Patenting Plants Under the Canadian Patent Act

Introduction:

On August 6th, 1998, Monsanto Canada Inc. and Monsanto Company (collectively a.k.a “Monsanto”) filed action in the Federal Court of Canada to restrain Percy Schmeiser and Schmeiser Enterprises Ltd. (collectively a.k.a. “Schmeiser”) from knowingly making, using and selling, all without consent or license, Monsanto’s patented plant genes and cells of Roundup Ready canola plants (Canadian Patent No. 1,313,830). This patent claims plant genes and cells, including those of a canola plant, which have genetically-engineered heightened tolerance to a commonly sold chemical herbicide, glyphosate (a.k.a “Roundup”). The commercial product is called “Roundup Ready” canola. This dispute is currently with the Supreme Court of Canada. At issue is the patent owned by Monsanto (a.k.a. “Roundup patent”), where the Supreme Court will decide whether the Roundup patent includes the entire canola plant or just its genes and cells. This paper will demonstrate why the Supreme Court of Canada’s interpretation of Canadian Patent laws in regards to Roundup patent in Monsanto Canada Inc. and Monsanto Company v. Percy Schmeiser and Schmeiser Enterprises Ltd. is vital to patenting plants in Canada.

In essence, this paper will attempt to answer the question, whether the Roundup patent is for the whole plant or just the plant genes or cells.

Patent Protection in Canada Generally:
The granting of patents is ultimately governed by the Commissioner of Patents pursuant to the Canadian Patent Act (hereinafter the “Patent Act” or the “Act”). The Act indicates that a patent will only be granted for an "invention," which section 2 defines 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.

Therefore, section 2 of the Canadian Patent Act sets forth the criteria for patentability. In order to be patentable, the art, process, manufacture or composition of matter must be considered an “invention.” Once considered an invention under section 2, this invention must be considered “new” and “useful.” The question which arises here is whether the Roundup patent controls the entire plant or simply its genes and cells. If the Roundup patent is interpreted by the Supreme Court of Canada to include control over the entire plant, then as a higher life form a plant cannot be patented under Canadian patent laws, and this patent will be invalid. However, should the Supreme Court of Canada decide that the Roundup patent includes only what it describes, plant genes and cells, the its validity will be sustained. In previous jurisprudence, Harvard College v. Canada (Commissioner of Patents) (a.k.a. “Harvard College”), the Supreme Court of Canada determined that higher life forms, such as animals plants and seeds, are not patentable under the current Act.

“Higher Life Form”: 

The term “higher life form” is not defined in the law. In common usage, it includes plants and non-human animals other than single-celled organisms. In Canada, the Patent Office describes higher life forms as “multi-cellular differentiated organisms (plants, seeds and animals)” and does not consider them to be patentable. In this case, the opposing parties are not disputing the Canadian courts decision not to allow patents for “higher life forms”. Rather this is a dispute about the subject matter of the Roundup patent. More specifically at issue is whether the Roundup Patent is for the whole plant or only for plant genes and plant cells.

**Schmeiser’s Argument:**

Schmeiser contends that the distinction between claims to a whole plant and claims restricted to a plant gene and plant cell makes no appreciable difference. The patent over the plant gene and cell allows Monsanto control over the plant and the seed.

In the Appeals Division, Justice Sharlow opined that the distinction between patent claims relating to the genes and cells is legally distinct from patent claims to the whole plant. Sharlow held that ownership of the plant does not supercede the rights of the patent holder to the gene. Therefore, a patent on the gene can restrict use of the plant and seed. She likened the conflict to one between the conflict to one between the owner of a machine and the owner of a patent to an infringing component of the machine. The owner of the machine can be ordered to remove the infringing component. If the owner cannot do
that, the owner can be ordered to deliver up the entire machine to the patent
holder.16

Schmeiser recognizes Justice Sharlow’s analogy but argues for a different
legal conclusion. If a gene and cell patent operates no differently than a plant
and seed patent, Schmeiser argues, then it is necessary to consider if plants and
seeds can be patented.17 If plants and seeds cannot be patented, because they are
considered “higher life forms”, then neither should genes and cells.18

Justice Sharlow’s analogy, however, contrasts the Commissioner of
Patents reasoning in the Harvard mouse patent. In the Harvard mouse patent,
two inventors from Harvard claimed the process of injecting the cancer-
promoting gene into the mammal and the resulting offspring, highly sensitive to
carcinogens. In reviewing the Harvard mouse patent claims, the Commissioner
found that, in order to be eligible for a patent in Canada, something made must
be under the inventor's control and the resulting product must be consistently
reproducible.19 Consequently, the Commissioner found the inventor's influence
only extended to the inclusion of the cancer-forming gene and thus the
Commissioner only approved claims for the process of inserting the cancer-
promoting gene into the mammal. The Commissioner did not issue the patent
for the Harvard mouse because its inventors lacked "full control over all the
characteristics of the resulting mouse," 20. This lack of full control, the
Commissioner found, proved insufficient to support the patentability of the
product claims.21

Relating the Commissioner’s reasoning in the Harvard mouse patent to
plants, Schmeiser contends that Monsanto’s patent over plant genes and cells is
invalid because Monsanto does not maintain control over the entire canola plant. Moreover, Schmeiser disputes the patent contending that the scope of the Roundup patent is overbroad. By controlling the plant’s genes and cells, Monsanto in effect has indirect control over the canola plant.

**Scope of Higher Life Forms:**

The majority of the Supreme Court of Canada in *Harvard College* determined that higher life forms are outside the definition of an “invention” in Section 2 of the Canadian Patent Act. More specifically, higher life forms are neither a “manufacture” nor a “composition of matter” as those words are to be understood in the Act. The Court classified plants and seeds in the definition of a higher life form. Their reasoning in *Harvard Mouse* for so deciding is based on the fact that plants, like animals, have differentiated cells, including seeds, exhibiting a broad range of size, structure, shape, and function. Furthermore, no human inventive act is required beyond the production of the first modified founder cell to produce a differentiated plant, plant cells, or genes in those cells.

In *Re Application of Abitibi Co. (a.k.a “Abitibi”),* the Patent Appeal Board, with the Patent Commissioner concurring, listed the following as patentable subject matter:

“All micro-organisms, yeasts, moulds, fungi, bacteria, actinomycetes, unicellular algae, cell lines, viruses or protozoa; in fact to all life forms which are produced en masse as chemical compounds are prepared, and are formed in such large numbers, that any measurable quantity possess uniform properties and characteristics.”
Schmeiser indicates that absent from this list are genes and “cells” (as opposed to cell lines). Schmeiser claims the Roundup patent is for a plant cell, and is not restricted to a particular cell line.\textsuperscript{27} Therefore, the claims include all cells found within the canola plant, including pollen cells, seed cells, leaf cells, stem cells, root cells, and the innumerable other cell types within a canola plant.\textsuperscript{28} As a result, Schmeiser alleges, though Monsanto may not have claimed protection for a plant or a seed, its claim over a universal plant cell allows Monsanto to assert its monopoly over every cell found in a plant and the seed.\textsuperscript{29} Based on such an analysis, Schmeiser maintains that it would not matter which cell of the plant has the patented DNA, if the DNA is present in any cell, that cell infringes and so does the plant in which it is found.\textsuperscript{30} Therefore, Schmeiser concludes, the subject matter of the Roundup patent is not patentable because without reference to a particular cell line, the claim can apply not only to the founder cell, but also to all the differentiated cells of the plant derived from the founder cell, and indeed, to all the progeny of the plants crossed with the differentiated plant.\textsuperscript{31}


Schmeiser points out that Justice Bastarache, writing for the majority in Harvard College, was persuaded that the PBRA\textsuperscript{32} was passed in recognition that the Patent Act was “not tailored to plants due to their unique characteristics.”\textsuperscript{33} Protection for plants, Schmeiser argues, is therefore to found within the special statutory scheme of the PBRA and not the Patent Act.\textsuperscript{34} This reasoning gives
Schmeiser a complete defense to infringement because if protection for plants falls within the PBRA, and not the Act, Monsanto’s patent will be invalid. As a result, Schmeiser would have been allowed to save and sow seeds from the canola plant, as long as the progeny are not sold as commercial propagating material.35

**Monsanto’s Argument:**

In the present case, Monsanto argues, there exists a patent allowed by the Commissioner of Patents, containing claims similar to those allowed by the Commissioner in *Harvard College*.36 An issued patent, such as the one here Monsanto argues, is entitled to a presumption that it is valid. Therefore, Monsanto notes that the onus here is different than in *Harvard College*. In *Harvard College*, the onus was on the person seeking those particular claims to persuade the Commissioner of Patents that they were proper, and, having been turned down, to persuade the Courts.37 Here, a patent has been allowed, the onus rests on Schmeiser to demonstrate that the Commissioner and the lower Courts were wrong in issuing the patent.38

**Subject Matter of the Patent:**

In *Harvard College*, the majority of the Supreme Court of Canada determined that the Commissioner of Patents was correct in rejecting the product claims (claims 1 through 12) sought to be patented: “higher life forms”, such as a mouse, were not proper subject matter for a patent as the current Canadian Patent Act stands.39
Monsanto contends that Schmeiser impermissibly attempts to broaden the scope of the patent at issue beyond its claims, which are expressly confined to plant genes, plant cells expressing those genes and transformation methods. On its face, the Roundup patent does not claim whole plants. The majority decision in *Harvard College* does not support the conclusion that plant genes, plant cells, and transformation methods are unpatentable subject matter. Thus, Monsanto asserts their patent claims as written and allowed by the Commissioner are proper.

Furthermore, even if one accepts Schmeiser’s argument that the Roundup patent effectively claims whole plants, nothing in *Harvard College* supports the conclusion that whole plants are unpatentable subject matter. The majority, Monsanto claims, simply concluded that the transgenic mouse which was the subject of Harvard’s patent application was a “higher life form” and therefore unpatentable. Monsanto urges that the *Harvard College* decision by the Supreme Court of Canada rests on the Court’s concern about permitting a patent on sentient mammal – a class that includes human beings. No such concerns arise if the patents extend to plant genes, plant cells or, indeed, whole plants, so says Monsanto.

**Scope of the Patent:**

In *Harvard College*, the Supreme Court of Canada recognized that since at least 1982 there has been a history of recognizing that certain “lower life forms” have been patented in Canada. As previously pointed out in the Schmeiser
argument, in *Abitibi*, the Patent Appeal Board allowed a patent indicating that its decision would apply to all...

“all micro-organisms, yeasts, moulds, fungi, bacteria, actinomycetes, unicellular algae, cell lines, viruses or protozoa; in fact to all life forms which are produced en masse as chemical compounds are prepared, and are formed in such large numbers, that any measurable quantity possess uniform properties and characteristics.”\(^{48}\)

Almost a century ago, the Supreme Court of Canada recognized that the term “composition of matter”, as it appears in the Canadian Patent Act, was capable of a broad meaning.\(^{49}\) Monsanto alleges that this definition includes chemical compositions, as well as mechanical.\(^{50}\) It is some composition upon which some directing intelligence has been brought to bear.\(^{51}\)

In *Re Application for Patent of Connaught Laboratories* (a.k.a “Connaught”), the Patent Appeal Board concluded that cell lines derived from “higher life forms” were patentable.\(^{52}\) Moreover, in *Harvard College*, all nine members of the Supreme Court of Canada found that the fertilized, genetically altered oncomouse egg, which ultimately developed into the mouse, was an invention which was proper subject matter for the grant of a patent.\(^{53}\) As a result, Monsanto argues that their invention, plant genes and cells, is analogous to the patentable, genetically altered oncomouse egg in *Harvard College*. The difference here is ultimately the plant cells develop into canola plants. Accordingly, Monsanto maintains, their Roundup patent should remain valid.

*Protection Under Plant Breeders Rights Act or Patent Act:*
The majority in *Harvard College* did not conclude that the statutory protection for plants is limited to the PBRA.\textsuperscript{54} In fact, as was made clear in the majority’s discussion on the point in *Harvard College*, Monsanto points out, the PBRA protects advancements and improvements in plant varieties obtained through cross-breeding techniques as distinct from genetic engineering wherein the genetic code is altered by human intervention.\textsuperscript{55} The majority decision in *Harvard College* cannot be properly construed to deny patents to inventions which fundamentally change, at level of the genetic code, characteristics of plants.\textsuperscript{56} Therefore, Monsanto asserts the majority decision does not preclude the patentability of plant cells and genes.

Furthermore, the PBRA does not preclude patentability of plant cells and genes or whole plants.\textsuperscript{57} The Patent Act and PBRA compliment each other and protect different beneficial results of human ingenuity.\textsuperscript{58} They were intended to, and do, co-exist. For example, in *Pioneer Hi Bred Ltd v. Canada (Commissioner of Patents)* (a.k.a “Pioneer Hi-Bred”), the Supreme Court of Canada held that the Commissioner correctly rejected a patent application claiming a new variety of soybean resulting from artificial cross-breeding and selection, because it could not be sufficiently disclosed by depositing a seed sample.\textsuperscript{59} This Court recognized that, in cross-breeding, there is human intervention in the reproduction cycle but not intervention which alters the actual rules of reproduction, which continues to obey the laws of nature.\textsuperscript{60} This Court further distinguished cross-breeding from genetic engineering which requires a change in the genetic code affecting all the hereditary material – the human intervention occurring inside the gene itself.\textsuperscript{61} Consequently, Monsanto argues that they
should be afforded protection under the Patent Act because their invention required human intervention inside the plant gene itself.

**Conclusion:**

This case is currently with the Supreme Court of Canada and many people are eagerly awaiting the Court’s decision. Even though the majority of the Supreme Court of Canada recognized in *Harvard College* that there is a distinction between “higher life form” and “lower life form”, they did not indicate where the line between them might exist.\(^6\)\(^2\) The crux of this case falls on whether the Court decides that the Monsanto patent is for the whole plant or just the plant genes and cells. If the Court rules that the patent, claiming only plant genes and cells, controls the whole plant then Monsanto will lose this patent because, as this Court ruled in the *Harvard College*, plants are fall within the scope of “higher life forms” and thus are unpatentable.\(^6\)\(^3\) However, if the Supreme Court of Canada rules that the Roundup patent only includes the plant genes and cells it is fair to assume that this Court will uphold the patent’s validity, as they did with the oncomouse egg (claims 13 through 26) in *Harvard College*.\(^6\)\(^4\)

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2. Respondents Monsanto Canada Inc. and Monsanto Company’s Memorandum of Fact & Law to the Supreme Court of Canada at 2.


4. *Monsanto Canada Inc. and Monsanto Company* Memorandum of Fact & Law in the Supreme Court of Canada at 1.
5 Id.


11 Appellants Percy Schmeiser and Schmeiser Enterprises Ltd.’s Factum to the Supreme Court of Canada at 11.

12 Id.

13 Id.

14 Id.

15 Id.

16 Id.

17 Id. at 12.

18 Id.

19 Id. at 564-65.

20 Id.


23 Id.

24 Id.

25 Id.

26 *Re Application of Abitibi Co.* (1982), 62 C.P.R. (2d) 81 (Com’r Pat) at 89.

27 Appellants Percy Schmeiser and Schmeiser Enterprises Ltd.’s Factum to the Supreme Court of Canada at 15.

28 Id.

29 Id.

30 Id.
31 Id. at 16 and 17.


34 Appellants Percy Schmeiser and Schmeiser Enterprises Ltd.’s Factum to the Supreme Court of Canada at 14.

35 Id. at 13 (footnote 1).

36 Respondents Monsanto Canada, Inc. and Monsanto Company’s Factum to the Supreme Court of Canada at 29.

37 Id.


39 Harvard College v. Canada (Commissioner of Patents.), 2002 S.C.C 76

40 Respondents Monsanto Canada, Inc. and Monsanto Company’s Factum to the Supreme Court of Canada at 30.

41 Harvard College v. Canada (Commissioner of Patents.), 2002 S.C.C 76

42 Respondents Monsanto Canada, Inc. and Monsanto Company’s Factum to the Supreme Court of Canada at 30.

43 Id.

44 Harvard College v. Canada (Commissioner of Patents.), 2002 S.C.C 76

45 Respondents Monsanto Canada, Inc. and Monsanto Company’s Factum to the Supreme Court of Canada at 30.

46 Id.


50 Respondents Monsanto Canada, Inc. and Monsanto Company’s Factum to the Supreme Court of Canada at 31.

51 Id.


Respondents Monsanto Canada, Inc. and Monsanto Company’s Factum to the Supreme Court of Canada at 32.

Id.

Id.

Id.


Id.

Id.

Id.

Respondents Monsanto Canada, Inc. and Monsanto Company’s Factum to the Supreme Court of Canada at 32.


Id.