

**A STUDY ON THE PATENT LAW STANDARD
OF NON-OBVIOUSNESS**

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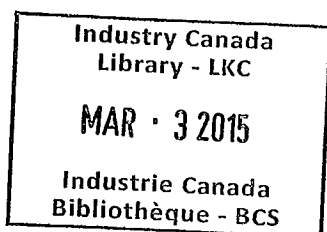
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LEGAL SUMMARY

There are three basic requirements imposed by law and jurisprudence on claims in a patent application before they can be said to be directed to new subject matter. Section 2 of the *Patent Act* defines "invention" as:

Any new and useful art, process, machine, manufacture, or composition of matter, or any new and useful improvement in any art, process, machine, manufacture, or composition of matter.

In addition to novelty and utility the invention must also involve inventive ingenuity to be patentable. This is enunciated in *Canadian Gypsum Co. Ltd. v. Gypsum, Lime & Alabastine, Canada Ltd.*¹:

To support a valid patent there must be something more than a new and useful manufacture, it must have involved somehow the application of the inventive mind: the invention must have required for its evolution some amount of ingenuity to constitute subject matter, or in other words invention.

In the mid 1960's a suitable test for non-obviousness was adopted by the Canadian Courts from British case law, from a chemical case. This test, known as the "Cripps question", is as follows:

Was it for all **practical purposes** obvious to any skilled chemist in the state of chemical knowledge existing at the date of the patent which consists of the chemical literature available ... and his general chemical knowledge, that he could manufacture valuable therapeutic agents by making the higher alkyl resorcinols ...?²

The test for non-obviousness has evolved over the years by the judiciary and has been applied to all types of technology. In *Beloit Canada Ltd. v. Valmet OY*³ Mr. Justice Hugessen stated the test of obviousness, at p 294, as:

¹ (1931) Ex. C.R. 180

² *Burns & Russell of Canada Ltd. v. Day & Campbell Limited* (1966) Ex.C.R. 673 at 681-682

³ (1986) 8 C.P.R. (3d) 289 at 295

The test for obviousness is not to ask what competent inventors did or would have done to solve the problem. Inventors are by definition inventive. The classical touchstone for obviousness is the technician skilled in the art but having no scintilla of inventiveness or imagination; a paragon of deduction and dexterity, wholly devoid of intuition; a triumph of the left hemisphere over the right. The question to be asked is whether this mythical creature (the man in the Clapham omnibus of patent law) would, in light of the state of the art and of common general knowledge as at the claimed date of invention, have come directly and without difficulty to the solution taught by the patent. It is a very difficult test to satisfy.

It is a purpose of this report to review the standard of non-obviousness, as it is applied by the Canadian Patent Office and the Canadian Courts, and determine if the standard is applied equally to different fields of technology and equally within a field of technology, as the field develops. The findings of this review will be compared with the standards and practice from other jurisdictions, primarily the United States and Europe.

The determination of obviousness is a factual determination. In all jurisdictions, there must be a determination of the invention, or the problem to which the invention is directed. There must then be an assessment of the prior art, whether it is the closest prior art as considered in European practice, or relevant prior art as determined in Canadian and United States practice. Once the prior art has been identified, it then must be determined whether a person of ordinary skill in the art having knowledge of the prior art, and the common general knowledge which such a skilled person would possess, would consider the invention as non-obvious, or involving an inventive step.

In our review of the Canadian Court and Canadian Patent Appeal Board decisions, we determined whether there was a different set of criteria applied to different types of technology in determining obviousness or non-obviousness. By the term "criteria" it is meant to refer to the reasons provided by the Patent Appeal Board and/or the Canadian Courts for either accepting or rejecting a case. Our hypothesis in this extensive review, was the following: if the Canadian Patent Office and the Canadian Courts accepted or rejected claims based on the same criteria for each type of technology then it could be concluded that a uniform standard is applied to the different fields of technology.

It is our conclusion, based on our review of published decisions, that the criteria used by the Courts and by the Canadian Patent Office, in determining non-obviousness does not differ from one field of technology to another. The test of obviousness, whether it is the *Cripps* question or the *Cripps* question as applied in the *Beecham Canada Ltd. v. Procter*

& *Gamble Co.*⁴, or more recently in the *Beloit Canada Ltd. v. Valmet OY*⁵ is the same for all fields of technology.

What is not constant, and what varies through time and through the development of a technology, is the benchmark to which obviousness/non-obviousness is to be judged. This benchmark is the unimaginative skilled technician, his common general knowledge, and the applicable prior art.

As the technology develops, the skill and the common general knowledge of the ordinary workman in the pertinent art increases. It is this yardstick, against which obviousness/non-obviousness is judged, which changes as the technology develops. Thus, the test for obviousness is still based on the *Cripps* or the modified *Cripps* question, but the general knowledge of the unimaginative skilled technician changes throughout the development of a technology. Furthermore, the literature and the information available to him to determine obviousness (prior art) change as the field or technology develops. What would appear obvious or non-obviousness to this unimaginative skilled technician will change through the development of the technology.

This point has been accepted by Canadian Courts as discussed, for example, in *Monsanto Co. v. Commissioner of Patents*⁶. As the field of technology develops, so does the knowledge of the unskilled technician and the common general knowledge from which he can draw. A similar conclusion was also reached in a review of the standard of obviousness as applied to chemical patents as the field of chemistry developed⁷. It is our position that the standard does not change throughout the development of the technology, but what changes is the benchmark to which the standard is to be judged. Thus, the benchmark to which the standard of non-obviousness is judged, is a continually evolving benchmark which continues to change as the field of technology develops.

In the United States, there has been great concern expressed regarding the application of the standard of non-obviousness in the United States Patent and Trademark Office, specifically with regards to the emerging technologies of biotechnology and computer related technologies. In these areas, it was generally held that the application of the standard of obviousness was higher than in other areas of technology. There were many reasons given for this imbalance. For example, in these new areas of technology, there is a large body of new examiners, who lack legal training. As a result, it was felt that

⁴ (1982) 61 C.P.R. (2d) 1 at 27

⁵ (1986) 8 C.P.R. (3d) 289 at 295

⁶ (1979) 42 C.P.R. (2d) 161

⁷ Bernard F. Roussin, Comparative Review of the Patentability Requirements for Chemical Products and Synthesis, Canadian Patent Reporter, Vol. 15, pp. 49-67, 1952

examiners frequently act as scientific peer reviewers in the biotechnology area, rather than as patent examiners. They often spend more time and effort critiquing the science than examining the patentability question. Inadequate search files in some cases, such as the software area, were also cited as a problem. It is proposed that the main reason for this higher standard of obviousness being applied, especially in the biotechnology area, reflects the higher skill that the biotechnology examiners bring with them to their task in determining the question of obviousness. They are perhaps reviewing the patent application not through the eyes of the unimaginative skilled technician, but through their own eyes, thus perhaps defining a higher skill, to the skilled technician than the law dictates. Thus, it is proposed that the United States patent examiners, in the biotechnology field in particular, are not using the correct yardstick to judge the question of non-obviousness.

In Canada in the biotechnology area, it was found that very few objections on obviousness are raised by the Canadian biotechnology examiners. The biotechnology examiners feel that as this technology is very new, it is difficult to say that an invention is obvious. At the present time the examiners feel that since there is not much known about the field, this field is very unpredictable and, thus, most inventions are considered non-obvious. They, however, recognize that as the field develops there will be an increase in the skill of the ordinary workman, and thus, one would expect to see more obviousness rejections raised by the Canadian biotechnology examiners.

Thus, at present, the Canadian biotechnology examiners have set the skill of the ordinary skilled technician and the common general knowledge which he brings with him to assess the invention as very low. The examiners' assessment of the unpredictability of the field, results in a different problem which is not seen in the United States. There is a reluctance by Canadian biotechnology examiners to allow any claims which go beyond the provided examples in an application. The examiners, thus, are attempting to restrict the applicant to the proved utility of their invention, and not its predicted utility. This is contrary to Canadian case law and Canadian practice in other fields of technology. This problem is really a question of sufficiency of disclosure and the definition of "sound prediction" which is outside the scope of the present study and, thus, has not been reviewed in any detail.

Thus, from our review, we could find no evidence of a different standard of obviousness being applied across different fields. In the area of biotechnology, the same standard of obviousness is being applied as in other fields. What does change is the yardstick against which inventions are judged. This yardstick includes the person skilled in the art; the common general knowledge in a particular field of invention which this skilled person brings to the task; and the prior art, against which the person skilled in the art will determine the question of non-obviousness. The level of the skill of a person skilled in the art will vary from one field to another. It will also vary as the field develops. Thus, although the standard of non-obviousness is the same from one field of technology to another, and within a field as the field develops, what varies during the development of technology, is the benchmark to which obviousness/non-obviousness is to be judged. The

benchmark is a constantly evolving benchmark which must reflect the facts for each individual case.

It is not considered, as a result of the findings of this study, that a more comprehensive definition of non-obviousness is required. The Canadian judiciary has provided a clear set of guidelines in order to identify the standard in which inventions are to be judged. We could find no evidence that a different standard of non-obviousness being applied across different fields.

As biotechnology is still an emerging field of technology, there has been a tendency on the part of Canadian biotechnology examiners, in assessing the issue of non-obviousness, to consider the ambit of the common general knowledge in a somewhat more restrictive fashion than has been done in well established fields of technology. It is a recommendation of this report that the Canadian biotechnology examiners ensure that, as the field develops, they adjust the level of the skill of the unskilled technician and his common general knowledge accordingly to ensure that the correct yardstick, against which invention is to be judged, is used.

It is further a recommendation of this report that a more detailed review of the sufficiency of disclosure question and the issue of predicted utility is conducted, specifically with regard to the biotechnology inventions as compared to other inventions in other fields. As noted, at present the Canadian biotechnology examiners believe that the level of predicability in the field of biotechnology is very low. As a result, they are reluctant to allow claims which go outside the scope of the specific examples provided in the patent applications. They, thus, are only willing to allow claims to the proved utility, rather than any predicted utility.

INTRODUCTION

1.1 Purpose of Report

"Nobody, however, has told me, and I do not suppose anybody ever will tell me, what is the precise characteristic or quality the presence of which distinguishes invention for a workshop improvement. Day is day, and night is night, but who shall tell where day ends or night begins?"⁸

"No one has really succeeded in defining, apart from the statutory definition, the difference between an advance that is obvious as a workshop improvement and one that involves inventive ingenuity. One of the difficulties is that there is no objective standard of invention. What one person might regard as inventive another would consider as obvious."⁹

The second quotation, taken from *The King v. Uhlemann Optical Co.*, I believe incorrectly refers to a statutory definition of the difference between obviousness and inventive ingenuity. In 1950, the time at which this comment was made, there was no such definition. The second part of this quotation, and the previous quotation, demonstrates the subjective nature of the determination of invention or inventive ingenuity. It is this subjectiveness that makes it so difficult to set forth a standard of invention. Nevertheless, in the years which followed, a standard of non-obviousness was introduced and refined by the judiciary. This standard is applied to all types of inventions, whether it be electrical, chemical, mechanical or biological.

In the United States concern has been expressed regarding the application of the standard of non-obviousness in the United States Patent and Trademark Office, especially with the emerging technologies of biotechnology and electronics and computer related technology¹⁰. In these areas, there is a general consensus that the standard of non-obviousness is too rigorously applied by the Examiners.

⁸ *Samuel Parkes & Co. Ltd. v. Cocker Brothers Ltd.* (1929), 46 R.P.C. 241 at 248

⁹ *The King v. Uhlemann Optical Company*, Canadian Law Report, 1950, Ex. C. 142

¹⁰ This will be elaborated more fully later in the report, with a summary of comments from public hearings on the standard of non-obviousness held on July 20, 1994 at the United States Department of Commerce, Patent and Trademark Office.

It is thus a purpose of this report to review the standard of non-obviousness, as it is applied by the Canadian Patent Office and the Canadian Courts, and determine if the standard is applied equally to different fields of technology and equally within a field of technology, as the field develops.

The findings of this review will be compared with the standards and practice from other jurisdictions, primarily the United States and Europe.

2. THE STANDARD OF NON-OBVIOUSNESS IN CANADA

2.1 Introduction

There are three basic requirements imposed by law and jurisprudence on claims in a patent application before they can be said to be directed to new subject matter. Section 2 of the *Patent Act* defines "invention" as:

Any new and useful art, process, machine, manufacture, or composition of matter, or any new and useful improvement in any art, process, machine, manufacture, or composition of matter.

Novelty and utility are not the only requirements of patentability. The invention must also have involved inventive ingenuity to be patentable. This is enunciated in *Canadian Gypsum Co. Ltd v. Gypsum, Lime & Alabastine, Canada Ltd.*¹¹:

To support a valid patent there must be something more than a new and useful manufacture, it must have involved somehow the application of the inventive mind: the invention must have required for its evolution some amount of ingenuity to constitute subject matter, or in other words invention.

At present there is no statutory requirement for "non-obviousness" in the Canadian *Patent Act*. Bill S-17, which received Royal Assent on May 6, 1993, but is not yet in force awaiting enabling regulations, will change the current situation. Section 28.3 of the amended *Patent Act* reads:

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, having regard to

- a) all information disclosed more than one year before the filing date by the applicant, or by a person who obtained knowledge, directly or

¹¹ (1931) Ex. C.R. 180

indirectly, from the applicant, in such a manner that the subject-matter became available to the public in Canadian or elsewhere; and

- b) all information disclosed before the claim date by a person not mentioned in paragraph (a) in such a manner that the subject-matter became available to the public in Canada or elsewhere.

In this chapter, in reviewing the Canadian standard of non-obviousness, we will begin with an analysis of the present standard by which Canadian inventions are judged, including a brief historical review of how this standard evolved. Through this review a meaningful description and definition of the following will be provided:

- 1) test for non-obviousness;
- 2) unimaginative skilled technician;
- 3) relevant date for the assessment of non-obviousness;
- 4) common general knowledge;
- 5) prior art; and
- 6) secondary considerations.

Having assessed the standard of non-obviousness, it will then be determined how this standard has been applied in the Canadian Intellectual Property Office and in the Canadian Courts, for different fields of technology, and during the life cycle of a technology. To this end, relevant Canadian cases, which include decisions at the Patent Office (the Patent Appeal Board-Commissioner decisions) and the Canadian Courts, will be reviewed and summarized.

2.2 Test for Non-obviousness

2.2.1 The Evolution of the Test for Non-Obviousness

Canadian patent cases in the early 1900's recognized the need for "invention" or "exercise of the inventive faculty," but it was not until the mid 1960's that a suitable test for obviousness was adopted by the Canadian Courts. In *Burns & Russell of Can. Ltd. v. Day & Campbell Ltd.*¹², the Exchequer Court accepted the "Cripps question," which had gained

¹² (1966) Ex.C.R. 673 at 681-682

wide acceptance in the United Kingdom, as a suitable test for the evaluation of obviousness. However, as can be seen from the following quotation, the test was not applied in this case.

The "Cripps question" in Great Britain (as it was put in this case from which its name is derived) is as follows:

Was it for all practical purposes obvious to any skilled chemist in the state of chemical knowledge existing at the date of the patent which consists of the chemical literature available ... and his general chemical knowledge, that he could manufacture valuable therapeutic agents by making the higher alkyl resorcinols ...?

If this question were modified so as to put a question in a form complying with Canadian patent law and so as to be applicable to this case for the purpose of determining invention or non-invention, the words "existing at the date of the patent" would have to be changed to the words "existing at the date of the invention".

Using this question as modified may be a proper test to employ in a Canadian patent action in certain cases to determine whether or not invention exists; but in this case I do not propose to draft and employ such a question.

The "Cripps question" was approved in the Supreme Court of Canada by Mr. Justice Pigeon in *Farbwerke Hoechst A.G. v. Halocarbon (Ontario) Ltd.*¹³:

In my view this statement of the requirement of inventive ingenuity puts it much too high. Very few inventions are unexpected discoveries. Practically all research work is done by looking in directions where the "state of the art" points. On that basis and with hindsight, it could be said in most cases that there was no inventive ingenuity in the new development because everyone would then see how the previous accomplishments pointed the way. The discovery of penicillin was, of course, a major development, a great invention. After that, a number of workers went looking for

¹³ (1979) 42. C.P.R. (2d) 145, at 155-157

other antibiotics methodically testing whole families of various microorganisms other than *penicillium notatum*. This research work was rewarded by the discovery of a number of antibiotics such as chloromycetin obtained from *streptomyces venezuelae* as mentioned in *Laboratoire Pentagone v. Parke, Davis & Co.* ((1968), 55. C.P.R. 111, 69 D.L.R. (2d) 267, [1968] S.C.R. 307), tetracycline as mentioned in *American Cyanamid Co. v. Berk Pharmaceuticals Ltd.* ([1976] R.P.C. 231, p. 257) where Whitford J. said: "A patient searcher is as much entitled to the benefits of a monopoly as someone who hits upon an invention by some lucky chance or an inspiration". I cannot imagine patents obtained for antibiotics and for various processes for their production being successfully challenged on the basis that the discovery of penicillin pointed the way and there was no inventive ingenuity in the search for other antibiotics and in the testing and the development of processes. In my view, the true doctrine was clearly stated by the Privy Council in *Pope Appliance Corporation v. Spanish River Pulp and Paper Mills, Ltd.* ([1929] 1 D.L.R. 209, [1929] A.C. 269, pp. 280-1), Viscount Dunedin said:

After all, what is invention? It is finding out something which has not been found out by other people. This Pope in the present patent did. He found out that the paper would so stick, and the practical problem was solved. The learned judges below say that all this might have been done by any one who experimented with "doctors" and air blasts already known. That is that someone else might have hit upon the invention. There are many instances in various branches of science of independent investigators making the same discovery. That does not prevent the one who first applies and gets a patent from having a good patent.

The same result will be obtained by putting, as the trial judge did (*Farbwerke Hoechst A.G. v. Halocarbon (Ontario) Ltd.*, (1974) 15 C.P.R. (2d), 105 at 113), the "Cripps question" as to which Viscount Simon said in *Martin and Biro Swan Ltd. v. H. Millwood Ltd.* ([1956] R.P.C. 125 at pp. 133-4):

Your Lordships at least have the opportunity of affirming that the law on this matter is as stated by *Jenkins, L.J.*, in *Allmanna Svenska Elekiriska A/B v. Burntisland Ship Building Coy. Ltd.* (1952) 69 R.P.C. 63, and that the proper question to ask is that which was formulated by Sir Stafford Cripps as counsel in *Sharpe & Dohme Inc. v. Boots Pure Drug Coy. Ltd.* (1928) 45 R.P.C. 153 at p. 163:

Was it obvious to any skilled chemist in the state of chemical knowledge existing at the date of the patent that he could manufacture valuable therapeutic agents by making the higher resorcinols by the use of the condensation and reduction processes described. If the answer is 'No' the patent is valid; if 'Yes' the patent is invalid.

In *Canadian General Electric Co. v. Fada Radio Ltd.* ([1930] 1 D.L.R. 449, [1930] A.C. 97 at p. 101) the Privy Council said:

The law on this subject is, in their Lordships' opinion, accurately summarized by Maclean J. in his judgment. His statement is as follows: "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. Sometimes it is a combination that is the invention; if the invention requires independent thought, ingenuity and skill, producing in a distinctive form a more efficient result, converting a comparatively defective apparatus into a useful and efficient one, rejecting what is bad and useless in former attempts and retaining what is useful, and uniting them all into an apparatus which,

taken as a whole, is novel, there is subject-matter. 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.

The "Cripps question" evolved during the 1980's. The question formulated by Mr. Justice Urie in *Beecham Canada Ltd. v. Procter & Gamble Co.*¹⁴ was as follows:

The question to be answered is whether at the date of invention ... an unimaginative skilled technician, in light of his general knowledge and the literature and information on the subject available to him on that date, would have been led directly and without difficulty to [the] invention.

In *Beloit Canada Ltd. v. Valmet OY*¹⁵ the Trial judge suggested that the proper question is not would the unimaginative skilled technician be led directly and without difficulty to the invention, but could the unimaginative skilled technician be so led? J. Walsh stated:

The point is however that each of the patents in question, and press arrangements already in use at the time of the alleged invention, disclosed press arrangements sufficiently similar to those embodied in the patents in suit that, according to these expert witnesses anyone skilled in the art of machine combinations could have devised another type or variation of press arrangement to accomplish the objective sought and obtained by the said patents in suit, and that to do so did not involve inventive skill justifying the issue of a patent.

At the Federal Court of Appeal (*Beloit Canada Ltd. v. Valmet OY*)¹⁶, it was held that the evidence of the experts, although admissible, is to be treated with care.

¹⁴ (1982) 61 C.P.R. (2d) 1 at 27

¹⁵ (1984) 78 C.P.R. (2d) 1 at 49

¹⁶ (1986) 8 C.P.R. (3d) 289 at 295

Every invention is obvious after it has been made, and to no one more so than an expert in the field. Where the expert has been hired for the purpose of testifying, his infallible hindsight is even more suspect. It is so easy once the teaching of a patent is known to say, "I could have done that"; before the assertion can be given any weight, one must have a satisfactory answer to the question, "Why didn't you?"

In this decision the Mr. Justice Hugessen stated the test of obviousness, at p 294, as:

The test for obviousness is not to ask what competent inventors did or would have done to solve the problem. Inventors are by definition inventive. The classical touchstone for obviousness is the technician skilled in the art but having no scintilla of inventiveness or imagination; a paragon of deduction and dexterity, wholly devoid of intuition; a triumph of the left hemisphere over the right. The question to be asked is whether this mythical creature (the man in the Clapham omnibus of patent law) would, in light of the state of the art and of common general knowledge as at the claimed date of invention, have come directly and without difficulty to the solution taught by the patent. It is a very difficult test to satisfy.

Thus, the classic touchstone for obviousness is the skilled technician in the art, having no scintilla of inventiveness or imagination. The question to be asked is whether this person would, in light of the state of the art and common general knowledge as at the date of invention, have come directly and without difficulty to the solution being taught by the patent.

It is thus clear from a review of the jurisprudence that the determination of whether or not an invention is obvious will turn on the consideration of four factors:

1. The definition of the person skilled in the art or the unimaginative skilled technician which is discussed further below;
2. The common general knowledge in the art;
3. The prior art; and
4. Secondary considerations.

The level of skill one attributes to the person skilled in the art and the determination of the level of common general knowledge have a serious impact on whether an invention will be found to be obvious or not. Accordingly, it is very important to properly assess in

the case of each invention, who the person skilled in the art is, having regard to the nature of the invention. The common general knowledge will then in part flow from this determination.

2.2.2 The "Unimaginative Skilled Technician"

The "unimaginative skilled technician" has been defined in many ways by the Canadian Courts. He has been referred to as a "skilled workman in a workshop", an "ordinary workman" or a "man skilled in the art".

In *General Tire & Rubber Co. v. Firestone Tyre & Rubber Co., Ltd.*¹⁷, per Sachs, L.J. we are told that it is to this person that one tests whether an invention is obvious or not.

For constructing the patent in suit and again for reaching a conclusion, if there was no anticipation, on the issue of obviousness, it is necessary for us to put ourselves into the position of a skilled addressee at the time the specification was published on 20th November, 1950. For it is to a skilled addressee - a skilled man reasonably well versed in the art - that the specification is deemed to be addressed, and it is by the standards of the *common general* knowledge of such a man that one tests whether the invention was obvious or not.

Harold G. Fox¹⁸, summarized the definition of the skilled technician as follows:

"Ordinary Workman" Defined: The term "ordinary workman" is susceptible of some misunderstanding. It refers to a hypothetical person possessing the ordinary skill and knowledge of the particular art to which the invention relates (*Ernest Scragg & Sons Ltd. v. Leeson Corpn.* (1964), 26 Fox Pat. C. 1. at 54; Or, as Lord Reid put it in *Van der Lely N.V. v. Bamfords Ltd.*, [1963] R.P.C. 61 at 71, the typical addressee of the specification - the kind of person who would be expected to make a machine of this kind) and a mind willing to understand a specification that is addressed to him (*American Cyanamid Co. v. Charles E. Frosst & Co.* (1965), 29 Fox Pat. C. 153 at 223). This hypothetical person has

¹⁷ [1972] R.P.C. 457 (C.A.) at 481-482

¹⁸ Canadian Patent Law & Practice, 4th Ed., (1969) Carswell, at 184-186

sometimes been equated with the "reasonable man" used as a standard in negligence cases (*Burns & Russell of Canada Ltd. v. Day & Campbell Ltd.* (1965), 31 Fox Pat. C. 36 at 47). He is assumed to be a man who is going to try to achieve success and not one who is looking for difficulties or seeking failure (*Unifloc Reagents Ltd. v. Newstead Colliery Ltd.* (1943), 60 R.P.C. 165 at 185). So that where the patent is for the production of a simple mechanical article, the ordinary workman in such case will be a mere mechanic capable of producing that article; but if the patent relates to some highly complicated process-physical, chemical or electrical-the ordinary workman in such case will necessarily be a highly trained person who, in accordance with the complexity of the nature of the invention, must necessarily bring to bear upon the same a highly specialized, scientific, and expert knowledge of the art to which the invention relates (*Minerals Separation North American Corp. v. Noranda Mines Ltd.*, [1947] Ex. C.R. 306 at 317, 6 Fox Pat. C. 130 at 146; [1950] S.C.R. 36; (1952), 12 Fox Pat. C. 123; *American Cyanamid Co. v. Charles E. Frosst & Co.* (1965), 29 Fox Pat. C. 153 at 231; *Unifloc Reagents Ltd. v. Newstead Colliery Ltd.* (1943), 60 R.P.C. 165 at 185; *Raleigh Cycle Co. Ltd. et al v. H. Miller & Co. Ltd.*, [1948] 1 All E.R. 308 at 320; see also *De Forest Phonofilm of Canada Ltd. v. Famous Players Canadian Corp. Ltd.*, [1931] Ex. C.R. 27; *Wandscheer et al. v. Sicard Ltd.* (1947), 7 Fox Pat. C. 93 at 106, [1948] S.C.R. 1 at 15; *Neilson v. Harford* (1841), 1 W.P.C. 295 at 314, 8 M. & W. 806, 11 L.J. Ex. 20).

Thus, it becomes obvious that the expression, "ordinary workman skilled in the art," must be construed differently for different classes of patents. A complex chemical patent would necessarily require high technical skill in order to be put into use (*Badische Anilin und Soda Fabrik v. Levinstein* (1887), 4. R.P.C. 449; *Edison v. Holland* (1889), 6. R.P.C. 243, 280; *Badische Anilin und Soda Fabrik v. La Societe Chimique des Usines du Rhone* (1897), 14, R.P.C. 875), while a small improvement patent would require very few directions in order to be capable of comprehension by an ordinary workman (*Plimpton v. Malcolmson* (1876), 3 Ch.D. 536, 568; *Incandescent Gas Light Co. v. De Mare Incandescent Gas Light System* (1896), 13 R.P.C. at 327). The specification is, therefore, addressed not to the public

generally, many of who may be ignorant of the subject-matter of the patent, but only to those skillful men who possess sufficient knowledge to render them capable of appreciating the nature of the invention (*De Forest Phonofilm of Canada Ltd. v. Famous Players Canadian Corpn. Ltd.*, [1931] Ex. C.R. 27; *Société des Usines Chimiques Rhone-Poulenc et al. v. Jules R. Gilbert Ltd. et al.* (1967), 35 Fox Pat. C. 174 at 195, (1968), 38 Fox Pat. C. 203; *Edison v. Holland* (1889), 6 R.P.C. 243, 277, 278, 280; *Badische Anilin und Soda Fabrik v. La Société Chimique des Usines du Rhone* (1897), 14 R.P.C. 875; *British Thomson-Houston Co. Ltd. v. Charlesworth, Peebles & Co. Ltd. et al.* (1925), 42 R.P.C. 180 at 208, per Lord Buckmaster; *Naamlooze Vennootschap de Bataafsche petroleum Maatschappij's Application* (1940), 57 R.P.C. 65 at 69). And this skill must be taken to mean skill and knowledge incidental to that particular art to which the invention relates, for a mechanic may be ordinarily skilled and competent in one branch of industry and not in another (*Harmar v. Playne* (1809), Dav. P.C. 318, per Lord Ellenborough C.J.).

It may perhaps happen that a person possessing scientific knowledge of a high order would be confused by a direction in a patent, but if an ordinary workman comprehends no difficulty the specification will be held sufficient (*Badische Anilin und Soda Fabrik v. Levinstein* (1887), 12 App. Cas. 710, 4 R.P.C. 449; *Haskell Golf Ball Co. Ltd. v. Hutchinson* (1905), 22 R.P.C. 478 at 493). The class of workman to be considered is, in each case, that which would carry out the invention ("*Z*" *Electric Lamp Co. v. Marples* (1910), 27 R.P.C. 305, 737; *Osram Lamp Works v. "Z" Electric Lamp Co.* (1912), 29 R.P.C. 424). A specification may, therefore, be addressed to more than one class of "ordinary workmen" and it is no objection that one person may require to call in assistance from a person in another art in order to understand it fully. It is not necessary for the patentee to instruct persons wholly ignorant of the subject-matter to which his invention relates in all that they must know before they can understand what he is talking about. As Lindley L.J. said in *Edison and Swan Electric Light Co. v. Holland* ((1889), 6 R.P.C. 243 at 280): "One class of persons may understand only one part of the specification and another class the other, and yet the patent

may be valid." This principle was more fully discussed by Lord Parker in *Osram Lamp Works Ltd. v. Pope's Electric Lamp Co. Ltd.* (172 (1917), 34 R.P.C. 369 at 391): "...it may well be necessary to call in aid more than one art. Some of the directions contained in a specification may have to be carried out by skilled mechanics, others by competent chemists. In such case, the mechanic and chemist must be assumed to co-operate for the purpose in view, each making good any deficiency in the other's technical equipment (See also *Burns & Russell of Canada Ltd. v. Day & Campbell Ltd.* (1965), 31 Fox Pat. C. 36 at 48)."

More recently in *Beloit Canada Ltd. v. Valmet OY*¹⁹, the benchmark for determining obviousness was defined as:

The classical touchstone for obviousness is the technician skilled in the art but having no scintilla of inventiveness or imagination; a paragon of deduction and dexterity, wholly devoid of intuition; a triumph of the left hemisphere over the right.

Thus, this mythical man, who must judge the question of obviousness is technically skilled in the art, but has no scintilla of inventiveness or imagination; a paragon of deduction and dexterity, wholly devoid of intuition; a triumph of the left hemisphere over the right²⁰. It has long been recognized, however, that this ordinary workman or unimaginative skilled technician will be a different person for different classes of patents. Thus, the ordinary workman or unskilled technician must be taken to mean the skill and knowledge which are commensurate with the particular art to which the invention pertains. For example, a complex chemical patent would necessarily require a person with a high technical skill in order to be able to put the patent into use.

Furthermore, one could envisage situations where one or two areas of technology are called upon in order to work the invention. For example in *The Procter & Gamble Co. v. Kimberly-Clark of Canada Ltd.*²¹, the Court held that the workman of ordinary skill in the art to whom the patent was addressed was a composite having knowledge of garment making and a basic knowledge of the chemistry of heat-shrinkable elastics. Equally, in

¹⁹ (1986) 8 C.P.R. (3d) 289 at 295

²⁰ *Beloit Canada Ltd. v. Valmet OY* (1986) 8 C.P.R. (3d) 289 at 295

²¹ 40 C.P.R. (3d) 1 at 10-11

other circumstances, a small improvement patent may only require very few instructions in order to be capable of comprehension by an ordinary workman, and in that case, the level of skill would not be as high.

This was reiterated in the recent decision of *Bayer Aktiengesellschaft v. Apotex Inc.*²², where the Ontario Court held as follows:

The notional skilled technician can be a composite of scientists, researchers and technicians bringing their combined expertise to bear on the problem at hand: "This is particularly true where the invention relates to a science or art that transcends several scientific disciplines." (*Per* Wetson J. in *Mobil Oil Corp. v. Hercules Canada Inc.*, unreported, September 21, 1994, F.C.T.D., at p. 5 [now reported 57 C.P.R. (3d) 488 at p. 494, 82 F.T.R. 211])

Thus, the level and type of skill to be attributed to the unimaginative skilled technician will turn on the **facts** of each case.

The level of skill to be attributed to a person skilled in the art as it may pertain to a bio-technological invention can span the whole spectrum. While some inventions may require a person with a Ph.D. degree in molecular biology, others will only require a person having a B.Sc. degree or even a technical degree from a college. This, for example, would hold true for an invention which is an improvement on a process where the improvement itself is of a very simple nature. As in other fields, there will also be inventions for which the person skilled in the art is a composite, for example of a Ph.D. in immunology and a Ph.D. in molecular biology or a composite of a Ph.D. in immunology or virology, of a person working in the pharmaceutical industry who is skilled in the tableting of a drug and of a Ph.D. in molecular biology. The latter composite could be the person skilled in the art for the preparation of a new drug made by recombinant technology.

2.2.3 Determination of Claimed Invention

In order to apply the test for obviousness, an assessment of the invention in question, arrived at by a proper construction of each of the claims in the patent is required. The construction of a patent is for the Court to determine, in accordance with well-recognised principles. The patent is construed on the basis of the man skilled in the art and his understanding of the art. This man skilled in the art is the same man as defined above. The claims define the statutory monopoly, and thus, in construing a patent, the claims must be interpreted. In construing the claims in a patent, recourse to the remainder of the

²² (1995) 60 C.P.R. (3d) 58

specification is permissible only to assist in understanding terms used in the claims; unnecessary when the words of the claim are plain and unambiguous; and improper to vary the scope or ambit of the claims²³.

The date as of which the patent is to be construed is the date the patent was issued²⁴. The claims are to be construed without regard to the prior art or to the effect which the construction will have on the issue of validity or infringement.

2.2.4 Relevant Date

As discussed previously, when the "Cripps question" was adapted for Canadian practice in the mid 60's, the question was changed to refer to the date of invention rather than the date of the patent. Thus, the relevant skill of the unimaginative skilled technician, the prior art and the technician's common general knowledge is to be determined as of the date of invention. Much has been written about the date of invention and how to arrive at said date. For example in *Christiani & Nielsen v. Rice*²⁵, it was said:

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 verbally, a description which affords the means of making that which is invented.

Thorson, P., in *Ernest Scragg & Sons v. Leeson*²⁶, after considering that decision, and other earlier decisions, held that the test laid down in *Christiani & Nielsen* was not intended to replace the general statement in *Permutit Co. v. Borrowman*²⁷ and concluded:

It may also be proved, in the case of an invention of an apparatus, that the apparatus was made at such date or, in the case of an invention of a process, that the process was used at such date. The essential fact to be proved is that at the asserted date the invention was no longer merely an idea that

²³ *Beecham Canada Ltd. v. Procter & Gamble Co.* (1982), 61 C.P.R. (2d) 1 at 27

²⁴ *Allied Signal Inc. v. DuPont Canada Inc.* (1995) 61 C.P.R. (3d) 417 at 426

²⁵ [1930] S.C.R. 443 at 456

²⁶ 45 C.P.R. 1 at 32

²⁷ [1926] 4 D.L.R. 285 at p. 287, 43 R.P.C. 356

floated through the inventor's brain but had been reduced to a definite and practical shape.

... While the Court will, of course, carefully scrutinize the evidence in support of an inventor's assertion that he made his invention at a date long prior to the date of his application the law does not impose a heavier onus of proof on the inventor than that which is usual in civil cases.

As amended, Section 28.3 clearly sets forth the relevant date for the determination of invention or obviousness and the date of prior art that can be considered in this question. The test of obviousness is to be applied as of the claim date. The relevant part of Section 28.3 reads as follows:

"...would not have been obvious on the claim date to as person skilled in the art or science to which it pertains, ..."

The prior art that the skilled person can consider in answering the question of obviousness is prior art, which was publicly available as of the claim date or one year before the filing date for prior art disclosed by the applicant or by a person who obtained knowledge directly or indirectly from the applicant, as stated in Section 28.3, as shown below:

- a) all information disclosed more than one year before the filing date by the applicant, or by a person who obtained knowledge, directly or indirectly, from the applicant, in such a manner that the subject-matter became available to the public in Canada or elsewhere; and
- b) all information disclosed before the claim date by a person not mentioned in paragraph (a) in such a manner that the subject-matter became available to the public in Canada or elsewhere.

As a result of the clear definition given concerning the relevant dates to determine obviousness and the relevant prior art, no further discussion on these points is warranted.

2.2.5 Common General Knowledge

The question of obviousness, which is addressed to the skilled unimaginative technician, must be viewed in light of his common general knowledge and publicly available information in the art, to which the invention pertains. General knowledge, or common general knowledge, as it is often described, comprises knowledge which is established by evidence to have been sufficiently disseminated and accepted within the art so as to be generally known and understood by the real life equivalents of the unimaginative skilled technician in the art. The available literature and information in the art, typically comprising written documents such as patents (or published patent applications) and scientific/technical articles, and possible prior use, form what is frequently referred to as the prior art.

Common general knowledge does not mean public knowledge. Common general knowledge is knowledge that is itself known and widely accepted without question by the bulk of practitioners in the art and it is part of the common stock of knowledge that they may be expected to have as a part of their technical equipment.

In *Plimpton v. Malcolmson*²⁸ it is stated:

When you say a thing is known to the public and part of common knowledge, of course you do not mean that every individual member of the public knows it. That would be absurd. What is meant is that if it is a manufacture connected with a particular trade, the people in the trade shall know something about it; if it is a thing connected with a chemical invention, people conversant with chemistry shall know something about it. And it need not go so far as that. You need not show that the bulk, or even a large number, of those people know it. If a sufficient number know it, or if the communication is such that a sufficient number may be presumed, or assumed to know it, that will do.

Fox²⁹ defines common knowledge as:

Such a piece of information only becomes common knowledge when it is generally known and accepted without question by the bulk of those engaged in the particular art, in

²⁸ (1876) 3 Ch.D. 531 at 556

²⁹ Canadian Patent Law & Practice, 4th Ed., (1969) Carswell, pages 103-107

other words, when it becomes part of the common stock of ideas relating to the art.

Common (general) knowledge does not include public knowledge of particular documents (*Cluett, Peabody & Co. Inc. v. Dominion Textile Co. Ltd.*, [1938] Ex. C.R. 47 at 73; *British Acoustic Films Ltd. v. Nettlefold Productions* (1936), 53 R.P.C. 221 at 250, per Luxmoore J.), but rather the knowledge that a fully fledged practitioner in an art may be expected to have as part of his technical equipment (*Automatic Coil Winder & Electrical Equipment Co. Ltd. v. Taylor Electrical Instruments Ltd.* (1943), 60 R.P.C. 111 at 119, (1944), 61 R.P.C. 41 at 43; as for example, by instruction to students and by textbooks; *Allman Svenska Elektriska A/B v. Burntisland Shipbuilding Co. Ltd.* (1951), 68 R.P.C. 227 at 236-237).

The evidence (of common general knowledge) must be such as will show that the subject matter of the patent in suit was a part of the technical stock-in-trade of persons skilled in the particular art at the time of the alleged invention, ...

In *Cluett Peabody & Co., Inc. v. Dominion Textile Co. Ltd.*³⁰ it is stated:

As prior user is another medium of publication, the following remarks by Luxmore J. in *British Acoustic Films Ltd. et al. v. Nettlefold Productions* ((1936) 53. R.P.C. 221, at 250) might be referred to. He said:

In my judgment it is not sufficient to prove common general knowledge that a particular disclosure is made in an article, or series of articles, in a scientific journal, no matter how wide the circulation of that journal may be, in the absence of any evidence that the disclosure is accepted generally by those who are engaged in the art to which the disclosure relates. A piece of particular knowledge as disclosed in a scientific paper does not become common general knowledge merely

³⁰ [1938] Ex. C.R. 47 at 73-74, per MacLean, P.

because it is widely read, and still less because it is widely circulated. Such a piece of knowledge only becomes general knowledge when it is generally known and accepted without question by the bulk of those who are engaged in the particular art, in other words, when it becomes part of their common stock of knowledge relating to the art. Whatever else common general knowledge may be, it has never in my judgment included public knowledge of particular documents, reports or scientific papers and the like. The knowledge of a number of individuals that a particular suggestion or particular suggestions has or have been made for the use of biasing in a particular apparatus, or a number of particular apparatus, cannot be held to be common general knowledge. It is certainly difficult to appreciate how the use of something which has in fact never been used in a particular art can ever be held to be common general knowledge in the art.

2.2.6 Prior Art

In practice someone challenging the validity of a patent will know what he is searching for and with hindsight can find and make a careful selection of the most appropriate references. The hindsight approach has, however, been held to be unfair to inventors. Someone faced with the same problem as the inventor must use foresight³¹. There are two questions. The first is whether the reference will be located at all by someone conducting a literature search. The second is whether the searcher will select and collate the most appropriate citations from the vast amount of available literature. As is stated in **Eli Lilly v. Marzone** at p. 35,

considering generally all the references cited in defence and after considering the evidence in chief and especially the cross-examinations, the evidence of Safe and the discovery evidence it is probable that at the time of the invention most of the references

³¹ *Eli Lilly and Company et al. v. Marzone Chemicals Ltd. et al.* (1978) 37 C.P.R. (2d) 1 at 33 affirmed; (1978) 37 C.P.R. 3

relied on in defence would probably not have been located by any research confronted with the problem which was solved by the making of the compound trifluralin. These references as stated are carefully selected pieces of prior knowledge, some not even concerned with herbicides; all probably not part of common knowledge. Also, it would be improbable that any such researcher would go outside the herbicide art and make a selection of references such as the defence made in this case of the prior art. It is impossible to assume in this case that such would have been made in any event.

The prior art, which is to be made available to the skilled unimaginative technician has been held to be only such prior art that would have been located after a "diligent search".

An objective test should be applied to determine whether or not the hypothetical skilled person would have been aware of the alleged prior art.

In *Mahurkar v. Vas-Cath of Canada Ltd.*³², it is stated:

In reviewing the prior art I have also been persuaded by counsel for the plaintiff that an objective test should be applied to determine whether the hypothetical skilled workman in the art could be reasonably assumed to have knowledge of such prior art. There appears to be adequate authority in the jurisprudence (See e.g. *Eli Lilly & Co. v. Marzone Chemicals Ltd.* (1977), 37 C.P.R. (2d) 3 at pp. 34-5 (F.C.T.D.); aff'd C.P.R. (2d) 37, 22 N.R. 511 (F.C.A.); and cases cited in *Xerox of Canada Ltd. v. IBM Canada Ltd.* (1977), 33 C.P.R. (2d) 24 at pp. 48-50 (F.C.T.D.)) for such a test. No evidence was produced by the defendants to show that the ordinary skilled workman should be assumed to have been aware of all of this prior art. Frankly I find it difficult to believe that several of the items of prior art would have been present to the mind of the ordinary skilled workman in 1981.

³² (1988) 18 C.P.R. (3d) 417 (F.C.T.D.) at 435 - 436, per Strayer J.; aff'd 32 C.P.R. (3d) 409 (F.C.A.)

If there was a long standing need for a solution to the problem solved by the invention and no one, in fact, found anything helpful in the literature, this will show that the references would not have been found and selected³³. It must be shown that a diligent search would, in fact, have located the references relied on. It is not sufficient to give the expert the classes and sub classes in the Patent Office where the prior art is located, and have him merely confirm its location.

In *The Procter & Gamble Co. v. Kimberly-Clark Ltd.*³⁴ it is stated:

It is clear that the knowledge this fictitious person is considered to possess consists of the general knowledge that the ordinary skilled workman would have had at the relevant time, as well as any information available to him or her at the time in publications, including patents, in other words prior art. Moreover, an objective test should be applied to determine whether the hypothetical skilled workman could be reasonably assumed to have knowledge of such prior art (*Mahurkar v. Vas-Cath of Canada Ltd.* (1988) 18 C.P.R. (3d) 417 (F.C.T.D.) at 435 - 436, per Strayer J.; aff'd 32 C.P.R. (3d) 409 (F.C.A.)):

In this regard the defendant submits, that based on Brenner's evidence, the prior art patents it has relied on could have been located in a straightforward manner by someone conducting a search in the United States Patent Office in classes dealing with elasticizing waistbands for trousers, elasticizing waistbands for pants and methods of elasticizing woven fabrics in the late 1960's (Brenner affidavit, ex. D-44, paras. 12-19). According to the defendant, based on Brenner's search, the Pohl, Neyret, Sheperd and 19th century English patents were reasonably accessible in a state of the art search (Brenner, p. 3660).

Both counsel for the plaintiffs and the defendant made reference to the *General Tire & Rubber Co. v. Firestone Tyre & Rubber Co., Ltd.* ([1972] R.P.C. 457 (C.A.) at pp. 499-500) case, as establishing the diligent level of search:

³³ *Eli Lilly* op cit at p. 35

³⁴ (1991) 40 C.P.R. (3d) 1 (F.C.T.D.) at 45-48 per Teitelbaum J.

As regards diligent search, a phrase which we were given to understand originates from Lord Reid in *Technograph* ([1971] F.S.R. 188 at 193) we take this as apt to describe what research groups employed by large-scale concerns, such as those in the *Technograph* case and in the instant case, ought to know. Such researches, however, can involve not only heavy expenditure but also questions of priorities in the use of available manpower. What extent of search is appropriate in a given case and what would be its probable results are questions of fact.

My concern with Brenner's search is not the methodology of his search, but the fact that the classes and subclasses were given to him in which the prior art could have been located, and he basically confirmed its location. As such, he could not be said to have conducted an independent search (Brenner, p. 3641). Had Brenner, as the expert, been told "Go and see what you can find" and returned indicating that "I could not find these patents" or "I have found these patents" (the patents referred to by the defendant) then I would be satisfied that a reasonable and diligent search had been conducted. I use both terms noting that the search would be considered reasonable if it is not less than a diligent search.

As I understand, searches were conducted by the plaintiffs but no evidence was adduced as to what was found in these searches. Some of the prior art may have been located. However, based on the evidence it is not clear that a diligent search would have revealed the existence of the prior art patents relied upon by the defendant. Therefore, when placing myself in the position of the notionally skilled person, in 1969, faced with the Althouse problem, I should have regard to the common general knowledge of such an addressee, but contrary to what is suggested by the defendant this would not include the prior art patents, because I have concluded that these prior art patents would not have been located by a diligent search. Thus, in this case, the assessment of obviousness will be based on what was known or done in the industry, namely, common general knowledge. Further, it should also be kept in mind that the patent is

directed to a person of ordinary skill in the garment industry with some knowledge of polymer chemistry.

2.2.7 Secondary Considerations

Secondary considerations can provide some objective assistance in the evaluation of obviousness. The best known of these secondary considerations is commercial success. Other secondary considerations include long-felt want, attempts by others to solve the problem, the form of acceptance by the relevant public, and contemporaneous development by others.

In *Diversified Products Corp. v. Tye-Sil Corp.*³⁵ it was stated:

While the factor of commercial success, taken alone, is not conclusive evidence of inventiveness, where as here, it is but one of many factors, it cannot be disregarded. As stated by the Supreme Court of Canada in *The King v. Uhlemann Optical Co.* ((1949), 11 C.P.R. 26, [1950] Ex. C.R. 142, 10 Fox Pat. C. 24) at p. 106, *per* Rinfret C.J.C.:

The commercial success of the invention, if not conclusive, is, at least in this case, an element to establish the clear recognition that the patent in suit met the problem and the want; that the advantages therein involved an inventive step, which *Uhlemann* was first to take ...

and by this court in *Cutter (Canada) Ltd v. Baxter Travenol Laboratories Ltd.* ((1983), 68 C.P.R. (2d) 179 at pp. 189 and 191, 45 N.R. 393, *per* Thurlow C.J.):

The fact that the patented device represented a significant advance in the art seems to me to be borne out as well by the evidence of its commercial acceptance and the very substantial use made of it both in Canada and elsewhere.

³⁵ (1991) 35 C.P.R. (3d) (F.C.A.) *per* Decary J.A., at 367-368

...It should also be remembered that it is established by the evidence that the patented device represents a significant advance in the art and that it has had very substantial acceptance in the market and has been commercially successful. That indicates, if nothing more, that it is a practical device, something which could not be said for some of the patented items in the prior art. Was there then a need for inventive ingenuity to conceive it or was a mere workshop effort required.

In *Energy Absorption Systems v. Y. Boissonneault & Fils*³⁶ it was stated:

Furthermore, commercial success is a secondary but relevant consideration in the approach to the inventive step requirement. (See *Eli Lilly & Co. v. Marzone Chemical Ltd.* (1977), 37 C.P.R. (2d) 3, per Gibson J. at pp. 21 and 36; *Beloit Canada Ltd. v. Valmbeginset OY* (1984) 78 C.P.R. (2d) 1 at 49 per Hugessen J. at p. 296; and *The King v. Uhlemann Optical Co.* (1949), 11 C.P.R. 26, [1950] Ex. C.R. 142, 10 Fox Pat. C. 24, p. 105-106). Commercial success has been well established in the present case. Mr. Denman showed that the invented cartridge was readily accepted by the Highway Safety Community and that shortly after its introduction in the market-place, it very quickly replaced the plaintiff's other compression-type energy absorbers. Mr. Denman produced a chart illustrating the rapid growth of the Hex-Foam cartridge from zero percent of sales of compression-type energy absorbers by the plaintiff in January of 1981 to 100% of such sales by July of 1982.

In view of the evidence in this case of a problem and a solution to it (the necessity to accommodate a 1,800 lb. vehicle collision without weakening the structure and impairing a redirective capability of a crash cushion, and the discovery of a lighter weight substitute for the compression-type energy absorbing material to be mounted in the bays of the crash cushion), and as there was no

³⁶ (1990), 30 C.P.R. (3d) 420 (F.C.T.D.) at 463-464, per Pinard J.

evidence of any unusual or excessive advertising, the commercial success is strong evidence of invention.

2.2.8 Summary

"Day is day, and night is night, but who shall tell where day ends or night begins"³⁷.

In order for an invention to be obvious, the skilled unimaginative worker, in light of his common general knowledge and armed with the available prior art must be led "directly and without difficulty" to the alleged invention. (Expression has its roots in *Xerox of Can. Ltd. V. I.B.M. Can Ltd.*³⁸). This must be balanced with the accepted position that a mere scintilla of invention is sufficient to support the validity of a patent. Invention may be present notwithstanding that there was no difficulty putting an idea into effect once it was conceived. An invention is not to be considered obvious because of its simplicity.

In *Diversified Products Corp. v. Tye-Sil Corp.*³⁹ it was stated:

It is well-established that a mere "scintilla of invention" is sufficient to support the validity of a patent. As Tomlin J. (as he then was) said in *Samuel Parkes & Co. v. Cocker Bros.* ((1929), 46 R.P.C. 241 at p. 248 (C.A.)), approved by Rinfret J. in *The King v. Uhlemann Optical Co.* ((1949), 11 C.P.R. 26, [1950] Ex. C.R. 142, 10 Fox Pat. C. 24) at page 105.

Nobody, however, has told me, and I do not suppose anybody ever will tell me, what is the precise characteristic or quality the presence of which distinguishes invention from a workshop improvement. Day is day, and night is night, but who shall tell where day ends or night begins? ... The truth is that, when once it had been found, as I find here, that the problem had waited solution for many years, and that the device is in fact novel and superior to what had gone before, and has been widely used, and used in

³⁷ *Samuel Parkes & Co. Ltd. v. Cocker Brothers Ltd.* (1929) 46 R.P.C. 241 at 248

³⁸ (1977) 33 C.P.R. (2d) 24 at 53

³⁹ (1991) 35 C.P.R. (3d) at 350 at 365 and 367, per Decary J.A.

preference to alternative devices, it is, I think, practically impossible to say that there is not present that scintilla of invention necessary to support the Patent.

From the moment it is established that a technician skilled in the art but having no scintilla of imagination would not by himself have been able to conceive what was conceived by the inventors, it matters not whether it was easy or not, afterwards, to suggest the way to carry it into effect. As noted by my colleague Marceau in his concurring reasons which I have had the opportunity to read, inventiveness can coexist with easiness and simplicity. To the British case of *Hickston's* to which he refers, I would add the Canadian cases of *The King v. Uhlemann Optical Co.* ((1949), 11 C.P.R. 26, [1950] Ex. C.R. 142, 10 Fox Pat. C. 24), pp. 105-6 and *De Frees & Betts Machine Co. v. Dominion Auto Accessories Ltd.* ((1963), 44 C.P.R. 74, [1964] Ex. C.R. 331, 25 Fox Pat. C.5 [affd 47 C.P.R. 12, [1965] S.C.R. 599, 30 Fox Pat. C. 204]), pp. 108-11.

It is improper to rely upon an *ex post facto* analysis of the invention.

In *Beloit v. Valmet*⁴⁰, it was stated:

While the evidence of experts is, in my view, properly admissible on an "ultimate issue" question such as obviousness, it seems to me that it must be treated with extreme care.

Every invention is obvious after it has been made, and to no one more so than an expert in the field. Where the expert has been hired for the purpose of testifying, his infallible hindsight is even more suspect. It is easy, once the teaching of a patent is known, to say, 'I could have done that'; before the assertion can be given any weight, one must have a satisfactory answer to the question, "Why didn't you?"

⁴⁰ (1986) 8 C.P.R. (3d) 289 at 295, at 295 (F.C.A.), per Hugessen J.A.

And in *Farbwerke Hoechst A.G. v. Halocarbon (Ontario) Ltd.*⁴¹ it was stated:

I would also draw attention to the following words of Lord Diplock in *Technograph Printed Circuits Ltd. v Mills & Rockley (Electronics) Ltd.* ([1972] R.P.C. 346) at p. 362:

... Once an invention has been made it is generally possible to postulate a combination of steps by which the inventor might have arrived at the invention that he claims in his specification if he started from something that was already known. But it is only because the invention has been made and has proved successful that it is possible to postulate from what starting point and by what particular combination of steps the inventor could have arrived at his invention. It may be that taken in isolation none of the steps which it is now possible to postulate, if taken in isolation, appears to call for any inventive ingenuity. It is improbable that this reconstruction *a posteriori* represents the mental process by which the inventor in fact arrived at his invention, but, even if it were, inventive ingenuity lay in perceiving that the final result which it was the object of the inventor to achieve was attainable from the particular starting point and in his selection of the particular combination of steps which would lead to that result.

The issue of *ex post facto* analysis is also discussed in *Reading & Bates Construction v. Baker Energy Corp.*⁴²:

In dealing with a question of obviousness, care must always be taken to guard against dangers inherent in hindsight analysis. The thought underlying the expression that one is "the wiser after the fact" (even as regards inventions) was captured as early as 1667 in these poetic words (John Milton, *Paradise Lost*, Book VI, lines 498-501):

The invention all admir'd, and each, how he
To be the inventor miss'd; so easy it seemed
Once found, which yet unfound most would

⁴¹ (1979) 42. C.P.R. (2d) 145 at 157, per Pigeon J.

⁴² (1987) 18 C.P.R. (3d) 180 (F.C.A.) at 188 per Stone J.A., affirming 13 C.P.R. (3d) 410

have thought Impossible.

In patent law, that notion was put in legal terms by Lord Russell of Killowen in *Non-Drip Measure Co. Ltd. v. Stranger's Ltd.* ((1943), 60 R.P.C. 135 at p. 142 (H.L.)), where he said: "Nothing is easier than to say, after the event, that the thing was obvious and involved no invention". The same view was recently echoed by my colleague Mr. Justice Hugessen in the *Beloit v. Valmet* ((1986) 8 C.P.R. (3d) 289 at 296) case at p. 296.

In summary, Canadian courts have generally accepted the "Cripps question", modified for Canadian practice in assessing invention or non-obviousness. Thus, the patent application must be directed to subject matter which would not occur easily and without difficulty to an unimaginative skilled technician looking at the problem with his common general knowledge and the relevant prior art. In determining invention, care must be taken to ensure that there is no *ex post facto* analysis of the invention, and that a mere scintilla of invention is sufficient to support non-obviousness. Furthermore, as determined on a case-by-case basis, it is proper to consider secondary considerations to assist in the evaluation of obviousness.

2.3 The Application of the Standard of Non-Obviousness in Canada

2.3.1 Introduction

It is well established in the field, that the determination of non-obviousness is strictly a fact-based analysis. It is not possible to discuss non-obviousness or to define a person of skill in the art in terms of absolutes. Generally, the way in which the unimaginative skilled technician or person skilled in the art is determined, or the way in which the common general knowledge is ascertained will be the same for each case, regardless of the field of technology, or the particular evolutionary point of the technology. What will differ for each technology and through time will be the specifics. For example, a person skilled in the art for a biochemical invention will be totally different from the person skilled in the art as defined for a mechanical invention. However, the way in which the person will be defined or determined will be the same from one field to another. Thus, as will be seen, the courts have provided guidelines for the definition of the terms referred to above. However, for **each** invention considered, specific definitions and specific results will vary, based on the facts for each case. On this point it was stated in *Sommerville Paper Boxes Ltd. et al v. Cormier et al*⁴³ that:

⁴³ *Sommerville Paper Boxes Ltd. et al v. Cormier et al* (1939) 2 C.P.R. 181 (Ex.Ch.)

Questions of invention and anticipation are questions of fact. No general rule can be laid down to determine whether any particular instance involves invention or not or whether any prior art publication constitutes an anticipation or not. Each case must be determined on its own merits.

The determination of "invention" or "non-obviousness" is a difficult task to perform. Invention is some immeasurable advance over the prior art. The difficulty of this task was eloquently expressed by J. Tomlin in *Samuel Parkes & Co. Ltd. v. Cocker Brothers Ltd.*⁴⁴ when he said:

Nobody, however, has told me, and I don't suppose anybody ever will tell me, what is the precise characteristic or quality the presence of which distinguishes invention from a workshop improvement. Day is day, and night is night, but who shall tell me where day ends or night begins?

Regardless of the technology there are certain criteria that have been accepted, which establishes the existence of invention. Equally so, there are certain flagposts that mark situations where no invention exists. For example, if there is evidence that the result achieved by a patented device, even though new and useful, could have been achieved by a skilled workman as a matter of shop routine, the patent will be held invalid. Every small improvement is not to be considered an invention and the prevailing view of the law is that the industrial public should not be embarrassed for patents for every small improvement.

If the solution to a problem, as claimed by the applicant is one that would naturally have occurred to persons of ordinary intelligence and acquainted with the subject-matter who gave his mind to the problem, then there is no invention, it is merely an exercise of expected skill⁴⁵. Similarly, small variations in form or modifications of current standards of instruction in old art rarely are indicative of invention, but are usually improvements resulting from experience and the changing requirements within the field⁴⁶.

⁴⁴ *Samuel Parkes & Co. Ltd. v. Cocker Bros. Ltd.* (1929), 46 R.P.C. at 248

⁴⁵ Re Application 063,607, 12 C.P.R. (2d) 148-152

⁴⁶ *Niagara Wire Weaving Co. v. Johnson Wire Works Ltd.* (1939), 1 C.P.R. 229 at p. 243, [1939] Ex. C.R. 259 at p. 273, [1939] 3 D.L.R. 285

Mr. Justice MacLean in *Lighting Fastener Co. v. Colonel Fastener Co. et al.*⁴⁷ wrote: "Every trifling improvement is not invention and the industrial public should not be embarrassed by, patents for every small improvement. A slightly more efficient way of doing a thing, small changes in size, shape, degree or quality in a manufacture or machine, even assuming novelty, is not invention. Something further is necessary to justify a monopoly. ...there must be sufficient ingenuity to make a useful novelty into an invention. A small amount of ingenuity may be sufficient, but there must be some..."

On the other hand, slight alterations or improvements may produce important results which do point to inventive ingenuity. There are numerous situations where an improvement in an art can be considered an invention.

Invention can result from a combination of well-known features or elements which contribute to an improved result, particularly if the combination has never been made before, and more particularly, if the result has some special value proved by its utility and appreciation. It has been authoritatively stated that the art of combining two or more parts into a new combination whether they are new or old, or partly new and partly old, so as to obtain a new result, or a known result in a better, cheaper, or more expeditious manner, is valid subject-matter if there is sufficient evidence of thought, design, and *ingenuity in the invention*, and novelty in the combination⁴⁸.

On the other hand, there can be no invention in a mere combination of features, each of which is well-known and contributes no more than its well known functions. There is no invention in altering proportion of ingredients that were used before in combination when the proportion is not necessary to success, nor to alter the size and shape of the articles or to merely substitute materials. Invention exists where fresh advantages have been developed and disadvantages overcome. Ordinarily, the use of one material instead of another in constructing a device or carrying on a known process is obvious and not an invention. It can, however, be called an invention if some new and useful results, such as an increase in efficiency, or an overall saving in operation is a result. A new means of using an old machine, or the adaption of an old machine to produce a new result, or the use of an old thing to cure a defect in an old machine may be sufficient to show invention.

It is well established that a mere "scintilla of invention"⁴⁹ is sufficient to support the validity of a patent. In the Federal Court Case, *O'Cedar of Canada Limited v. Mallory*

⁴⁷ (1932) Ex.C.R. 89, 101 and 127; (1933) S.C.R. 363, 371; and 377; (1934) 51 R.P.C. 349

⁴⁸ *Merco Nordstrom Valve Co. et al. v. Comer* (1941), 1 C.P.R. 75 at p. 93, [1941] 2 D.L.R. 10, [1942] Ex. C.R. 138 at p. 155

⁴⁹ *Ernest Scragg & Sons v. Leesona* 45 C.P.R. 1

*Hardware Products Limited*⁵⁰, Thorson P. summarizes a number of decisions in supporting his findings that simplicity does not negate invention. In many cases a small or slight difference can produce large results⁵¹.

If the alleged invention consists of curing a defect which would be readily known to a workman in the area having the common knowledge of the trade, a patent will be invalid, whereas if the invention discloses a solution to a problem not posed in the prior art, an invention will result.

Invention may also be present as a result of a new and useful selection among members of a class of substances from which selection that the inventor is able to produce new and useful results, or old results in a cheaper or better manner. Selection patents are more usually found in the chemical and biological area than in other arts. Three general positions have been asserted with regards to selection patents. First, a selection patent, to be valid, must be based on some substantial advantage to be secured by the use of the selected members; second, the select members must possess the advantage in question; and third, the selection must be in respect of a quality of a special character than can fairly be said to be particular to the select group.

Similarly invention can result in substitution of one material for another. In this regard guidelines have been set forth as to the criteria for determining whether a substitution of one material for another involved inventive ingenuity.

If there is a new use of an old material employed for practical purposes, properties or advantages not apparent or utilized in the known material, then there will be invention provided that the recognition of those advantages and properties was not obvious.

Invention may also consist in omission. There may be invention in omitting a stage in a process or omitting an unnecessary ingredient in a composition, or in omitting an unnecessary part of a machine.

Certain considerations may turn the balance in favour of a presumption of invention. Practical commercial success of a new article does not necessarily demonstrate the presence of invention, but it raises a strong presumption that invention was necessary to produce it for the first time. This is particularly relevant where the alleged invention has satisfied a long felt want within the industry. It may indicate a need on the part of the public that had

⁵⁰ *O'Cedar of Canada Limited v. Mallory Hardware Products Limited* (1955), 15 Fox Pat. C 134, at page 152; 24 C.P.R. 103 at p. 123, [1956] Ex. C.R. 299

⁵¹ *Patent Exploitation Ltd. v. Siemens Bros. N Co.* (1904), 21 R.P.C. 541 at p. 549 per Lord Davey

not been previously satisfied⁵². Commercial success however is only a presumption and is not a controlling principle. In a case where it is plain that there is no inventive step required, no amount of evidence of commercial success can validate the patent. On the other hand, in cases where it is quite plain that there was some invention involved in the discovery, commercial success does not add anything to strengthen the position. In a case which is borderline, evidence of commercial success can be extremely relevant and can sufficiently tip the scale in favour of the patent.

Commercial success may be explained by many factors and will have little to do with the presence of inventive ingenuity. These factors can include low cost price, mere novelty, commercial expertise, and the creation of a new demand by style or fashion trends. Thus, great care must be exercised in considering this issue.

It does not matter how much time, money or effort was spent, so long as there are those essential considerations of novelty, utility and invention. The conception of the novel and useful idea is the beginning, and the practical application of that idea constitutes invention. Where there is a problem awaiting a solution, a disclosure solving that problem is likely to be accepted as one involving invention, particularly if there have been unsuccessful attempts in the past to solve that problem. There may be invention in recognizing that a problem exists. Once the problem is identified, it may then become obvious how to solve the problem. However, the invention rests in the recognition of the problem.

Similarly, if an invention is useful to the public, it is not material whether the invention resulted from long experiments and profound research, or whether it came through some sudden and lucky thought, or was a mere accidental discovery. On this point it is interesting to review the comments of Mr. Justice Pigeon in *Farbwerke Hoechst A.G. v. Halocarbon (Ontario) Ltd.*⁵³. In this decision it was stated that almost all research work is done by looking in directions where the "state of the art" points. On that basis and with hindsight, it could be said in most cases that there was no inventive ingenuity in the new development because everyone would then see how the previous accomplishments pointed the way. There are very few inventions which are unexpected discoveries. In *American Cyanamid Co. v. Berk Pharmaceuticals Ltd.*⁵⁴, Whitford J. said: "A patient searcher is as much entitled to the benefits of a monopoly as someone who hits upon an invention by some lucky chance or an inspiration".

⁵² *Teledyne Industries Inc. et al. v. Lido Industrial Products Limited* (1979) 45 C.P.R. (2d) 18 (FCTD) November 14, 1979, upheld on appeal (1981), 57 C.P.R. (2d) 29, leave to appeal the Supreme Court refused 59 C.P.R. (2d) 183

⁵³ 42 C.P.R. (2d) 145, at 155-157

⁵⁴ [1976] R.P.C. 231, p. 257

There have been a number of papers written on the subject of obviousness by Canadian practitioners throughout the years. No one, however, has addressed the question of whether the standard of obviousness has been applied equally between one field of technology to another, or whether the same standard of obviousness is applied through the field as it develops. Papers, which have been written on the subject of obviousness, are summarized below.

In reviewing the application of the standard of non-obviousness in Canada, Roger T. Hughes⁵⁵ suggested that the courts have set a fairly low threshold for a standard of inventiveness. In his opinion the courts look at several factors in considering the issue of obviousness, depending upon the facts for each case. These factors include commercial success, long felt need, nature of infringement, nature of invention, and the expert evidence on the alternate issue. Instead of looking at cases based on the type of technology, chemical or mechanical, he based his review along the lines of the understandability of the technology. In other words, the degree that the court itself appreciates the nature of the invention, and to what extent they must rely on the testimony of experts. In his opinion, if the invention is one that is itself clearly understood by the court, then the court may be impressed with commercial success and long felt need. Whereas if an invention is not really understandable without expert testimony, then the court looked not at the invention, but more so at the testimony of the experts.

G. Douglas Wilson⁵⁶ conducted a case by case review and determined whether or not the court found that the invention was obvious, or whether the invention was not obvious. The "pendulum" represented the result of the questions "Was the invention obvious or not?". If yes, the pendulum swings one way, if no, the other way. In his review, he determined from 1930 to 1950 that the courts appear to have been anti-patent, the pendulum had swung to the right. Whereas from 1950 to 1986, except in the late 1960s, the courts appear to be favouring patents, i.e., the pendulum had generally swung to the left. In 1985 and 1986 the pendulum stayed close to the middle. This review was extended past 1986 to 1991, wherein it was determined that the pendulum has continued to swing in the favour of patents, i.e., to the right⁵⁷. This review, however, did not address the questions set forth in the present study.

⁵⁵ Roger T. Hughes, Degree of Inventiveness Required to Support a Patent in Canada, Canadian Intellectual Property Review, Vol. 3, No. 1, 1987, pp. 40-46

⁵⁶ G. Douglas Wilson, "Recent Developments in the Meaning of Obviousness: Is the Pendulum Swinging?", Canadian Intellectual Property Review, Vol. 3, No. 3, 1987, pp. 388-404

⁵⁷ John Bochnovic, Invention/Inventive Step/Obviousness, In Patent Laws Canada, Ed. Gordon F. Henderson, Thompson Canada Limited 1994

Having defined the standard of non-obviousness which is currently being used by the Canadian judiciary in the preceding section, we embarked upon an extensive review of published decisions by the Canadian Patent Appeal Board, and by the Canadian Courts on the question of obviousness.

In our review of the published decisions from the Canadian Patent Office, and from the Canadian Courts, we determined whether there was a different set of criteria applied to different types of technology in determining obviousness or non-obviousness.

Our hypothesis in this extensive review, was the following: if the Canadian Patent Office and the Canadian Courts accepted or rejected claims based on the same criteria for each type of technology then it could be concluded that the standard applied to the different fields of technology is the same.

In contrast, if the Canadian Patent Office and the Canadian Courts accepted or rejected claims based on different criteria for each type of technology then it could be concluded that the standard applied to the different fields of technology is not the same.

By the term "criteria" it is meant to refer to the reasons provided by the Patent Appeal Board and/or the Canadian Courts for either accepting or rejecting a case. Based on these results, we were then able to draw conclusions as to whether or not the standard was being applied equally from one field of technology to another. Also by reviewing decisions throughout the development of a field, we were able to draw conclusions as to whether there was any difference in the application of the standard of obviousness, as the field of the technology developed.

2.3.2 Review of Canadian Patent Office and Canadian Court Decisions

2.3.2.1 Introduction

Patent applications are examined by the Canadian Patent Office, in the Canadian Industrial Property Office, by trained Examiners, who have a technical background commensurable with the field of applications to which they have been assigned to examine. When an Examiner refuses an application as obvious over the prior art, the Applicant is provided with an opportunity to present arguments in support of his or her application. Occasionally the Examiner does not agree with the arguments put forward by the Applicant and the Examiner makes the action Final. At this time the Applicant can request a review by the Patent Appeal Board and the Commissioner of Patents (Rule 47 (2)).

In the examination of patent applications, the onus is on the Commissioner of Patents to justify his reasons for refusing an application for patent. In this respect, it is important to note that Section 40 of the *Patent Act* reads in part:

"Whenever the Commissioner is satisfied that an application is not by law entitled to be granted a patent, he shall refuse the application and, ..."

In the decision of the Supreme Court of Canada in *Monsanto Co. v. Commissioner of Patents*⁵⁸, it was stated that the Commissioner's decision is not a matter of discretion, the Commissioner has to justify his refusal. The Supreme Court of Canada, on this point stated:

Evidence had been submitted in the form of affidavits based on scientific principles, it does not take issue with those principles, it just says: "We are not satisfied that this is adequate". In my view this is insufficient because, if accepted, it makes the right of appeal illusory. In this respect it is important to note that s. 42 of the *Patent Act* reads:

42. Whenever the Commissioner is satisfied that the applicant is not *by law* entitled to be granted a patent he shall refuse the application and, by registered letter addressed to the applicant or his registered agent, notify the applicant of such refusal and of the ground or reason therefor.

I have emphasized *by law* to stress that this is not a matter of discretion: the Commissioner has to justify any refusal. As Duff, C.J., said in *Vanity Fair Silk Mills v. Commissioner of Patents* ([1938] 4 D.L.R. 657, [1939] S.C.R. 245 at p. 246):

No doubt the Commissioner of Patents ought not to refuse an application for a patent unless it is clearly without substantial foundation.

Under the *Constitution Act, 1867*, section 91(22), patents are one of the exclusive matters over which the jurisdiction of the Parliament of Canada extends. Section 20 of the *Federal Court Act* gives the Federal Court of Canada exclusive jurisdiction over conflicting patent applications and all matters concerning the impeachment or annulment of a patent. The Federal Court has concurrent jurisdiction with the appropriate provincial courts in matters of patent infringement. However, where a remedy is sought under the *Patent Act* or any other federal statute, only the Federal Court has jurisdiction.

⁵⁸ (1979) 42 C.P.R. (2d), page 161 to 180

Pursuant to Section 41 of the *Patent Act*, every person who has failed to obtain a patent by reason of a refusal of the Commissioner to grant it may, within six months of the Commissioner's decision, appeal to the Federal Court of Appeals.

The Federal Court of Canada was created in 1971 by the *Federal Court Act*. The Federal Court of Canada is the successor to the Exchequer Court of Canada which was created in 1875. Appeals from the Federal Court of Canada or its predecessor court, are to the Supreme Court of Canada. Where an infringement action is brought in a provincial court, the decision of the court may be appealed to the appropriate provincial court of appeal. Appeals from provincial court of appeal are to the Supreme Court of Canada.

Issues of obviousness may come before the courts in one of the following ways:

1. An appeal to the Federal Court of Appeal from a decision of the Patent Appeal Board rejecting a patent for lack of invention;
2. A Federal Court action to find a patent invalid for lack of invention through impeachment proceedings; and
3. In an infringement action in either a provincial court or the Federal Court where the defendant seeks to defend its infringing actions by alleging the plaintiff's patent is invalid because of it is obvious and lacks invention.

In an appeal to the Federal Court of Appeal from a decision of the Patent Appeal Board, the onus is on the appellant/applicant to prove that the invention possesses the requisite amount of inventive ingenuity. However, because Section 43 of the *Patent Act* deems every issued patent to be valid, the onus is on the person attacking the validity of an issued patent to prove such invalidity.

2.3.2.1.1 Patent Application or Patent Accepted

We reviewed the standard of obviousness, as applied by the Canadian Patent Office and the Canadian Courts, by reviewing the published Patent Appeal Board and Court decisions. We found that when claims were accepted, i.e., when the patent application or patent was deemed to be the result of an exercise of the inventive faculty, the reasons relied on were from at least one of the following criteria:

- 1) The invention claimed represented a solution to a problem not posed by the prior art.
- 2) The invention demonstrated some advantage which was not found in prior art claims or combinations.

- 3) The invention demonstrated some commercial success or long felt want within the industry, which although by itself did not indicate invention, taken together with other factors provided a strong support of invention.
- 4) The invention represented some substitution which involved inventive ingenuity.
- 5) The invention resulted in surprising results which would not have been expected.

The full review of the decisions of the Canadian Patent Office can be found in the attached Appendix. A summary of this review follows.

2.3.2.1.1.1 Solution to a Problem Not Posed in the Prior Art

In some inventions the applicant overcomes a problem which differs from the problems previously addressed in the prior art. For example, in *Re Application No. 067,761*⁵⁹, it was decided that the applicant overcame a problem associated with stacking flexible documents, which was different from the problems of the prior art. The means and specific arrangements used to overcome these problems were different from that which went before. Thus, the Commissioner of Patents allowed the claims stating in part that:

The problems with which he was concerned were different than those of the citation, and the means and specific arrangements he has used to overcome those problems differ from what went before.

As a further example, in *Re Application for Patent of Nounen et al. (Now Patent No. 1,179,713)*⁶⁰, the applicant filed an application for patent relating to an invention to a closed fuse of the type used in high-tension electric systems. The examiner rejected the application as obvious. However, the Patent Appeal Board held that the cited art did not address the improvement of the applicant and the prior art was not concerned with prevention of atmospheric air from entering the fuse interior. The prior art was thus not directed to the same problem.

⁵⁹ 29 C.P.R. (2d) 116-123

⁶⁰ 4 C.P.R. (3d) 280

2.3.2.1.1.2 Advantages from the Claimed Combination

In some cases the invention describes a new combination of known elements, however, the elements in this new combination contribute to a new result or known result in a better, cheaper or more expeditious manner. There is thus sufficient evidence to support a patent. For example, in a patent application⁶¹ related to backings for carpets, ribbon-shaped warp yarns were interwoven at right angles with round-shaped weft yarns to form the carpet backing. The Examiner refused the claims over a Belgian patent disclosing a carpet backing of the same or similar materials. The Patent Appeal Board found that the prior art cited by the Examiner did not teach or suggest the combination explicitly defined in the claims. They further found that several important and non-obvious advantages flowed from the concept of employing a relatively flat cross-section multi-filament yard in the weft. They thus allowed the claims.

In an example from the chemical arts, an applicant sought a patent for claims to the liquefaction of natural gas. In the decision at appeal, the Patent Appeal Board and the Commissioner, in reviewing the prior art, acknowledged that the recovery with the prior art was approximately 45% as compared to a yield of 90% recovery with the present application. They thus stated:

Clearly then this represents a highly desirable improvement and, in our view, shows sufficient ingenuity to justify a patent.⁶²

2.3.2.1.1.3 Commercial Success/Long Felt Want

Practical commercial success for a new article does not necessarily demonstrate the presence of invention, but it raises a strong presumption that invention was necessary to produce it for the first time. Commercial success however, cannot be relied on if there is no inventive step. No amount of evidence of commercial success can validate a patent. For example, in Re Application No. 173,735⁶³, the applicant sought a patent for a wall assembly where the wall panels were fastened to the studs by an adhesive tape which quickly permits easy installation and dismantling of the walls. The examiner rejected the application over prior art patents.

⁶¹ Re Application No. 005,341 (Now Patent No. 1,006,418) 32 C.P.R. (2d) 62-66

⁶² Re Application for patent of Lummus Co. (Now Patent No. 1,109,388) 59 C.P.R. (2d) 228-233

⁶³ 49 C.P.R. (2d) 255-262

At the Patent Appeal Board hearing, the applicant presented arguments over the prior art and emphasized that his device had been very commercially successful, and referred to its extensive use. On the issue of commercial success the Board stated:

While evidence of commercial success by itself does not necessarily demonstrate invention the results obtained by the applicant company indicates that it must have fulfilled, to some degree, a "want" for this type of panel fastening arrangement. While the concept of removable panel means is shown in the British patent, we are unable to find any indication of commercial use of the magnetic attraction attachment means taught in it. There is no doubt that building material supply industry is very competitive and since applicant is a relatively small company it would not have had the capacity either to monopolize this field or to push expensive sales campaigns. Nor are the users of the invention likely to be influenced by advertising pressures. We have come to the conclusion consequently, that a major reason for the commercial success of this invention is its practical success, one which results in significant labor-saving costs during removal and reinstallation.

A further example, taken from Canadian Court decisions, can be seen in *Teledyne Industries Inc. et al. v. Lido Industrial Products Limited*⁶⁴. The plaintiff sought relief from infringement of a patent for an invention relating to a spray nozzle. The defendant claimed that the patent was invalid due to, *inter alia*, lack of inventive ingenuity.

The court at page 32, held in favour of the plaintiff and stated that:

Although success on the marketplace is not by any means conclusive proof of inventive ingenuity, as that success may be attained notwithstanding a complete lack of inventive ingenuity regarding the product and may be due entirely to marketing ingenuity and effective sales promotion. However, commercial success can be good evidence of the inventive ingenuity involved in the creation of a device as well as of its practical utility: it may indicate a real need on the part of the public which had not been satisfied previously.

⁶⁴ (1980) 45 C.P.R. (2d) 18 (F.C.T.D.) November 14, 1979, upheld on appeal (1981), 57 C.P.R. (2d) 29, leave to appeal the Supreme Court refused 59 C.P.R. (2d) 183

2.3.2.1.1.4 *Substitution Involving Inventive Ingenuity*

An invention can result in substitution of one material for another. In this regard guidelines have been set forth as to the criteria for determining whether a substitution of one material for another involved inventive ingenuity. Inventive ingenuity may be present if:

1. A change or variation in the construction of an article or apparatus is rendered necessary by reason of the use of a particular kind of material not previously used for the purpose in mind.
2. The use in a particular article or apparatus of a known material not previously used for the purpose is due to a hitherto unknown and unsuspected property of the material.
3. The adaptation of the known material to a particular article or piece of apparatus, leads to a new departure in the technique of the production of the article or apparatus; or
4. A known material is used in an article or apparatus when it had not previously been so used, and such utilization depends on previously known properties of the material, provided the new use results in an unexpected advantage, or unexpectedly avoids a known disadvantage⁶⁵.

For example, in Re Application No. 010,866 (Patent No. 973,863)⁶⁶, the applicant sought to obtain a patent on claims directed to the use of a plurality of seamless gores of unwoven spunbonded fibrous material to form a parachute canopy. The Examiner rejected the claims based on the grounds that the application was directed to a mere substitution of materials. However, the applicant submitted that the discovery that spunbound material could be successfully used in making parachutes was contrary to expectations. In the Patent Appeal Board decision it was stated:

⁶⁵ Re Application No. 010,866 (Patent No. 973,863) 32 C.P.R. (2d) 105-113

⁶⁶ 32 C.P.R. (2d) 105-113

In the instant application the purpose and function of the "spunbonded material" is different from any previous suggested use for it, and therefore the application does not fail for this reason.

2.3.2.1.1.5 Surprising Results

Slight alterations or improvements may produce important results, which would not have been expected according to the prior art. As an example the applicant sought a patent for a ceramic catalyst support for use in automotive pollution control systems⁶⁷. The examiner rejected the claims and relied upon a prior art patent having the same object as the applicant, namely, the production of a high surface to weight structural component as a catalyst support for use in automotive pollution control systems. In the Patent Appeal Board decision, it was concluded that in view of the surprising results, the application should be accepted. Specifically, it was stated:

This, in our view, is surprising and in the absence of any evidence to the contrary, we believe we should accept the applicant's statement. ... Applicant does not, of course, have to know the reason why he gets greater strength, only that he does.

2.3.2.1.2 Patent Application or Patent Rejected

In this review, we found that when claims were rejected, i.e., when the patent application or patent was deemed not to be the result of an exercise of the inventive faculty, the reasons relied on were from at least one of the following criteria:

- 1) The advance represents no more than a workshop improvement.
- 2) Although there was a new use of an old process, or analogous use, there was no invention in the adaptation of the old process.
- 3) The substitution was an obvious substitution, resulting in no unexpected benefit.
- 4) The technology was a combination which did not provide a result, i.e., the technology was a mere aggregation of elements.

⁶⁷ Re Application for Patent by Turner (Patent No. 1,093,051) 59 C.P.R. (2d) 260-264

2.3.2.1.2.1 *Workshop Improvement*

Small variations in form or modifications of current standards of instructions in old art rarely are indicative of invention, but are usually improvements resulting from experience and the changing requirements within a field. For example in *Re Application No. 056,232*⁶⁸, the applicant sought to obtain a patent on claims relating to the production of a particular yeast by cultivation on a hydrocarbon-containing nutrient medium in the absence of added growth factors. The examiner rejected the application on the grounds that the claims did not define an inventive step over the prior art. In reviewing the evidence the Patent Appeal Board concluded that the most that had been done by the applicant was mere verification, minor experimentation does not amount to invention.

In *Gibbney et al (carrying on business as Projen Distributors) v. Ford Motor Company of Canada Ltd.*⁶⁹, the plaintiff sought a remedy for infringement against the defendant for a patent relating to a protector for a generator. Infringement was admitted by the defendant, who challenged the validity of the patent on the ground of, *inter alia*, that there was no inventive step made by the inventor.

The Court held that the patent was invalid, in that the "invention" was a mere workshop improvement showing to inventive ingenuity.

The Court stated at pages 165 - 166, that:

Reverting to the evidence herein, it appears from Anderson's testimony that all he did to solve the unidentified customer's generator problem was go to his shed, pick up a piece of old stove-pipe, mold it to go around the generator and then flair out the rearward portion thereof in order to ensure that the holes would be protected or shielded from direct splashes or that oil could not directed fall in, or that oil fumes and particles in the ambient air would be restricted somewhat in being drawn in by the impeller into the air cooling stream of the generator.

...

Quite apart, however, from the prior art submitted by the defendant and merely looking at the problem to be solved, how it could be solved and how the patentee solved it, it

⁶⁸ 35 C.P.R. (2d) 282-286

⁶⁹ (1968) 52 C.P.R. 140 (Ex. Ct.), April 21, 1967.

appears to me evident that the solution of an outwardly flared band attached to the generator would have been obvious.

and, at pages 167 - 168,

From this I must conclude that a competent workman at the date of invention, knowing that a rearward extension of the casing would shield rearward holes from the entry of contaminants, with the knowledge also of the teaching of Schneider, that if one makes the air undergo a change in direction an aerodynamic principle of reduction of particles, of contaminants, going into the generator will be realized, would have easily come up with a unit such as the progen unit and, therefore, I have here further reason to hold that the patentee's unit was a perfectly obvious, logical and reasonable solution to whatever problem existed at the time and, finally, that there was no invention in so doing.

2.3.2.1.2.2 *New Use of an Old Process or Analogous Use Where There is No Novelty or Invention in the Adaptation of the Old Process*

If a new use is analogous to an old use, except perhaps for small variations in form, there is generally no invention. For example, in *Re A Method of Removing Lead From Steam Stills*⁷⁰, the Patent Appeal Board rejected an application which was directed to a method for removing a lead deposit formed on the surface of a steam still by means of a water jet, stating that the invention was an obvious extension of the state of the art of cleaning a variety of surfaces using a jet of liquid. Although the prior art cited was directed to a different use, the use was analogous.

2.3.2.1.2.3 *Substitution in an Obvious Manner*

A slightly more effective way of doing a thing, a small change in size, shape, degree or quality in a manufacture of machine, even if new, is not normally an invention, especially if there is no demonstrated advantage in making the substitution. For example, in *Re Application No. 126,631 (Now Patent No. 1,015,133)*⁷¹, the applicant sought a patent relating to the conversion of metal halides represented by MX_4 , to the corresponding oxides MO_4 at temperatures from 600°F to 1600°F using a vaporized alcohol as a dehalogenating agent. The examiner rejected some of the claims on the basis of a prior art patent which

⁷⁰ 35 C.P.R. (2d), 262-266

⁷¹ 39 C.P.R. (2d), 88-94

disclosed a two-step method of conversion of a halide to an oxide. The process involved heating in the presence of a hydrolyzing agent, followed by a calcination step conducted at a substantially higher temperature than the hydrolyzing step. The application in question used a one-step process. At appeal, the Patent Appeal Board and the Commissioner decided that the one-stage heating cycle was not patentably significant over a two-stage heating cycle, and thus refused the claims.

2.3.2.1.2.4 *Combination Does Not Provide a Result - A Mere Aggregation*

There is no invention in merely combining features, each of which is well-known and contributes no more than its well known functions. In *Re Application No. 115,583* (Patent No. 993,739)⁷², the applicant sought to obtain a patent on an automated poultry feeder for providing a predetermined quantity of feed at prescribed periods during the day. Although the combination was novel, it was not felt that the claims displayed inventive ingenuity. The Board recognized that when assessing an alleged invention the combination of a claim as a whole must be considered. In this example, no result had been achieved from the combination, which could have been considered to have flowed from an inventive step.

In *Rubbermaid (Canada) Ltd. v. Tucker Plastic Products Ltd.*⁷³ the plaintiff sought relief from infringement of a patent relating to a portable rotary tool caddy. The defendant claimed that the patent was obvious to an ordinary workman and the date of the invention.

The court at pages 14 - 15, held that the patent was invalid due to a lack of inventive ingenuity:

In determining whether, in this case, it required inventiveness to conceive the article described in claim 1 of the plaintiff's patent I shall, therefore, disregard the presumption. Moreover, in making this determination I also intend to disregard the commercial success enjoyed by the plaintiff in the marketing of its tool caddy. Indeed, the tool caddy that was put on the market embodied many features which were not described in claim 1 of the patent so that it can be said that the article which found favour with the public was not the one described in the claim that is attacked by the defendant.

...

⁷² 24 C.P.R. (2d), 165-171

⁷³ (1973), 8 C.P.R. (2d) 6 (F.C.T.D.) Pratte J. November 14, 1972

It was conceded by counsel for the plaintiff that none of these integers were new. He submitted, however, that their combination required inventiveness. With this submission I cannot agree. In my view, any skilled handy-man would have thought of modifying the two-tiered turntable that was already on the market so as to use it as a rotary tool caddy.

2.3.2.1.3 Summary

In this review of decisions at the Canadian Patent Office and the Canadian Courts, we have looked at the criteria relied on when claims are refused or accepted. By looking at the criteria which is used, we are able to gain insight into the application of the test of obviousness, and determine whether the application of this test is different from one field of technology to another, or throughout the development of a technology.

There are at present very few, if any at all, published biotechnology decisions from the Patent Appeal Board or from the Canadian Courts on the issue of obviousness. Thus, for this field of technology, selected pending applications and allowed applications were also reviewed to determine the criteria which the examiners rely on to overcome an objection of obviousness. In our review of pending and issued cases, it was surprising to note that very few obviousness rejections were made by the Canadian examiners. When, however, these objections were raised, similar criteria as have been found in all other fields of technology were required in order to put forward a showing of non-obviousness. For example, if the applicant could show that there were advantages in his invention over the prior art, or if there was a selection which provided an improvement over the prior art, or some unexpected or superior results not predicted by the prior art, the examiner would withdraw the obviousness rejection. This finding is consistent with the few published cases that were available for review, and with the criteria used by the Canadian Patent Office in other fields of technology.

Thus, from our review of the decisions as published by the Canadian Patent Office and the Canadian Courts, we could not detect any difference in the criteria used in the determination of obviousness. Thus, according to our initial hypothesis, we could not detect any difference in the application of the standard of obviousness as applied from one field of technology to another, or as the field develops within a technology.

In assessing whether an invention is obvious or whether it requires the exercise of inventive ingenuity, both the Canadian Patent examiners and the Courts must first determine the nature of the invention claimed, and then assess the whole of the relevant prior art to the invention. Having done this, the test for obviousness must then be applied. The test involves an assessment of whether a skilled technician would, in view of the state of the art as it exists at the time of the invention, have been lead directly and easily to the

invention. The skilled technician will bring common general knowledge, which would exist at the time of the invention.

From our review of the decisions of the Patent Office and the Canadian courts, we could find no evidence that there is any difference in the way that the test is applied from one area of technology to another. As stated previously however, there were very few cases available for review in the biotechnology area.

In considering why so few cases in the biological area contained obviousness rejections, senior patent examiners in the biotechnology area of the Canadian Patent Office were questioned on this point. In their answer they stated that it was difficult to cite biotechnology cases as obvious over the prior art because of the newness and unpredictability of the field⁷⁴. The Examiners felt that in a new field, such as the biotechnology area, it was difficult to say that an invention was obvious. They felt that as the field develops, we would see more obviousness rejections being raised by the Canadian patent examiners. At the present time they felt that there is not that much known about the field, and thus, most inventions would be considered non-obvious. But as the field develops there would be an increase in the skill of the workman and, thus, one would expect to obtain more obviousness rejections.

Thus, at present, the Canadian biotechnology examiners have set the skill of the skilled technician and the common general knowledge which he brings with him to assess the invention as very low. However, it is admitted that as the technology develops, there will be an increase in the skill of this technician, and we will thus see more obviousness rejections.

In our opinion, the standard of non-obviousness must be consistent from one field of technology to another. It further follows, that the standard of non-obviousness must be consistent between the Canadian Patent Office and the Canadian courts. For example, if the standard of obviousness was lower in the Canadian Patent Office than in our Court system, one would obtain a patent in which there would be little assurance of its validity. Thus, for a meaningful, reliable and credible system, it is imperative that the standard of non-obviousness as applied by the Canadian Patent Office, is the same standard as applied by the Canadian court system.

Whenever an issued patent is held to be obvious, it could be suggested that the Courts were applying a higher standard, than the Patent Office. This however is not a fair conclusion, as the Court has available evidence as to the state of the art and of common knowledge. This evidence is usually far more extensive than what could be developed from the Examiner's search. Also, there may be searches for the purposes of litigation of patents in other countries and of the technical literature, which would come out in any litigation in

⁷⁴ From interviews with Canadian examiner's specializing in the field of biotechnology, 1995.

our country. A further point that should be mentioned is that the Patent Office occasionally has difficulty in rejecting a case on obviousness as they do not know the date of invention. The Patent Office assumes that the date of invention is two years prior to the filing date, in cases under the old *Act* (cases filed prior to October 1, 1989), even though the case law indicates that this date is not appropriate. This problem will however be solved by the amendments to the *Patent Act*, which clearly define what prior art is relevant for the determination of obviousness, and as of what date obviousness is to be determined, as discussed above.

A floating standard, or a standard of non-obviousness which is applied differently to different fields of technology would result in great uncertainty. For example, a clear demarcation between the fields of technology would be required, and as was stated at the public hearings in the United States on the issue of obviousness (as discussed below), it would be difficult to draw a line between the technologies. For example, "where does chemistry end and biotechnology begin? And where does electronics end and computer programs begin?"⁷⁵ Thus it is imperative that the standard of obviousness as applied to different fields of technology be the same.

In reviewing the court decisions and the decisions of the Patent Appeal Board, it is our conclusion that the criteria relied on by the courts and the Canadian Patent Office in determining non-obviousness do not differ from one field of technology to another. The test of obviousness, whether it is the *Cripps*⁷⁶ question or the *Cripps* question as applied in the *Beecham Canada Ltd. v. Procter & Gamble Co.*⁷⁷, or more recently in the *Beloit Canada Ltd. v. Valmet OY*,⁷⁸ is the same for all fields of technology. Furthermore, from our review of court decisions and the decisions of the Patent Appeal Board, it is concluded that the standards are applied equally from one field of technology to another.

What is not constant and what varies through time and through the development of a technology is the benchmark to which obviousness/non-obviousness is to be judged. This benchmark is the unimaginative skilled technician, his common general knowledge and the prior art. As noted previously, the unimaginative skilled technician has been defined in many court decisions. The presently accepted definition of this hypothetical person is:

⁷⁵ Mr. Razzano, President, New York Intellectual Property Law Association

⁷⁶ *Sharpe & Dome Inc. v. Boots Pure Drug Co. Ltd.* (1928) 45 R.P.C. 153 at p. 163

⁷⁷ (1982) 61 C.P.R. (2d) 1 at 27

⁷⁸ (1986) 8 C.P.R. (3d) 289

The technician skilled in the art but having no scintilla of inventiveness or imagination; a paragon of deduction and dexterity, wholly devoid of intuition; a triumph of the left hemisphere over the right.⁷⁹

As the technology develops, the skill and the common general knowledge of the ordinary workman in the pertinent art increases. It is this yardstick, against which obviousness/nonobviousness is judged, which changes as the technology develops. Thus, the test for obviousness is still based on the *Cripps* or the modified *Cripps* question, but the general knowledge of the unimaginative skilled technician changes throughout the development of a technology, and the literature or the information available to him to determine obviousness (the prior art) changes as the field or technology develops. What would appear obvious or non-obvious to this unimaginative skilled technician will change through the development of a technology. This point of view has been accepted by the Courts as discussed for example in *Monsanto Co. v. Commissioner of Patents*⁸⁰, wherein it was stated:

We are no longer in the days when the architecture of chemical compounds was a mystery.

As the field of the technology develops so does the knowledge of the unskilled technician and the common general knowledge from which he can draw.

This conclusion is in line with the comments made by Bernard F. Roussin⁸¹ in his review of patent practice regarding chemical patents in the 1950s. He found that as any art advances, the steps required to evoke the inventive concept are increasingly greater in an exponential rather than an arithmetic gradient. Thus, at any point in time in the development of a technology, the yardstick against which invention is judged will change. The application of the test of obviousness is dependent upon the facts for each individual case.

It is obvious that as any art advances, the steps required to evoke the inventive concept are increasingly greater, in an exponential rather than an arithmetic gradient. The yardstick of the measure of invention expands continuously subject,

⁷⁹ *Beloit Canada Ltd. v. Valment OY* (1986) 8 C.P.R. (3d) 289 at 295

⁸⁰ (1979) 42 C.P.R. (2d) 161

⁸¹ Bernard F. Roussin, Comparative Review of the Patentability Requirements for Chemical Products and Synthesis, Canadian Patent Reporter, Vol. 15, pp. 49-67, 1952

however, to unexpected contractions which depend on economic conditions, politics, the predilections of judges, and other factors.

These comments, which were directed to the development of the field of chemistry, parallel the remarks made by the Canadian biotechnology examiners. At present, they are rarely citing obviousness in rejecting biotechnology cases as they feel that the area is so new and, thus, the level of skill to which inventions are judged is very low. This yardstick against which inventions are judged will change as the field develops.

Furthermore, it has been well settled that the unskilled technician or the ordinary workman is to be regarded as a person of very different knowledge and skill depending on the nature of the field of the invention⁸². If the invention is the construction of a mechanical combination, then the ordinary workman is a mechanic, knowledgeable in the construction of machines. On the other hand if the invention is for a process or product requiring the highest scientific knowledge to understand the process, then the ordinary workman is a highly trained scientist⁸³.

In summary, from our review, we could find no evidence of a different standard of non-obviousness being applied across different fields. In the area of biotechnology, the same standard of obviousness is being applied as in other fields. What does change, is the yardstick against which inventions are judged, as a field of technology develops. This yardstick includes the person skilled in the art and the common general knowledge in the particular field of invention, as well as the prior art. As mentioned previously, the level of skill of the person skilled in the art will vary in the biotechnology field, as it does in other areas, depending on the nature of the invention. As biotechnology is still an emerging field of technology, there has been a tendency on the part of Canadian examiners, in assessing the issue of non-obviousness, to consider the ambit of the common general knowledge in a somewhat more restrictive fashion than has been done in well-established fields of technology. This has resulted in more inventions being found non-obvious than being found obvious. As the field of biotechnology expands and becomes better established and developed, the level of common general knowledge will as a result increase, as will the prior art, which will undoubtedly result in more biotechnology inventions being found obvious.

⁸² *American Cyanamid Co. v. Charles E. Frost & Co.*, 47 C.P.R. 215 at 300

⁸³ *American Cyanamid Co. v. Charles E. Frost & Co.*, 47 C.P.R. 215, at 300-301

3. THE STANDARD OF NON-OBVIOUSNESS IN THE UNITED STATES

3.1 Introduction

The U.S. Supreme Court initially cited non-obviousness as a condition of patentability in 1850 in *Hotchkiss v. Greenwood*⁸⁴. The case involved a doorknob and the jury charged that the conception of the patented doorknob required no more ingenuity or skill than was possessed by an ordinary mechanic acquainted with the business⁸⁵, and thus the patent was held invalid.

In the century that followed there were numerous decisions and opinions written on the requirement for invention. In order to instil uniformability in the application of the standard, Congress added Section 103 to the patent statute in the *Patent Act* in 1952. Section 103 in part reads as follows:

A patent may not be obtained though the invention is not identically disclosed or described as set forth in Section 102 of this title, if the differences between the subject matter sought to be patented and the prior art would have been obvious at the time the invention was made to a person having ordinary skill in the art to which such subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

In this chapter, we will review the historical evolution of the test of non-obviousness as it was developed in the United States. According to section 103 of the *Patent Act*, a determination of obviousness requires an assessment of the scope and content of the prior art, the differences between the prior art and the claims at issue, and the level of ordinary skill in the art. These factors as they relate to the issue of obviousness will also be discussed. Secondary considerations, such as commercial success, also have a factor to play in the determination of obviousness or non-obviousness of an invention in the United States, and these other issues will also be discussed. Finally, the application of the standard of non-obviousness will be determined. In this section, the application of the standard, unlike the extensive review which was done in the corresponding Canadian section, will be limited only to the comments which have been published by U.S. practitioners. Particular attention will be given to the application of the standard of non-obviousness as it is applied to quickly

⁸⁴ 52 U.S. (11 How.) 248 (1851)

⁸⁵ 52 U.S. (11 How.) 248 (1851)

emerging fields, such as biotechnology and the field of electronics and computer related technology. The comments on these emerging technologies are based primarily on the comments voiced at a public hearing on the standard of non-obviousness, which was held on June 20, 1994 in the United States. The chapter will conclude with a discussion of the differences between Canadian and U.S. practice.

3.2 Test for Non-Obviousness

3.2.1 The Evolution of the Test for Non-Obviousness

The first critical decision on the issue of obviousness, following the introduction of Section 103, was a decision of the United States Supreme Court in *Graham v. John Deere*⁸⁶, where it was stated:

Under Section 103, the scope and content of the prior art are to be determined; differences between the prior art and the claims at issue are to be ascertained; and the level of ordinary skill in the pertinent art resolved. Against this background, the obviousness or nonobviousness of the subject matter is determined. Such secondary considerations as commercial success, long felt needs, failure of others, etc, might be utilized to give light to the circumstances surrounding the origin of the subject matter sought to be patented. As indicia of obviousness, these inquiries may have relevancy.

Thus, Section 103, according to this decision, requires the determination of:

1. the scope and content of the prior art;
2. the differences between the prior art and the claims at issue; and
3. the level or ordinary skill in the art.

Other secondary considerations of non-obviousness are also to be evaluated. These can include: commercial success; long felt, but unresolved need in the industry for the invention; failure of others to invent the patented subject matter; or any other evidence that can give light to the circumstances surrounding the origin of the subject matter sought to be patented.

These four elements serve as the key to the determination of non-obviousness and each will be reviewed and considered in further detail.

⁸⁶ 383 U.S. 1 at 17, 1966

3.2.2 The Scope and Content of the Prior Art

In considering obviousness, the person of ordinary skill in the art will have knowledge of all the pertinent art. This person is viewed as working in his shop with the prior art around him. The prior art is only that which this person would have selected without the advantage of hindsight and he may not gather the prior art with the claimed invention in mind. What the prior art taught or suggested or what knowledge is available is a factual determination. The references must be reviewed for all that they fairly teach to one of ordinary skill in the art.

3.2.3 The Differences between the Prior Art and the Claims

As noted above, Section 103 requires a determination of "the differences between the **subject matter** sought to be patented and the prior art". However, in *Graham v. John Deere*⁸⁷ it was stated that the differences between the prior art and the **claims at issue** were to be determined. Subsequent court cases on the issue have made it clear that it is the subject matter as a whole which is to be considered in determining obviousness. For example in *In re van Venrooy*⁸⁸ the court clearly stated that it is the invention as a whole, which should be considered.

The courts have apparently equated the term "invention as a whole" with the statutory expression "subject matter as a whole". In a further example, In *Re Buehler*⁸⁹ it was stated, more to the point, when the court said:

As a matter of law, the board was imprecise when it stated that "the differences between the prior art and the process of the appealed claims are such *differences* as would be obvious to one skilled in the art." (Emphasis ours.) The question under §103 is whether the *subject matter as a whole* would have been obvious, not whether the *differences* would have been obvious.

⁸⁷ 383 U.S. 1 at 17, 1966

⁸⁸ 412 F. 2d 250, 162 U.S.P.Q. at 39

⁸⁹ 515 F. 2d 1134, 185 U.S.P.Q. 781 (1975)

It is not, however, to be concluded that *Graham*⁹⁰ was not excluding the factor of the subject matter as a whole, there appears to be a consensus that *Graham* was not attempting to redraft §103 to delete the words as a whole.

3.2.4 The Level of Ordinary Skill in the Art

The statute demands that obviousness be tested by reference to a person having ordinary skill in the art. Such a person must have the level of skill at the time just before the invention was made. This person is not a judge, nor a layman, nor a skilled artisan in a remote field, nor an inventor, nor a genius in the art at hand. This person is presumed to be one who thinks along lines of conventional wisdom in the art and is not one who undertakes to innovate. This person is presumed to have knowledge of all references that are sufficiently related to one another and to the pertinent art. In order to obtain an insight into this "hypothetical man" there follows a selection of descriptions taken from various U.S. Court decisions.

*Custom Accessories v. Jeffrey-Allan Industries*⁹¹

The *Graham* (383 U.S. 1 at 17, 1966) analysis includes a factual determination of the level of ordinary skill in the art. Without that information, a district court cannot properly assess obviousness because the critical question is whether a claimed invention would have been obvious at the time it was made to one of ordinary skill in the art. The important consideration is "the need to adhere to the statute, *i.e.*, to hold that an invention would or would not have been obvious, as a whole, when it was made to a person of 'ordinary skill in the art' - not to the judge, or to a layman, or to those skilled in remote arts, or to geniuses in the art".

The person of ordinary skill is a hypothetical person who is presumed to be aware of all the pertinent prior art. The actual inventor's skill is not determinative. Factors that may be considered in determining level of skill include: type of problems encountered in art; prior art solutions to those problems; rapidity with which innovations are made, sophistication of the technology; and educational level of active workers in the field. Not all such factors may be

⁹⁰ 383 U.S. 1 at 17, 1966

⁹¹ 1 USPQ2d 1196 (1986) p. 1201

present in every case, and one or more of them may predominate.

*Environmental Designs, Ltd. v. Union Oil Co. of Cal.*⁹²

Factors that may be considered in determining level of ordinary skill in the art include: (1) the educational level of the inventor; (2) type of problems encountered in the art; (3) prior art solutions to those problems; (4) rapidity with which innovations are made; (5) sophistication of the technology; and (6) educational level of active workers in the field. *Orthopedic Equipment Co., Inc. v. All Orthopedic Appliances, Inc.*, Appeal Nos. 83-513, 83-525 Slip op. 13 (Fed. Cir. May 16, 1983, 217 USPQ 1281, 1285). Not all such factors may be present in every case, and one or more of these or other factors may predominate in a particular case. The important consideration lies in the need to adhere to the statute, i.e., to hold that an invention would or would not have been obvious, as a whole, when it was made, to a person of "ordinary skill in the art" - not to the judge, or to a layman, or to those skilled in remote arts, or to geniuses in the art at hand.

*Orthopedic Equipment Co. v. All Orthopedic Appliances*⁹³

Although the educational level of the inventor may be a factor to consider in determining the level of ordinary skill in the art, it is by no means conclusive. Other factors which may be relevant in ascertaining the level of ordinary skill in the art include "the various prior art approaches employed, the types of problems encountered in the art, the rapidity with which innovations are made, the sophistication of the technology involved, and the educational background of those actively working in the field..."

⁹² 218 USPQ 865 (1983) p. 868-869; see also *Bausch & Lomb v. Barnes-Hind Hydrocurve*, 230 USPQ 416 (1986) p. 420

⁹³ 217 USPQ 1281 (1983) p. 1285

*Stewart-Warner Corp. v. Pontiac*⁹⁴

The trial court had found the level of ordinary skill in the art to be high. It found that all of the named inventors were graduate electrical engineers, that several had engineering master's degrees, and that most had several years of experience in the field of digital circuit design, computer programming, computer systems design, and digital display systems design. The same was found of AS&I's employees responsible for designing the Pontiac Silverdome scoreboard. Although section 103 is not concerned with the actual skill of the inventors - whose skill may be extraordinary - but rather with the level of ordinary skill in the art, Stewart-Warner's objection is that the trial court considered subsequent events as evidence of the level of skill in the art. The impropriety of such evidence of later developments is magnified in the context of rapidly evolving technology. The district court did not state its degree of reliance on subsequent events or on its measure of the level of skill in the art. But even assuming the level of ordinary skill in the art was "very high" at the time the invention was made, that fact does not alter our conclusion as to the nonobviousness of the '926 invention.

In conclusion, the criteria for assessing the level of skill of a person skilled in the art are very well articulated in the American jurisprudence. It is clear from the jurisprudence that the level of skill of such a person is not the level of skill of the inventor although the court will have regard to the educational level of the inventor in determining the level of skill of the person of ordinary skill in the art. The court will also have regard to a number of other factors including the type of problems encountered in the art and the sophistication of the technology.

3.2.5 Secondary Considerations

It is well established that evidence of a claimed invention's commercial success, satisfaction of a long felt but unsolved needs, or acceptance by the relevant industrial sector, must be considered by the courts and the Patent Office in their consideration of the obviousness or non-obviousness of an invention. The court, however, recognizes, for example, that commercial success must be as a result of the merits of the claimed invention,

⁹⁴ 226 USPQ 6761 (1985) p. 680-681

rather than to extensive advertising, aggressive marketing, or other unrelated issues. This has been dubbed a "nexus" requirement.

3.2.5.1 Commercial Success

Commercial success can be used as an indicator of non-obviousness if the commercial success is the result of the inventive features as opposed to other factors. Evidence of the success of a commercial embodiment which does not incorporate the features or advantages of the patent claims, issue is not indicative of the patentability of the invention as claimed.

An example of a well-presented case based on commercial success is *Panduit Corp. v. Dennison Manufacturing Co.*⁹⁵, *Panduit* demonstrated substantial commercial success of its patented one-piece cable ties, wherein sales comprised 50% of *Panduit's* total profits and 80% of its total cable tie sales. *Panduit* went on to demonstrate that the staff of *Dennison* engineers and designers unsuccessfully attempted for ten years to develop a successful one-piece cable tie. *Panduit* further demonstrated that *Dennison* was not successful in the marketplace until it introduced a copied version of *Panduit's* cable tie. *Dennison's* copying followed its own commercial success convinced the court that there was the nexus between *Panduit's* commercial success and the claimed invention.

In successful court cases in the U.S., there is one point in common: the patentee in each case found a way to tie commercial success to the claimed features.

3.2.5.2 Long Felt Need

If it can be shown that the claimed invention satisfies a long felt need in the industry, it can be directly inferred that the invention is non-obviousness; if the invention was obvious, the solution to the long felt need would have been supplied much sooner. The long felt need must be for a solution to a real problem which has been recognized in the prior art or in the industry. Having established a long felt need, the patentee must then establish the nexus between the long felt need and the claimed invention.

An example of well-presented evidence of a long felt need can be found in *Railroad Dynamics, Inc. v. a. Stucki Co.*⁹⁶. This case involved a patent to a hydraulic shock absorber assembly for eliminating the rocking and rolling of railway freight cars. The patentee first

⁹⁵ 774 F.2d 1082, 1099-1100, 227 U.S.P.Q.

⁹⁶ 579 F. Supp. 353, 366-68, 218 U.S.P.Q. 618 (E.D. Pa. 1983), *aff'd*, 727 F. 2d 1506, 220 U.S.P.Q. 929 (Fed. Cir.), *cert. denied*, 105 S. Ct. 220 (1984)

presented expert testimony by persons in the industry on the duration and extent of the rocking and rolling problem and of the substantial efforts made to solve the problem. The patentee then presented evidence of substantial commercial success which flowed from the advantages made possible by the patent claims.

3.2.5.3 Failure by Others

Like a long felt need, this type of evidence is more direct than commercial success. Establishment of a nexus between others' failure to solve a problem and a claimed invention requires several steps. First it must be established that the claimed invention did in fact solve a problem. Secondly, it must be shown that others were aware of the problem and that they were motivated to solve the problem and that they had knowledge of the critical prior art. Thirdly, it must be shown that attempts were made to solve the problem at hand and that these attempts were not intentionally made in a direction away from the inventive concept.

An example of the successful use of this type of objective evidence is found in *Jones v. Hardy*⁹⁷. In this case, the patentee devised a mold and method for casting concrete walls using a polystyrene sheet or foam with designs molded thereon. This permitted the sheet or foam to be air blown off after the concrete had hardened, thereby avoiding the problem of unwanted adherence to the sheet or foam. The court held that polystyrene sheet with designs carved or cut therein, as opposed to molded, had been used for years to cast concrete walls with the attendant adherence problems, yet nobody prior to the patentee had resolved the problem. This was a classic example of a solution staring into the eyes of, and yet eluding, persons skilled in the art.

In order for such evidence to be indicative of obviousness/non-obviousness, it must be demonstrated that the claimed invention solves a specific problem and that previous unsuccessful attempts were made to solve that very same problem by skilled persons equipped with an informed knowledge of the problem and with prior art tools necessary to solve it.

3.2.5.4 Acquiescence of Acclaim by the Industry

Another important type of objective evidence of non-obviousness is the response by the industry to the claimed invention. Like long felt need, evidence of an industry's particular reaction to a claimed invention provides some indication of where the invention fits, vis-à-vis the state of the art. This type of evidence can include statements by persons in the industry in newspapers, trade articles and advertising literature, restraint by those in

⁹⁷ 727 F.2d 1524, 1530, 220 U.S.P.Q. 1021 (Fed. Cir. 1984)

the industry from infringing or challenging the claimed invention and licenses and requests for licenses by those in the industry.

3.2.5.5 Copying

Copying is the ultimate form of industry acclaim, an indication that the claimed invention is so good as to be deserving of imitation and to render useless any efforts to design around or improve upon it. Because of this, it has been recognized that this type of evidence can be indicative of non-obviousness. Merely copying, without a connection to the copier's views of the claimed invention, or the claimed features of the invention is not indicative of non-obviousness. However, copying by a number of persons in the industry under circumstances reflecting a claim for the claimed invention and/or its advantages can be highly persuasive of non-obviousness.

3.2.5.6 Simultaneous Solutions by Different Inventors

Evidence of simultaneous solutions by different inventors can infer that the invention was obvious to persons skilled in the art. In order to be successful, the simultaneous solution must be independent of any knowledge of the claimed invention, and must be more than a mere accidental arrival at the claimed invention in order to be indicative of what would have been obvious to a person of ordinary skill in the art. The evidence of simultaneous solution is not strong evidence of obviousness. In support of this position, the courts have pointed to the fact that some degree of simultaneous invention is in fact recognized by the interference provisions of the United States Patent Laws.

3.2.5.7 Scepticism by Those Skilled in the Art

Evidence that the subject inventor proceeded to solve a problem contrary to the teachings or accepted wisdom of the prior art or of experts in the field, and in an atmosphere of scepticism and disbelief is highly persuasive of non-obviousness. This can be best demonstrated by showing that the solution ran counter to conventional process parameters which were accepted at the time of the invention.

3.2.5.8 Unexpected or Surprising Results

Unexpected, or surprising results can be a strong objective indication of non-obviousness. To be considered, however, such evidence must be presented in the form of factual comparative testing to the closest prior art. Any unexpected or surprising results or advantages must flow from the claimed features.

3.2.5.9 Admissions

Direct admissions of obviousness or non-obviousness will undoubtedly be rare. As with all other forms of objective evidence, the proponent must show that admissions were specifically directed to the claimed invention.

To successfully use objective evidence as support for non-obviousness, it must be remembered that for all types of objective evidence there must be an establishment of the connection between the evidence and the claimed invention. Also, various types of objective evidence should be packaged together for presentation.

3.3 The Application of the Standard of Non-Obviousness in the United States

In reviewing articles written on the application of the standard of obviousness across different field of technology in the United States, it is clear that there is only one standard. This standard is for the most part applied equally from one field of technology to another. To demonstrate, relevant passages from court decisions and articles written on the U.S. standard of obviousness follow:

*Interconnect Planning Corp. v. Feil*⁹⁸

This is not a facile statutory interpretation. The quality of non-obviousness is not easy to measure, particularly when challenged years after the invention was made. That which may be made clear and thus "obvious" to a court, with the invention fully diagrammed and aided, in this case, by a hostile inventor seeking to eliminate his own invention, may have been a breakthrough of substantial dimension when first unveiled.

The judicial application of uniform standards for determining compliance with 35 U.S.C §103 is essential, because the technological incentives fostered by the patent system depend on consistent interpretation of the law. To this end, faithful adherence to the patent statute and guiding precedent fosters uniformity in result.

⁹⁸ 227 USPQ 543 (1985) p. 548

*Panduit Corp. v. Dennison Manufacturing Co.*⁹⁹

The law must be the same for all patents and types of inventions. A level playing ground for the marketplace of ideas is as necessary for technological innovations as it is for politics and social policy.

*Re Papesch*¹⁰⁰ (137 USPQ (1963) p. 43)

The standard of obviousness under 35 U.S.C. §103 does not differ with the technology. This is a well-established rule that is firmly embedded in precedent. The problem of "obviousness" under section 103 in determining the patentability of new and useful chemical compounds, or, as it is sometimes called, the problem of, "chemical obviousness" is not really a problem in chemistry or pharmacology or in any other related field of science such as biology, biochemistry, pharmacodynamics, ecology, or others yet to be conceived. It is a problem of patent law. The Federal circuit has adhered to Papesch and has reiterated that obviousness determinations are made irrespective of the technology.

*Re Johnson*¹⁰¹

The problem of obviousness considered by the Patent and Trademark Office and to which we address ourselves here, arises under section 103 of the Patent Act. It is a problem of patent law and not of chemistry. Thus, the requirements of unobviousness in the case of chemical inventions is the same as for other types of inventions.

Myron Cohen¹⁰²:

⁹⁹ 1 USPQ2d 1593 (1987) p. 1602

¹⁰⁰ 137 USPQ (1963) p. 43

¹⁰¹ 223 USPQ 1260, 1263, Fed. Cir. 1984, cited in *Re Papesch* 137 USPQ 43, 47 (CCPA 1963)

¹⁰² "Nonobviousness and the Circuit Courts of Appeals - Twenty-Five Years in Review", In: "Nonobviousness - the Ultimate Condition of Patentability", J.F. Witherspoon, published by The Bureau of National Affairs, Inc., Washington, D.C. 1980

The last two indicate that insofar as it has been articulated, the articulated standard of nonobviousness pre-*Graham* was the same despite the technology involved. This is not a surprising conclusion in view of the fact that there is only one Section 103. Despite this, the statistics indicate that the courts of appeal tend to treat chemical inventions somewhat more gently than they do mechanical inventions. Thus, for all circuits in periods I, II and III, the courts found chemical inventions non-obvious 59 percent of the time and mechanical inventions non-obvious only 35 percent of the time.

As was true during the pre-*Graham* periods, partly due to the parsity of litigation over chemical patents, and, perhaps, partly due to the uniqueness of the subject matter, there is little express language establishing a standard of obviousness in chemical cases post-*Graham*.

Comparatively, few chemical cases find their way into the courts. This may explain why it is so difficult to find an articulated standard of nonobviousness as it relates specifically to chemical cases. Insofar as a chemical patent may deal with a combination, such as a mixture, the articulated standard of nonobviousness, both pre- and post-*Graham*, is the same as that articulated for mechanical combinations.

With respect to chemical inventions that do not involve a combination but, instead, involve, for example, a new compound, a statement by courts of appeals on what the standard of nonobviousness is hard to come by, at least during the pre-*Graham* era.

Having stated that the standard of non-obviousness as applied in the United States is, for the most part, equal from one field of technology to another, there appears to be a divergence from this ideal in the field of biotechnology and perhaps also in the field of electronics and computer related technology. On July 20, 1994, the United States Department of Commerce, Patent and Trademark Office, held a public hearing on the standard of non-obviousness. Submissions at these hearings were made by private inventors, legal counsel of biotechnology companies or biotechnology organizations, individual law firms, and intellectual property law associations. Some of the concerns expressed at this hearing are reported below:

Mr. Razzano, President, New York Intellectual Property Law Association.

Basically, our association believes that the same standard of non-obviousness should be applied in both patent prosecution and in patent enforcement.

The creation of the Federal Circuit in 1983 provided a forum designed to ensure uniformity in the actual application of the statutory definition of non-obviousness, both among the courts and in the Patent Office. Since that time, the Federal Circuit has applied the nonobviousness standard to numerous inventions in a variety of technologies, some old and some new.

Each case has been driven by the factual inquires implicit in 103 and explicitly delineated in *Graham v. Deere* (383 U.S. 1 at 17, 1966).

Obviousness is a fact-driven issue which has been the subject of much judicial debate for many years. There simply is no bright line test than can be applied like a mathematical formula in every case to every technology. If different standards are to be considered for different fields of technology, how could one reasonably distinguish between these technologies? Where does chemistry end and biotechnology begin? And where does electronics end and computer programs begin?

For these reasons, we believe that the defined standard of obviousness should be uniform across all fields of technology.

Mr. Cecil D. Quillen, Jr., Senior Advisor to Putnam, Hayes and Bartlett, Inc., and was formerly general Counsel to Eastman-Kodak Company.

The PTO should apply the same standard followed in the courts so that patentees receive a patent that is worthy of respect rather than merely an invitation to the roulette wheel of litigation.

Mr. Tegtmeier, Intellectual Property Law Section of the American Bar Association.

Overall, the present standard of nonobviousness is an appropriate standard and reasonably clear and workable when properly applied.

There is no evidence supporting the need for a different standard in different technological areas. And, in fact, it would be quite awkward to apply a different standard in different technological areas and then try and categorize the technology in patent applications coming under these different areas of technology and thereby apply a different standard. The Section, I should say, looks specifically at the biotechnology and software areas when considering this question.

While the Section opposes any raising of the standard of obviousness since there is no evidence of a compelling need for such, there are problems nevertheless in the patents issuing by the Patent and Trademark Office in individual cases on occasion.

However, the issuance of patents in these cases is not a justification for changing the overall standard. The problem is primarily rooted with inadequate search files in some cases, such as in the software area, the lack of in depth examiner training and experience in other cases, the fact that there's a large body of new examiners, the fact that new fact situations inevitably arise in connection with emerging technologies, such as in the biotechnology area and software areas, and the general lack of legal training of most examiners and the inadequate examination in particular cases, some of which may be due to time constraints on the examiner under the existing goal system.

Mr. Edward Pencoske, Patent Attorney from Pittsburg, Pennsylvania.

I believe that the standard of nonobviousness should be applied uniformly among the different examining groups within the PTO.

The standard set forth in the statute does not provide for variations among, for example, electrical, chemical and mechanical inventions. I do not believe the standard of nonobviousness should vary according to the field of technology involved. To have varying standards would only confuse matters, particularly for inventions that do not clearly fall within a particular field of technology.

Nowhere is the inconsistency in the application of the nonobviousness standard more appropriate than in the area of software and other high technology patents.

The misapplication of the current standard may be traced to three separate causes -- an inexperienced examining corps, the lack of appropriate prior art, and claim drafting techniques.

Mr. Raymond Loyer, Consulting Patent Counsel of Monsanto Company, St. Louis.

The standard is applied too rigorously in most of the biotechnology groups, while in some groups such as the mechanical area, the standard is much less rigorously applied.

Mr. Roger Smith, President, Intellectual Property Owners, Inc., and Chief Patent Counsel of IBM Corporation.

IPO members believe that the standard is applied somewhat differently among different examining groups from time to time and more importantly with different degrees of strictness from examiner to examiner.

We firmly believe that the standard of nonobviousness should not vary according to the field of technology involved.

Mr. Gary Newton, President, American Intellectual Property Law Association.

It is to be expected that the level of ordinary skill will vary from one technology to another according, for example, to who is the ordinary skilled artisan in the real world.

In the biotechnology arts, the artist may routinely have one or more post-graduate degrees. Whereas, in some mechanical arts lack of even an undergraduate degree would not be common.

Frederick D. Hunter, Chief Patent Counsel, The Lubrizol Corporation, representing the Chemical Manufacturers Association.

Although the problem is not as great in the chemical area, examiners frequently perform more as scientific peer reviewers in the biotechnology area than as patent examiners. They often spend more time and effort critiquing the science than examining the patentability question.

There should not exist a dichotomy between the application of the standards by the court and the application of the standards by the PTO. Uniform and clear standards of nonobviousness and uniform and clear administration of those standards would result in stronger patents, less litigation and more competitiveness for U.S. industry versus industry in other industrial countries.

Mr. Paul Kudirka, Cesari and McKenna, Boston.

Another thing that can be considered, and that has been mentioned by other people here is post-grant opposition, for people who are concerned in the industry would submit art after the grant or after a publication of a patent.

Mr. Gerald Murphy, Birch, Steward, Kolasch & Birch, Falls Church, Virginia.

In my experience and the experience of other attorneys in the firm, the standard of nonobviousness is applied differently among different examining groups with a considerably higher standard being applied in some chemical groups, especially in the biotechnology group.

At the present time, the public has two possible means for challenging an obvious patent -- litigation in the federal courts, and reexamination procedures at the Patent Office.

As any patent attorney with significant patent litigation experience will tell you, it is difficult to invalidate a patent in court on the grounds of obviousness. One reason for this difficulty is that the challenger of the patent must prove obviousness by clear and convincing evidence. This is a very difficult standard.

Another change in the laws which would make it easier to challenge obvious patents would be to allow more active participation by third parties during requests for reexaminations with the Patent Office. At present a third party's request for participation and a request for reexamination is severely limited.

As can be seen by the above-referenced statements from the oral hearings, and as noted in a review of the entire transcripts, most practitioners are content with the standard of obviousness in general as applied in the United States Patent and Trademark Office, and by the U.S. court system. It was also generally agreed that the standard of non-obviousness should be applied equally to the different fields of technology. However, there were a number of public testimonies which indicated that inventions pertaining to computer software or biotechnology must meet a higher standard of nonobviousness in the United States Patent and Trademark Office. It appears from the transcripts that one of the main reasons for this is the lack of training of the examiners in these areas, as to the applicable precepts of patent law. Most often these examiners are highly trained with regards to the field of technology for which they have been assigned, but lack patent law experience. Perhaps another source of inconsistency lies in the fact that so few cases in the area of biotechnology and computer technology have thus far been examined in the courts with regard to the question of obviousness.

These comments by the U.S. practitioners confirm our experience in dealing with the United States Patent and Trademark Office regarding applications relating to biotechnology. Perhaps the biotechnology examiners are setting a level of skill against which they are judging patents much higher than the law requires. I would suggest that the U.S. biotechnology examiners are not examining applications based on the true level of the skill at the time just before the invention was made. As previously stated, in the United States, the person that has been defined as having ordinary skill in the art is not a judge, not a layman, not a skilled artisan in a remote field, nor an inventor, nor a genius in the art at hand. The person is presumed to be one who thinks along lines of convention wisdom in the art, but is not one who undertakes to innovate.

It is submitted that the U.S. biotechnology examiner, which probably on average have a very high educational background and are very familiar with the art at hand, are not looking at the invention through the eyes of a person of ordinary skill in the art. Thus, to

reflect the comments made above, they are using an inappropriate yardstick in which to judge obviousness.

3.4 United States vs. Canada: Distinctions and Similarities

The law and the jurisprudence pertaining to the issue of obviousness in Canada and the United States have evolved independently. There are, however, a number of similarities. In each jurisdiction, obviousness is judged by a person of ordinary skill in the art, or an unskilled technician, bringing his common general knowledge and relevant prior art. This person of ordinary skill in the art then must determine whether the invention at hand is obvious in light of the relevant prior art.

From our review of the application of the standard of obviousness in Canada, and the application of the standard of obviousness in the U.S., there appears in both countries to be an acknowledgment that the standard must be applied equally from one field of technology to another. Both countries also recognize that as a field of technology develops, the yardstick to which an invention is judged will change. The knowledge base of the person of ordinary skill will increase as the field develops. Also, there will be an increase in the prior art which is available for him to reflect, and also there will be an increase in the amount of information available to him which has been termed the common general knowledge. These things vary throughout time and thus, one would expect that an invention which appears non-obviousness at the emergence of a technology, will at some point, later during the evolution of that technology, appear to be obvious.

What does appear to be different from our review is the practitioner's view of the standard of obviousness as applied in the field of biotechnology. In the United States, a number of practitioners voice their concern that the biotechnology examiners apply a very high standard of patentability. From our review, including interviews with Canadian practitioners and Canadian biotechnology patent examiners, this does not appear to be the case in Canada. In our review of biotechnology cases which were published, and cases which were in our offices, we found very few objections to the claims on the issue of obviousness. In our discussions with the Canadian biotechnology examiners, we were advised that the reason that we are seeing so few objections of obviousness at this point in time, is based on their belief that as this field is only just emerging, and thus very unpredictable, most developments are non-obvious. They further, however, explained that as the field develops, and as the skill base of the ordinary person in the art increases, as would the common general knowledge and the prior art from which to judge an invention, then we would expect to see more obviousness rejections.

There are a number of factors which can explain the differences between the application of the standard of non-obviousness, in the biotechnology field, in Canada and

in the United States. The first concerns the current backlog and the length of time it takes to prosecute a biotechnology application in Canada¹⁰³.

The Canadian Patent Office is still examining a number of cases which are pre-1989 (old Act cases). As stated previously, in examining these applications, Canadian examiners assume that the date of invention is two years prior to the filing date. It is of this date that obviousness must be judged. There has been an explosive development in the biotechnology field and, thus, comparing the Canadian biotechnology examiners to the U.S. biotechnology examiners is somewhat unfair as the Canadian examiners are examining very old cases where, as they have stated, the level of predictability is so much lower, and thus, their conclusion that almost everything is not obvious. In contrast, a biotechnology case will probably be pending in the United States Patent and Trademark Office for about a year before the first office action is issued.

One of the problems which result from this backlog in the Canadian Patent Office is the lack of litigation in this area. Important cases, in which litigation has proceeded in the United States, are still being prosecuted in the Canadian Patent Office. As a result, there has been no guidance from the Canadian courts which the Canadian biotechnology examiners can draw on to assist them in the examination of these cases.

In contrast, in the United States there have been a number of decisions, both at the Patent Office and in U.S. courts, which discuss the issue of obviousness with regards to biotechnology inventions. Some examples of these decisions follow.

Referring first to a paper authored by Brian C. Cannon entitled "*Towards a Clear Standard of Obviousness for Biotechnology Patents*"¹⁰⁴, this paper reviewed four biotechnology cases heard by the U.S. Federal Courts. From these cases, the author of this report suggested a two-factor legal analysis of non-obviousness. He suggested that someone must have already suggested the invention, either implicitly or explicitly, for it to be viewed as obvious to attempt. Secondly, that suggestion must be coupled with a reasonable expectation of success before the invention can be found legally obvious. Thus, the non-obvious claimed biotechnology invention must be unattainable through the use of reasonable, accessible, scientific methods. In the four cases reviewed, it was noted that in each case the court initially provided lengthy descriptions of the invention. But then the court shifted the focus from the end product of the scientific research to the actual research methods themselves. Thus, the court determined obviousness not by the invention itself, but by the steps that gave rise to the invention.

¹⁰³ As of May 1995 there were approximately 5,500 Old Act cases (cases filed before October 1, 1989). Of these one half were biotechnology/pharmaceutical cases. (These numbers were provided by a Canadian biotechnology Examiner)

¹⁰⁴ Cornell Law Review, Vol. 79, pp. 735-765, 1994, Cornell University

In analyzing the four decisions of the U.S. Federal Courts, the author of this article noted that all of the cases turned on the reasonable chance of success of each invention. The author further noted that:

This standard can adapt to emerging technologies because of its focus on methodology. New scientific procedures lie at the forefront of biotechnology discoveries. Inventions arise from new methods of discovering and manipulating genetic information. By analyzing scientific methods and not general ideas, the standard can remain applicable to emerging technologies. As scientific knowledge continues to grow and expand, the focus on methods can be applied to inventions from other fields of research¹⁰⁵.

This analysis follows the approach taken in determining the obviousness or non-obviousness of chemical inventions. In *Re Dillon*¹⁰⁶ the standard for *prima facie* obviousness requires that the chemical compound or composition be structurally similar to the prior art, and further that the prior art provides motivation to invent the claimed compound or composition, in order to demonstrate *prima facie* obviousness.

Genes, whose structure is only known after one isolates the DNA raises new issues of obviousness, which are being addressed by the United States courts. In *In re Bell*¹⁰⁷ there was a claim to a nucleic acid molecule containing human sequences, which coded for human insulin-like growth factors. The Examiner rejected the claim as obvious over a reference disclosing the amino acid sequence for the growth factor polypeptide and a general reference disclosing the isolation of a gene encoding a polypeptide using probes based on the amino acid sequences in the polypeptide. It was decided however, that the gene sequence was not structurally obvious. Due to the degeneracy of the genetic code at least 10³⁶ other nucleotide sequences could have coded for the same polypeptide. Based on the polypeptide sequence there was no way of knowing in advance the human nucleotide sequence.

A similar decision has been reached in *In re Deuel*¹⁰⁸, where the applicants had isolated and identified the sequence of cDNAs encoding human heparin-binding factors

¹⁰⁵ Brian C. Cannon, "Towards a Clear Standard of Obviousness for Biotechnology Patents", Cornell Law Review, Vol. 79, pp. 735-765, 1994, Cornell University

¹⁰⁶ 16 U.S.P.Q. 2d pp. 1897

¹⁰⁷ 991 F.2d 781, 26 U.S.P.Q. 2d 1529 (Fed. Cir. 1993)

¹⁰⁸ 51 F.3d 1552, 34 U.S.P.Q. 2d 1210 (Fed. Cir. 1995)

(HBGFs). The U.S. Patent Office rejected the claims as obvious over a European application disclosing the first 19 amino acids of these proteins and a general reference disclosing a method for cloning cDNA that relies on screening a cDNA library with an oligonucleotide probe designed using a partial amino acid of the corresponding protein. The court however, rejected this argument pointing out that the claims were directed to compounds, not processes, and thus the existence of a general method of isolating DNA or cDNA molecules was irrelevant. The claims to the specific DNAs were not obvious, absent any prior reference that suggested the claimed DNA.

There are numerous other U.S. decisions, which address issues of infringement, enablement (sufficiency of disclosure) and utility specific to biotechnology inventions, which go beyond the scope of the present study. Together these decisions form a body of U.S. case law, which is developing to address legal issues, which are specific to this technology. By in large, these issues have not been addressed by our Canadian Patent Office or by our Canadian Courts.

Also, as a result of the backlog in the Canadian Patent Office, when an applicant's case is taken up for examination, the applicant's corresponding U.S. and/or EPO case has often already issued to patent. Thus in order to avoid any further delays, by way of a lengthy Canadian prosecution, the applicant will sometimes, amend their claims to correspond to the issued claims in other jurisdiction. These claims are then often acceptable for allowance in Canada, at this time.

These issues, perhaps explain why the difficulties which have been voiced in the United States concerning the U.S. biotechnology examiner's are not being experienced in Canada, at this time.

As discussed above, the Canadian Examiners appear to rarely cite an obviousness rejection during prosecution because of their belief that the area is so new and unpredictable, that the advance in the art must be non-obvious. As a result, however, the Canadian biotechnology examiner's are extremely reluctant to allow any claims, which go outside the four corners of the Applicant's examples provided in the patent application. This is a major criticism voiced against the Canadian biotechnology examiners¹⁰⁹. Although this issue is not within the mandate of the present study, as the Examiners see it as a related issue, some comments are warranted.

The requirements of sufficiency of disclosure are set out in the *Patent Act* in Section 34 which presently reads:

"An applicant shall in the specification of his invention:

¹⁰⁹ From interviews with Canadian practitioners specializing in the field of biotechnology, 1995.

- a) correctly and fully describe the invention and its operation or use as contemplated by the inventor;
- b) set out clearly the various steps in the 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, construct, compound or use it;
..."

Thus, two things must be described in the specification; one being the invention, and the other the operation or use of the invention as contemplated by the inventor. In both regards, the specification is addressed to persons of skill in the art and not to the average unskilled member of the general public¹¹⁰. It has also been held that where the specification describes an invention sufficiently clear to enable a reasonably skilled workman to make use of it, even though some experiments are necessary, the patent will be good so long as those experiments do not require any exercise of the inventive faculty¹¹¹.

The specification includes the claims which clearly and distinctly defines what it is that the applicant wishes to protect. The function of the claims has been eloquently described by Thorson P.¹¹², wherein he defined the claims as a fence around the field of the inventors monopoly which warns the public against trespassing on its property. The fence must be clearly placed in order to give the necessary warning. The inventor must make certain that he does not fence in any property which is not his own. The inventor may make his claims as narrow as he sees fit within the limits of his invention, but he must not make them too broad. He must not claim what he has not invented for he would thus be fencing off property which does not belong to him. It also follows that a claim would fail if in addition to claiming what is new and useful, it also claims something that is old or something that is useless.

Where then is the line to be drawn between a claim which correctly claims the invention and one which go beyond the invention. If it is possible for the patentee to make a sound prediction and frame a claim which does not go beyond the limits within which the prediction remains sound, then he is entitled to do so¹¹³. In *Monsanto Co. v. The*

¹¹⁰ *Sandoz Patents Ltd. v. Gilcross Ltd. et al.*, (1972) 8 C.P.R. 2d p. 218

¹¹¹ *BVD. v. Canadian Celanese* (1936) Ex. C.R. 140

¹¹² *Minerals Separation North American Corpn. v. Noranda Mines Ltd.*, [1947] Ex. C.R. 306 at 352

¹¹³ *Olin Mathieson Chemical Corp. et al. v. Biorex Laboratories Ltd. et al.* (1972) R.P.C. 157

*Commissioner of Patents*¹¹⁴, Pigeon J. felt that the Patent Appeal Board had not provided any justification for their refusal of a claim containing a large number of products where only three had been tested in the specification. Pigeon, J. felt that contrary to Section 42 of the *Patent Act* the Patent Board of Appeal was limiting the patentee to the area of "proved utility" instead of allowing the applicant to the extent of "predicted utility".

Thus, it is clear that a decision in the Patent Office must be clearly supported by fact. It is not sufficient for the Patent Office to refuse an application because they do not believe that the claims are based on a sound prediction. Under Section 42 of the *Patent Act* as discussed previously, the Commissioner can only refuse a patent when "satisfied that the applicant is not by law entitled"¹¹⁵. The Commissioner cannot refuse a patent because the inventor has not fully tested and proved in all its claimed applications¹¹⁶. Basically, if the inventors have claimed more than they have invented and included substances which are devoid of utility, their claims will be open to attack. However, in order to succeed such an attack, there will have to be a clear evidence of lack of utility.

Often in addressing the teachings of Monsanto, the biotechnology examiner asserts that biological systems are generally more complex and less predictable than chemical ones, hence caution must be exercised when extracting anything from chemical to biological applications. It is the position of this report that the Patent Office must look at each case on its merits. A patent application is to be addressed to a person skilled in the art. In the particular instance, in a biotechnology case, the application is addressed to a highly skilled scientist, for example, with a background in biochemistry or molecular biology. The claims may be within the realm of predictability to such a skilled artisan. It is submitted that the case law provides us with the interpretation of the *Patent Act* and Patent Rules. The case law is equally applicable to every type of technology whether it is chemical, mechanical or electrical. There is no basis in law to support the Patent Office's position that since the *Monsanto* decision relates to a class of chemical compounds, the interpretation of the law in this decision is not applicable to an application directed to molecular biology. It is submitted that the Patent Office must look at each invention on its merits and read the invention as it would be read by a person skilled in the art to determine the breadth of claims which the applicant is entitled to, under the general doctrine of sound prediction.

It may be required by the applicant to provide evidence as to the predictability of the scope of the invention as claimed. Certainly the examiners should not outright reject all claims that go outside of the specific examples provided in the application, and must follow the teachings of the case law.

¹¹⁴ (1979) 42 C.P.R. 2d, p. 161

¹¹⁵ Section 40 of the *Patent Act*

¹¹⁶ *Monsanto Co. v. The Commissioner of Patents* (1979) 42 C.P.R. 2d, p. 161

There does not appear to be any particular problem or difference in the standard of obviousness, as generally applied in Canada, with reference to computer related applications. The primary rejection regarding software applications, and the source of the greatest difference between Canada and other jurisdictions is in the application of the definition of invention provided by Section 2 of the *Patent Act*, as interpreted by the only software related case *Schlumberger Canada Ltd. v. Commissioner of Patents*¹¹⁷ in software application. This issue goes outside of the object of the present study and thus will not be reviewed in detail in this report. However, a brief review of this issue is warranted.

When the software invention is claimed as a method or in any form and involving a mathematical algorithm, the application is rejected as unpatentable subject matter under Section 2 or Section 2 and Section 27(3), respectively. This is in stark contrast to the U.S. Patent Office and the Australian Patent Office.

In the United States Patent and Trademark Office, guidelines have been developed based on case law along a line divergent from a point in common with the Canadian Section 2 and *Schlumberger* decision. While software patents per se remain unpatentable, the U.S.P.T.O. recently announced, May 1995, new guidelines Re software product claims. According to the new guidelines every effort is to be made to categorize a software related invention as belonging to a patentable subclass. This is in contrast to Canadian practice that requires the computer-related invention to be "integrated with another practical system that falls within an area which is traditionally patentable".

In the Australian Patent Office, two recent cases have influenced a redefinition of patentability in computer-related inventions.

Following the *IBM v. Commission of Patents*¹¹⁸ case decision the AIPO adopted an new test for patentability for software-related applications. The test is: "Does the invention claimed involve the production of some commercially useful effect". This test allows a claim to a mathematical algorithm when used in a computer to be patentable provided its use has a commercially useful effect.

This same claim in Canada would be rejected under Sections 2 and 27(3). This same claim in the U.S. may be patentable as a software product, but may not be patentable, as a process claim, for being directed to a mathematical algorithm (*Benson*¹¹⁹).

Is there any evidence of a different standard of obviousness being applied in the area of biotechnology in Canada as compared to the United States? Certainly from our review

¹¹⁷ 56 C.P.R. 2d, 204; 63 C.P.R. 2d, 261

¹¹⁸ 1992, 22 IPR 417

¹¹⁹ *Commissioner of Patents v. Benson et al.*, 175 U.S.P.Q., 673

there appears to be a great difference in the area of biotechnology. This is not to say that the Canadian biotechnology practice should be changed to reflect the corresponding practice in the United States. It is clear from our review that the U.S. practitioners believe that the application of the standard of obviousness in the United States Patent and Trademark Office, as it relates to biotechnology and computer related technology, is too high. However, perhaps the biotechnology examiners should more realistically assess the skill of the person skilled in the art and common general knowledge in the art, rather than assuming that due to the unpredictability in the field almost everything is non-obvious. As a result, more cases in this area would probably be referred to the Patent Appeal Board and to the Canadian Courts for resolution. This would result in a body of case law addressing obviousness issues, among others, pertaining to this technology.

3.5 Summary

In reviewing written articles or court decisions on the application of the standard of obviousness across different fields of technology in the United States, it is clear that in principal there is only one standard. This standard is for the most part applied equally from one field of technology to another.

The patent system depends on consistent interpretation of the law. To this end, faithful adherence to the patent statute and guiding precedent fosters uniformity in result¹²⁰. The law must be the same for all patents and types of inventions. This is not surprising as there is only one Section 103. The standard of obviousness under 35 U.S.C. §103 does not differ with the technology. This is a well-established rule that is firmly embedded in precedent¹²¹. Furthermore, a level playing ground for the marketplace of ideas is necessary for technological innovations¹²².

Having stated that the standard of non-obviousness as applied in the United States is, for the most part, equal from one field of technology to another, there appears to be a divergence from this ideal in the field of biotechnology, and perhaps also in the field of electronics and computer related technology. It is felt by practitioners who work in this area, that the examiners apply a higher standard of obviousness for inventions in this area. It is proposed that the main reason for this divergence from the standard is the skill that the biotechnology examiners bring with them to their task in determining the question of obviousness is perhaps higher than the law dictates and, thus, they are not using the correct yardstick by which obviousness is to be judged.

¹²⁰ *Interconnect Planning Corp. v. Feil* 227 U.S.P.Q. 543 (1985) p. 548

¹²¹ *Re Papesch* 137 U.S.P.Q. (1963) p. 43

¹²² *Panduit Corp. v. Dennison Manufacturing Co.* 1 U.S.P.Q. 2d 1593 (1987) p. 1602

4. THE STANDARD OF NON-OBVIOUSNESS IN EUROPEAN PRACTICE

4.1 Introduction

Article 52 and Article 56 of the Convention on the Granting of European Patents deal with the concept of inventive step. These sections read:

Article 52 - Patentability

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

Article 56 - Inventive Step

An invention shall be considered as involving an inventive step if, having regard to the state of the art, it is not obvious to a person skilled in the art...

In this chapter, we will review the test for non-obviousness as it is applied in the European Patent Office. The European patent system is somewhat different from the Canadian and U.S. systems as described before. In Europe, a single patent application is applied for in the European Patent Office, and it is examined by a core of European patent examiners. Once the patent issues, it then matures as a set of regional patents in each of the countries originally designated in the European patent application. Accordingly, a set of patents, for example, British, German, Swiss, French etc., will finally issue. Thus, once the application has completed the procedural requirements in the European Patent Office, any subsequent litigation, which could address the question of obviousness, will go before the national courts in the relevant jurisdiction. Thus, in this review, the test for non-obviousness, and the application of that test for non-obviousness, for the most part, will reflect that standard which is applied during the prosecution of a European patent application. Certain comments, however, will be made with regard to case law as it has evolved in Great Britain.

Together with a review of the development of a test for non-obviousness, this chapter will also cover the application of this test for non-obviousness, and the distinction between the European/U.K. and Canadian practice.

4.2 Test for Non-Obviousness

4.2.1 The Evolution of the Test for Non-Obviousness

The European patent system has developed a "problem-solution approach" for the assessment of inventive step, which is applied in all instances in the EPO. The basic consideration is that every invention is a solution to a technical problem. This is reflected in Rule 27(1c) of EPO, which states:

- "(c) disclose the invention, as claimed, in such terms that the technical problem (even if not expressly stated as such) and its solution can be understood, and state any advantageous effects of the invention with reference to the background art;"

The inventive step thus corresponds to the step from the problem to the solution.

The method of assessing inventive step has three basic elements or stages:

- (1) The most relevant prior art in the particular case must be identified. The most relevant prior art is then evaluated to note the differences between the subject matter claimed and that disclosed in the most relevant prior art.
- (2) The objective problem has to be defined; and
- (3) In the final stage, the following question has to be answered: "Starting from the most relevant prior art, was it obvious to implement the differences identified in stage (1), in order to provide a solution to the objective problem (2)?"

4.2.2 The Prior Art

While obviousness is to be judged in the light of the "state of the art", the European Patent Office considers that particular attention should be paid to that prior art which is seen to differ the least from the claimed invention, i.e., the most relevant or the closest prior art. The most relevant art is represented by a document or other evidence which relates to the same technical field as the invention or to a closely related technical field. It is the hypothetical starting point, from which the inventor develops his product, processes and so on. Within the same field, it is possible to combine references to deny an inventive step,

and even a third document can be combined with two others. It is inadmissible or improper to combine unrelated or conflicting documents mosaically to deny inventive step.

4.2.3 The Objection Problem

The EPO requires each invention to solve a technical problem. The problem is not necessarily the inventor's subjective intention. The problem has to be seen against the background of the most relevant prior art. It may be necessary to re-formulate the problem if a more relevant piece of prior art turns up at a later stage. In doing so, care must be taken not to go beyond the original disclosure. There must be a basis for the re-formulated problem in the application as filed.

Once the problem has been established, it must be ascertained that this problem is solved by what is defined in the claims. If an alleged invention cannot be presented in such a way that a technical problem and its solution can be understood, then it is clear that there is no invention under Article 52 EPC.

4.2.4 The Assessment of the Solution

The question, in terms of the problem-solution approach, is: "Starting from the most relevant prior art, was it obvious for the man skilled in the art to implement the differences identified in stage (1), in order to provide a solution to the objective problem determined in stage (2)?" To answer this question one must first look at the man skilled in the art. This mythical man must be presumed to know all of the relevant art, both in the field of the invention, and in neighbouring fields. This person is presumed to be an ordinary practitioner aware of what was common general knowledge in the art at the relevant date. He should also be presumed to have had access to everything in the state of the art, in particular the documents cited in the search report, and to have had, at his disposal, the normal means and capacity for routine work and experiment.

As noted above, the most relevant or closest prior art is to be considered not in isolation, but together with common technical knowledge and more frequently one or more additional documents. All of these documents must have been known before the priority date of the application under consideration.

For the actual assessment, indicators in favour of an inventive step are, for example:

- (a) a long-felt need;
- (b) an existing prejudice (which of course must be generally accepted; a statement in one patent document is not sufficient);

- (c) there are many apparently equivalent alternatives, but only one particular embodiment is successful;
- (d) a surprising technical effect, which has to be verified with respect to the closest prior art, and must be linked to the features establishing the difference;
- (e) a new property which was not yet noticed about similar substances;
- (f) omitting a process step which was considered necessary up to now, without detrimentally affecting the end product; and
- (g) the technical development in this field was directed in quite another direction.

Indicators for obviousness, in other words against an inventive step, can be found in the following:

- (a) the result obtained could be foreseen by the expert;
- (b) the prior art directed the man skilled in the art inevitably to adopt a certain solution (the so-called "one-way street solution");
- (c) the only difference between the invention and the prior art is in the implementation of well-known equivalents;
- (d) the existence of the invention is the new use of a known substance by exploiting the known properties of this substance;
- (e) the gist of the invention is to apply a known product or process in an analogous situation; and
- (f) the invention only provides an aggregation of the effects of known features without any particular effect which would be due to a functional combination of features.

It is noted under EPO practice that the correct question cannot be *could the expert have done it?* The correct question is, *would he have done it?* In other words, an inventive step can be recognized even when it would have been obvious for an expert to have tried the claimed solution, if in fact he would not have tried this because he would not have expected to obtain a satisfactory result; or where there were many possibilities and the claimed solution was not the first choice; or where the prior art is a speculative statement

providing no real sign post toward the invention when read against the background of the whole state of the art; or because there was an established trend in the art contrary to the further use of the idea in the field in question; or where the properties of the envisioned product were foreseeable for this could not be made by known methods. In other words "obvious to try" is not on its own a showing of obviousness.

In the field of chemistry, the novelty of a compound is not enough for patentability. If the compound is a structure of a known type, the inventive step will only be recognized if the new compound has a property not suggested by the prior art. This is because a structural difference has no value unless it gives rise to a valuable property, effect, or increase in an effect. The situation is different, however, if the product compound is not structurally obvious over the prior art. In this case, no improvement over the prior art need be demonstrated, provided that a problem has been solved. In the chemical section, this improved technical effect must very often be demonstrated by comparative tests, normally carried out against the substance which it holds to represent the closest state of the art to the claimed product.

The demonstration of a technical effect is irrelevant if the solution claimed to the existing technical problem represents the way forward which the skilled person would naturally adopt. This is known as the "one-way street solution". It is based on the contention that an obvious solution to a known problem is not automatically inventive because it happens, unobviously to solve, in an unexpected way, some other problem. This is because an invention is unpatentable if it lacks an inventive step for whatever reason. However a one-way street solution does not exist where there were alternative ways in which the skilled person might reasonably proceed.

4.3 The Application of the Standard of Non-Obviousness in Europe

In our review of European practice, there was no indication that there is any difference in the way in which the inventive step is determined for one area of technology in comparison with any other area of technology. The European developed problem-solution approach is used for all types of technology, and thus, the standard of obviousness between technologies will not vary.

As stated by Christopher Tootal¹²³:

It hardly needs stating that the same fundamental criteria for testing novelty and inventive step must be applied to biotechnology ("biotech") inventions as to any other inventions.

¹²³ September 1995, Patentability Criteria: Novelty and Inventive Step in relation to Biotechnology Inventions

We could find no evidence to support the position that there is a different standard of application of inventive step in the biotechnology field as compared to other fields of technology.

4.4 Europe vs. Canada: Distinctions and Similarities

One important distinction between the European and the Canadian practice turns on the abilities of the skilled technician. A recent decision of the Ontario Court clearly highlights this point. In *Bayer Aktiengesellschaft v. Apotex Inc.*¹²⁴, the Ontario Court concluded that there was a significant difference between the abilities of the English hypothetical skilled technician and the Canadian one. The distinction turns on whether the skilled technician would test or try out various approaches. The Ontario court considered a British decision in which a patent was found to be obvious because it would have been to a skilled technician "obvious to try" another approach, in this case the prelingual administration of a drug. It quotes from an unreported decision of the English Court of Justice in *Bayer A.G. v. Norton Healthcare Ltd.* at page 77 as follows:

I have no doubt that the skilled man who read 862 with interest would in 1971 know of the current deficiencies of the treatment of angina pectoris and would believe it *worthwhile to try* to produce nifedipine in a form or forms which could be used for prophylactic treatment of angina pectoris and for the treatment of angina pectoris attacks. He would have in mind that such was likely to be possible by providing compounds for intravenous administration, but he would know that it was desirable to have the same form of administration for both types of treatment. Thus *he would attempt* to produce a form which could be administered by the patient by placing something into his mouth.

I do not believe that the fact that nifedipine is light sensitive or water insoluble would mean that it was other than *obvious for the skilled man to proceed with investigations* into its use. The information in 862 is clear, namely that with an appropriate dosage vehicle the problems of the prophylactic treatment of angina pectoris could be solved by the use of nifedipine. The skilled man would realise that the difficulty of light sensitivity could be overcome by appropriate manufacture and packaging and that the insolubility in water did not appear to affect the ability of the drug to be absorbed

¹²⁴ (1995) 60 C.P.R. (3d) 58 at 77-82

and be effective for reasonable long times. 862 told the skilled man how to produce the compound and provided an incentive to make it in an orally administrable form. That incentive would not be obliterated by discovering it was light sensitive and practically insoluble in water.

The statement in 862 that nifedipine can be applied for the treatment of angina pectoris attacks and the prophylactic treatment of angina pectoris is a clear *incentive to try* to find an appropriate form of administration so that the patient can administer the drug after an attack and also to prevent attacks. I believe it was obvious *to seek* to mimic glyceryl trinitrate and *to test* nifedipine prelingually. The skilled man would dissolve it in PEG as disclosed in 862 and *try it*. The result would be success and the rest follows. Claim 1 was obvious. (Emphasis added)

The Ontario court, having reviewed the decision, concludes at page 80:

There appears, however, to be a significant difference in the abilities of the English hypothetical skilled technician and the Canadian one. Indeed, making inquiries or testing, seems to be something outside the ken of the notional Canadian skilled technician.

The court further holds at page 81:

Thus, although one would normally imagine that this mythical person's laboratory is filled with mythical test tubes and Petri dishes and that his or her daily life is spent in experimentation, for the purposes of this legal exercise, no research of any kind can be contemplated. So, although it may have been logical to an actual skilled person at the time, based on the state of the art, to conduct certain testing, that is not open to the mythical skilled technician. The mythical researcher cannot have an inquiring or thinking mind which ultimately would lead him or her to the answer but rather he or she is expected to instantly and spontaneously exclaim, without more, "I already know the answer and it is obvious". Nor is it appropriate to say that there were significant telltales which pointed the way for the mythical expert or

that there were sufficient clues which made the invention "worth a try"...

The U.K. decisions which utilize the "worth a try" test, therefore, must be treated with great caution... Those U.K. decisions are, therefore, of little assistance in this case.

There is also an important difference between prosecution before the European Patent Office and prosecution in the Canadian Patent office or the United States Patent and Trademark Office. In the European Patent Office there is a post-grant opposition phase which allows third parties to participate in the prosecution proceedings. Article 99 states in part:

Within 9 months from the publication of the mention of the grant of the European patent, any person may give notice to the European Patent Office of opposition to the European patent granted. Notice of opposition shall be filed in a written reason statement. It shall not be deemed to have been filed until the opposition fee has been paid.

Thus, while the European patent is still at the "bundle" stage, third parties can file an opposition to oppose the grant of the patent.

An opposition can be filed on three grounds, which are as follows:

1. Patentability requirements;
2. Requirement of fair disclosure of the invention; and
3. The prohibition of any extension of subject matter of the patent beyond the content of the application as filed.

As noted above, in order for the opposition to be admissible, it must be filed within 9 months from the publication of the mention of the grant of the European patent. The opposition must be filed with "a written reasoned statement". The opposition thus must contain a statement of fact, evidence and arguments in order to support the opposition.

The patentee is then invited by the opposition division to reply to the opposition and, if necessary, to amend the specification. At the discretion of the Opposition Division, the opponent may be provided with an opportunity to comment on the observations and amendments, if any, as filed by the patentee. Proceedings before the opposition division are fairly flexible. Parties may be invited by the Opposition Division to file observations and communications from another party, or from the Opposition Division itself, as deemed necessary, throughout the opposition proceedings.

In principle, the Opposition Division should take a fresh look at each case under opposition. As a result, there may be a reduction in the number of patents that finally are maintained, however, the strength of the patent should improve after having undergone an opposition proceeding.

The outcome of the opposition may be that the patent is revoked. It is also possible that the patent will survive, either in its entirety, or amended to some extent. Any decision of the Opposition Division can be appealed to the Board of Appeal.

In Canada, third parties are allowed to file prior art, which they believe to be relevant to a pending patent application. Third parties are also invited to explain the relevance of the filed prior art. Once a Canadian patent issues, third parties can also file a Request for Ex-examination of the patent.

4.5 Summary

In our review of European practice, there was no indication that there is any difference in the way in which the inventive step is determined for one area of technology in comparison with any other area of technology. The European developed problem-solution approach is used for all types of technology, and thus, the standard of obviousness between technologies does not vary.

As noted previously, as the field of technology develops, the knowledge of the person of ordinary skill in the art will constantly change and, thus, one would expect that the determination of obviousness in the technology will produce different results as the technology develops. This is not to say that the standard will change, but only the factual results will change.

In Europe, as in Canada and in the United States, it is a well-founded principle that the determination of obviousness must be reviewed on a case-by-case basis, each case depends on its own facts. Similarly, the person skilled in the art, the common general knowledge that person brings to the problem and the prior art must be identified on a case-by-case basis.

SUMMARY

In this report, the standard by which obviousness is determined in Canada, the United States and Europe has been reviewed. The way in which inventions are judged is fairly similar between Canada and the United States, whereas the European Patent Office approaches the problem in a substantially different manner.

The determination of obviousness is a factual determination. In all jurisdictions, there must be a determination of the invention, or the problem to which the invention is directed. There must then be an assessment of the prior art, whether it is the closest prior art as considered in European practice, or relevant prior art as determined in Canadian and United States practice. Once the prior art has been identified, it then must be determined whether a person of ordinary skill in the art having knowledge of the prior art, and the common general knowledge which such a skilled person would possess, would consider the invention as non-obvious, or involving an inventive step.

The determination of obviousness is not only a factual determination, but it is also a subjective determination. The Patent examiner, or the Patent Appeal Board, or the judges in the courts, must place themselves in the shoes of this mythical man at the time the invention was made, or at the time at which obviousness is to be judged, and determine whether the advance made in the art is merely a workshop improvement, or the result of an exercise of the inventive faculty. This is not an easy task to perform.

It is well recognized within the field that the standard of non-obviousness must be applied equally from one field of technology to another. A floating standard, or a standard of non-obviousness which is applied differently to different field of technology, would result in great uncertainty. This requirement for a uniform application of the standard of non-obviousness is recognized in Canada, the United States and Europe, and I presume could be extended to other jurisdictions throughout the world if this study were so extended.

In our extensive review of Canadian Court decisions and decisions of the Canadian Patent Appeal Board, it is our conclusion that the criteria used by the Courts and by the Canadian Patent Office, in determining non-obviousness do not differ from one field of technology to another. The test of obviousness, whether it be the *Cripps*¹²⁵ question or the *Cripps* question as applied in the *Beecham Canada Ltd. v. Procter & Gamble Co.*¹²⁶, or more recently in the *Beloit Canada Ltd. v. Valmet OY*¹²⁷ is the same for all fields of technology.

¹²⁵ *Sharpe & Dome Inc. v. Boots Pure Drug Co. Ltd.* (1928) 45 R.P.C. 153 at p. 163

¹²⁶ (1982) 61 C.P.R. (2d) 1 at 27

¹²⁷ (1984) 78 C.P.R. (2d) 1 at 49

What is not constant, and what varies through time and through the development of a technology, is the benchmark to which obviousness/non-obviousness is to be judged. This benchmark is the unimaginative skilled technician, his common general knowledge, and the applicable prior art.

As the technology develops, the skill and the common general knowledge of the ordinary workman in the pertinent art increases. It is this yardstick, against which obviousness/non-obviousness is judged, which changes as the technology develops. Thus, the test for obviousness is still based on the *Cripps* or the modified *Cripps* question, but the general knowledge of the unimaginative skilled technician changes throughout the development of a technology. Furthermore, the literature and the information available to him to determine obviousness (prior art) changes as the field or technology develops. What would appear obvious or non-obviousness to this unimaginative skilled technician will change through the development of the technology.

This point has been accepted by Canadian Courts as discussed, for example, in *Monsanto Co. v. Commissioner of Patents*¹²⁸. As the field of technology develops, so does the knowledge of the unskilled technician and the common general knowledge from which he can draw. A similar conclusion was also reached in a review of the standard of obviousness as applied to chemical patents as the field of chemistry developed. It is our position that the standard does not change throughout the development of the technology, but what changes is the benchmark to which the standard is to be judged. Thus, the benchmark to which the standard of non-obviousness is judged, is a continually evolving benchmark which continues to change as the field of technology develops.

In the United States, there has been great concern expressed regarding the application of the standard of non-obviousness in the United States Patent and Trademark Office, specifically with regards to the emerging technologies of biotechnology and computer related technologies. In these areas, it was generally held that the application of the standard of obviousness was higher than in other areas of technology. There were many reasons given for this imbalance. For example, in these new areas of technology, there is a large body of new examiners, who lack legal training. As a result, it was felt that examiners frequently act as scientific peer reviewers in the biotechnology area, rather than as patent examiners. They often spend more time and effort critiquing the science than examining the patentability question. Inadequate search files in some cases, such as the software area, was also cited as a problem. It is proposed that the main reason for this higher standard of non-obviousness being applied, especially in the biotechnology area, reflects the higher skill that the biotechnology examiners bring with them to their task in determining the question of obviousness. They are perhaps reviewing patent applications not through the eyes of the unimaginative skilled technician, but through their own eyes, thus perhaps defining a higher skill, to the skilled technician than the law dictates. Thus,

¹²⁸ (1979) 42 C.P.R. (2d) 161

it is proposed that the United States patent examiners, in the biotechnology field in particular, are not using the correct yardstick to judge the question of non-obviousness.

In Canada in the biotechnology area, it was found that very few objections on obviousness are raised by the Canadian biotechnology examiners. The biotechnology examiners feel that as this technology is very new, it is difficult to say that an invention is obvious. At the present time the examiners feel that since there is not much known about the field, this field is very unpredictable and, thus, most inventions are considered non-obvious. They, however, recognize that as the field develops there will be an increase in the skill of the ordinary workman, and thus, one would expect to see more obviousness rejections raised by the Canadian biotechnology examiners.

Thus, at present, the Canadian biotechnology examiners have set the skill of the skilled technician and the common general knowledge which he brings with him to assess the invention as very low. The examiners' assessment of the unpredictability of the field, results in a different problem which is not seen in the United States. There is a reluctance by Canadian biotechnology examiners to allow any claims which go beyond the provided examples in an application. The examiners, thus, are attempting to restrict the applicant to the proved utility of their invention, and not its predicted utility. This is contrary to Canadian case law and Canadian practice in other fields of technology. This problem is really a question of sufficiency of disclosure and the definition of "sound prediction" which is outside the scope of the present study and, thus, has not been reviewed in any detail.

Thus, from our review, we could find no evidence of a different standard of obviousness being applied across different fields. In the area of biotechnology, the same standard of obviousness is being applied as in other fields. What does change is the yardstick against which inventions are judged. This yardstick includes the person skilled in the art; the common general knowledge in a particular field of invention which this skilled person brings to the task; and the prior art, against which the person skilled in the art will determine the question of non-obviousness. The level of the skill of a person skilled in the art will vary from one field to another. It will also vary as the field develops. Thus, although the standard of non-obviousness is the same from one field of technology to another, and within a field as the field develops, what varies during the development of technology, is the benchmark to which obviousness/non-obviousness is to be judged. The benchmark is a constantly evolving benchmark which must reflect the facts for each individual case.

RECOMMENDATIONS

It is not considered, as a result of the findings of this study, that a more comprehensive definition of non-obviousness is required. The Canadian judiciary has provided a clear set of guidelines in order to identify the standard in which inventions are to be judged. We could find no evidence that a different standard of non-obviousness being applied across different fields.

The determination of non-obviousness is a fact-based question. The person of ordinary skill in the art, who must address the question of non-obviousness, must be defined for each individual case. Also, the common general knowledge which this person will bring to bear on the question must also be defined. Thirdly, the relevant prior art against which the invention is to be judged, must also be determined. As biotechnology is still an emerging field of technology, there has been a tendency on the part of Canadian biotechnology examiners, in assessing the issue of non-obviousness, to consider the ambit of the common general knowledge in a somewhat more restrictive fashion than has been done in well established fields of technology. It is a recommendation of this report that the Canadian biotechnology examiners ensure that, as the field develops, they adjust the level of the skill of the unskilled technician and his common general knowledge accordingly to ensure that the correct yardstick, against which invention is to be judged, is used.

It is further a recommendation of this report that a more detailed review of the sufficiency of disclosure question and the issue of predicted utility is conducted, specifically with regard to the biotechnology inventions as compared to other inventions in other fields. As noted, at present the Canadian biotechnology examiners believe that the level of predicability in the field of biotechnology is very low. As a result, they are reluctant to allow claims which go outside the scope of the specific examples provided in the patent applications. They, thus, are only willing to allow claims to the proved utility, rather than any predicted utility.

