

# Franklin Barley: Patent Law and Plant Breeders' Rights

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## [INTRODUCTION](#)

1. Historically, the patent system has been ill-adapted to plant varieties. Plant breeders first sought protection under the industrial patent system. However, a number of technical difficulties were encountered in seeking to apply the rules of a system designed to protect technical inventions to plant varieties, which were thought not to precisely reproduce themselves, and whose appearance can vary depending upon the environment in which they are grown. Margaret Llewelyn observes:

There were two main reasons why the patent system was seen as inappropriate. First, plant material was not regarded as capable of meeting the requirements of novelty, inventive step and disclosure. Secondly, it was not thought to be in the public interest to permit such an extensive monopoly over plant varieties, given their communal importance. Underlying this was the view that it was desirable to retain, in so far as it was possible, the tradition of free exchange of new plant material between plant breeding institutes. This would ensure the widest possible dissemination and use of the new combinations of genetic information.[1]

2. For these reasons, it was decided to introduce a special form of protection which would be designed to support a specific industry, the plant variety right. The International Convention for New Plant Varieties was adopted in 1961 and an international system for the protection of plant breeder's rights was established.[2]
3. However, the scope of patentable subject matter expanded, slowly and incrementally until it covered plants. Bernard Edelman provides a history of intellectual property and biotechnology.[3] The French barrister and philosopher argues that there has been a move from a strict prohibition against the patenting nature towards a range of recent decisions allowing the patenting of living matter. Bernard Edelman argues that there has been a progressive accommodation of biotechnology within the legal system. He summarizes the stages of this passage as follows:

Life has been integrated into the market as easily as could be imagined because it has been a progressive process. It started with something that was symbolically far removed from mankind, the vegetable domain; from there it passed to the micro-organism, then to the most rudimentary forms of animal life, like the oyster. The whole of the animal kingdom is now targeted and we are on the verge of the human, weighed down with precedents which ensure the closure of the system and make any resistance difficult. The work of man, which must be remunerated, claims repayment from the whole realm of nature which has traditionally been free of any property claims.[4]

4. Bernard Edelman traces the evolution of the law through key moments in the United States legislation. The Plant Patent Act 1930 (US) distinguishes between 'products of nature' and 'human-made inventions'. The Plant Variety Protection Act 1970 (US) extends the category of an artificial nature to the reproducibility of plants. The decision of *Diamond v Chakrabarty* determined that genetically engineered organisms are either a manufacture or a composition of matter and are therefore patentable.[5] From single-celled organisms, the line then passes through genetically engineered plants to oysters and transgenic animals - like oncomouse. Bernard Edelman has recently elaborated upon his views on the patenting of genes and gene sequences.[6] He has argued that the contemporary developments over the

- commercialisation of the human genome have raised basic questions as to whether the human species is no more than a product to be used and exploited.
5. This paper considers how superior courts in a number of jurisdictions have interpreted the relationship between patent law and plant breeder's rights in light of developments in modern biotechnology. It looks at the range of discourses - including history, constitutional law, intellectual property law, science, economics and international law. Part 1 considers the High Court case of *Grain Pool of Western Australia v the Commonwealth*.<sup>[7]</sup> It contrasts the historical methodology of the joint judgment to dealing with plant breeder's rights with the futuristic approach employed by Justice Kirby in dealing with new scientific and technological developments. Part 2 examines the significance of the Supreme Court of the United States in *JEM Ag Supply Inc v Pioneer Hi-Bred International Inc*.<sup>[8]</sup> The majority of the court held that utility patents could be granted in respect of plants in addition to plant patents and plant variety rights. The minority of Justice Breyer and Justice Stevens were concerned about the potential for conflict between the various schemes of intellectual property protection for plants. Part 3 considers the implications of the decision in *Harvard College v The Commissioner of Patents*.<sup>[9]</sup> Justice Bastarache for the majority held that there was no express legislative authority to grant patents in respect of higher life forms - including plants, animals, and human beings. By contrast, Justice Binnie for the minority argued that the patent system did include higher life forms in light of other developments. The decision in the oncomouse case will undoubtedly have an important bearing on the appeal in the case of *Percy Schmeiser v Monsanto*.<sup>[10]</sup>

### **FEDERATION WHEAT: GRAIN POOL OF WESTERN AUSTRALIA V COMMONWEALTH**

6. In *Grain Pool of Western Australia v Commonwealth*, the plaintiff, the Grain Pool of West Australia, challenged the constitutional validity of the *Plant Variety Rights Act 1987 (Cth)* and its successor, the *Plant Breeders' Rights Act 1994 (Cth)*.<sup>[11]</sup>
7. The plant breeders' rights in dispute in this case concerned Franklin Barley.<sup>[12]</sup> The breeder was W A Vertigan of the Department of Primary Industry, Tasmania, Mount Pleasant Laboratories, Tasmania. "Franklin" originates from the controlled pollination of "Shannon" by "Triumph" carried out at Launceston, Tasmania in 1981. These followed three generations of single plant selection, based on disease tolerance, other agronomic characters and uniformity of type. This variety is distinct from all other known varieties in having the following combination of characters: the Yd 2 gene for tolerance to barley yellow dwarf virus; intermediate growth habit; long and white flag leaves; strongly pigmented flag leaf auricles; very late maturity; long 2 row heads of medium to lax density; short thick straw; a shallow saucer-shaped rachis stem collar; a depressed type lemma; and many long awns of uniform length along the rachilla. The commercial value of Franklin Barley was that it was a malting barley variety that is used in some beers, including James Boag and Cascade, and is exported to brewers in China, Japan and South Africa. Most of those who use the barley pay Tasmania a royalty through the State's agent, South Australian company Cultivaust Pty Ltd.

8. The case had its origins an earlier dispute between Cultivaust and the Grain Pool of Western Australia.<sup>[13]</sup> In 1991 Cultivaust entered into negotiations with Pool. Cultivaust provided Franklin barley to Grain Pool for the limited purpose of growing trials and malting evaluation. Further negotiations occurred in May 1992 with a view to a permanent licensing arrangement, but no concluded agreement was reached. However, it is said that Pool used the barley provided and other information to exploit the barley in Western Australia. It is said that this was an infringement of the applicants' rights under the plant breeder's rights legislation, a breach of the limited licence granted by Cultivaust, a breach by Grain Pool of a fiduciary duty allegedly owed to Cultivaust arising out of the circumstance of negotiations and a breach by Pool of a duty of utmost good faith owed by Grain Pool to Cultivaust.
9. In response, the Grain Pool of Western Australia maintained that the legislation was not supported by the intellectual property power under s 51 (xviii) of the Constitution, because plant breeders' rights did not fall within the constitutional definition of "Copyrights, patents of inventions and designs, and trade marks". Furthermore, the plaintiff argued that the legislation was not supported by the external affairs power under s 51 (xxix) of the Constitution because it was not a matter of international concern and the relevant treaty, the International Convention for the Protection of New Varieties of Plants 1991, had not been ratified.
10. The first defendant, the Commonwealth, in support of the legislation, relied upon s 51 (xviii) and s 51 (xxix) of the Constitution. The defendant, Cultivaust, a grain merchant and trader, maintained that it was a licensee from Tasmania, which had the exclusive right to sell and export Franklin barley; and claimed that the plaintiff, by selling within Australia and in exporting Franklin barley, had acted in breach of its rights. The States of Western Australian and Tasmania also intervened.

### **Joint Judgment**

11. The joint judgment - undoubtedly written by the intellectual property specialist, Justice Gummow - held that the Plant Variety Rights Act 1987 (Cth) and the Plant Breeder's Rights Act 1994 (Cth) were valid under the intellectual property power of the Constitution.<sup>[14]</sup> It relied upon a number of sources of authority, including historical studies into the development of intellectual property, constitutional law, and a fine, close reading of the legislation and the case law dealing with plant breeder's rights. The joint judgment concluded that plant variety rights do indeed belong within the ambit of "patents of invention" in the intellectual property power.
12. The High Court considered the meaning of the intellectual property power under the Constitution, which empowers the Commonwealth to make laws with respect to "Copyrights, patents of inventions and designs, and trade marks". The High Court reviewed the judicial authorities dealing with intellectual property and constitutional law. There was one notable instance of legislation being struck down by the High Court for exceeding the limits of s 51 (xviii), that being the Union Label case dealing with workers' marks.<sup>[15]</sup> The majority of Chief Justice Griffith, and Justices O'Connor and Barton held that an essential requirement of a trade mark is a trade or business connection between the owner of the trade mark and the goods to which a mark is fixed.

The minority of Justices Higgins and Isaacs dissented that the workers' marks were supported by the intellectual property power. There have been a number of decisions concerning the copyright power - such as *Australian Tape Manufacturers Association Ltd v Commonwealth*,<sup>[16]</sup> dealing with taxation, and *Nintendo v Centronics Systems*,<sup>[17]</sup> concerning the circuit layout provisions and acquisition of property on just terms. However, there have been no judicial decisions regarding the meaning of "patents of inventions and designs".

13. There was some academic comment which supported a narrow interpretation of the intellectual property power. In 1995, the constitutional law academic George Williams cast doubt over whether the intellectual property power would accommodate new technologies and scientific developments:

It may be questioned whether the Constitution, as drafted in the 1890s, makes adequate provision for the regulation of intellectual property by the Commonwealth in the 1990s. It is arguable that the Constitution, which was drafted before the first powered flight, let alone space flight, is not able to serve the needs of regulating such areas of intellectual property as genetically engineered animals and plants. More subtly, developments in the law and an emerging perception in the twentieth century of 'intellectual property' may have outstripped the constitutional framework.<sup>[18]</sup>

14. Similarly, Geraldine Chin argued that the High Court lacked a clear conceptual framework to deal with the technology provisions under the Australian Constitution.<sup>[19]</sup> She was sceptical whether even a purposive approach would shed much light on whether contemporary developments came within the meaning of the intellectual property power.<sup>[20]</sup> However, in hindsight, such conservative expectations about judicial interpretation and hermeneutics were not well-founded.
15. The judges in *Grain Pool of Western Australia v Commonwealth* were moved by the stronger impulse to take a flexible attitude to dealing with new technologies and scientific developments. The joint judgment endorses the dissenting judgment of Justice Higgins in the *Union Label* case. It comments:

These words do not suggest, and what follows in these reasons does not give effect to any notion that the boundaries of the power conferred by s 51 (xviii) are not to be ascertained solely by identifying what in 1900 would have been treated as a copyright, patent, design or trade mark. No doubt some submissions by the plaintiff would fail even upon the application of so limited a criterion. However, other submissions, as will appear, fail, because they give insufficient allowance for the dynamism which, even in 1900, was inherent in any understanding of the terms used in s 51 (xviii).<sup>[21]</sup>

They emphasize that what might answer the description of an invention for the purpose of that section will reflect changes in technology.<sup>[22]</sup>

16. The joint judgment of the High Court relies upon a number of historical studies into the development of intellectual property.<sup>[23]</sup> It emphasizes that the formulation of the intellectual property power in the Australian Constitution reflected the crystallisation of the legal categories and schema of intellectual property, which had developed in the United Kingdom in the nineteenth century. The joint judgment of the High Court highlights the recognition of plant variety inventions in 1900. They cite with approval the historical overview of Justice Rich in the United States Court of Appeal case, *Imazio Nursery Inc. v Dania Greenhouses*:

At least as early as 1892, legislation was proposed to grant patent rights for plant-related inventions. Plant patent legislation was supported by such prominent individuals as Thomas Edison who stated that "nothing that Congress could do to help farming would be of greater value and permanence than to give the plant breeder the same status as the mechanical and chemical inventors now have through the law". It was also supported by Luther Burbank, a leading plant breeder of the day... whose widow stated that her late husband 'said repeatedly that until Government made some such provision [for plant patent protection] the incentive to create work with plants was slight and independent research and breeding would be discouraged to the great detriment of horticulture'.<sup>[24]</sup>

Justice Callinan emphasized in the legal proceedings that there was a similar enthusiasm for the protection of plant breeding in Australia.<sup>[25]</sup> Such comments were incorporated into the final joint judgment, with the note: "Such views would have been at the time apposite to the position of Australian wheat breeders such as William Farrer, whose Federation cultivar of wheat was named in 1901."<sup>[26]</sup>

17. The High Court considers the evolution of common law and statute law. The joint judgment revisits the watershed Australian case of the *NRDC v the Commissioner of Patents*, and notes the concession of the plaintiff that the decision does not present any intrinsic impediment to the patentability of plant varieties.<sup>[27]</sup> The High Court has no compunction about following United States precedents.<sup>[28]</sup> The joint judgment endorses the decision of the majority of the Supreme Court of the United States in the case of *Diamond v Chakrabarty*:

The decision in *Chakrabarty* was that live, human-made, micro-organisms were patentable subject matter within the statutory requirement of an invention or discovery in the Patents Act 1952 (US) as being 'any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof'. However, in the judgment of the Supreme Court of the United States, reference was made to the enactment in 1930 of the Plant Patent Act (US), which afforded patent protection to certain asexually produced plants, and to the 1970 Plant Variety Protection Act (US), which authorised

the grant of patents for certain sexually reproduced plants, but excluded bacteria from its protection. That court pointed out that, prior to 1930, the belief that plants, even those artificially bred, were products of nature for the purposes of the patent law was thought to remove plants from the possibility of patent protection. However, the Supreme Court stressed that, in enacting the 1930 statute, Congress had explained at length its belief that the work of the plant breeder 'in aid of nature' was patentable invention. Sexually reproduced plants had not been included in the 1930 legislation because new varieties could not then be reproduced true-to-type through seedlings. By 1970, it had been generally recognised that true-to-type reproduction was possible and that patent protection was therefore appropriate.[\[29\]](#)

18. However, there is no discussion of the dissenting judgment of Justice Brennan in *Diamond v Chakrabarty*,[\[30\]](#) which took the contrary view that the existence of the Plant Patent Act 1930 (US) and the Plant Variety Protection Act 1970 (US) suggested that the Patent Act 1952 (US) was not intended to cover plant material. This contrary argument was endorsed by a minority of the Supreme Court of the United States in *JEM Ag Supply v Asgrow*[\[31\]](#) and the majority of the Supreme Court of Canada in the recent case of *Harvard College v the Commissioner of Patents*.[\[32\]](#)
19. The High Court addressed the argument of the plaintiff that the operation of the intellectual property power under s 51 (xviii) of the Constitution with respect to patents of invention is limited by what it identifies as certain traditional principles of patent law. In particular, it submits that there are certain fixed minimum requirements for the "intellectual effort" required of inventors respecting novelty and inventive step, that there is a crucial distinction between product and process claims, and the term 'patent' involves certain limitations as to exclusivity. The High Court engaged in a close reading of the Plant Variety Rights Act 1987 (Cth) and the Plant Breeder's Rights Act 1994 (Cth). They consider the threshold criteria for plant breeders' rights - distinctiveness, uniformity, and stability - which are known colloquially as the DUS requirements.[\[33\]](#) The High Court ruled that plant variety rights do indeed belong within the ambit of "patents of invention". They argue that the plant breeders' rights regime features essential characteristics of the patent regime. The High Court observes: "A plant variety having those characteristics is an invention in the constitutional sense and the statute secures the benefit of the invention by conferral of particular exclusive rights to control production of other plants with the same essential characteristics".[\[34\]](#) The High Court observe that a "plant breeder" is equivalent to an "inventor"; and that a "plant variety" is like the patent notion of "an invention". They comment that the requirement of "distinctiveness", "uniformity" and "stability" under plant breeders' rights is equivalent to "novelty" and "inventive step" under patent law. Similarly, the notion of common knowledge is like prior art under patent law. The requirement of "recent exploitation" is analogous to the patent rules with respect to secret use.[\[35\]](#)

20. Finally, the High Court rejected the submission of the Grain Pool of Western Australia that the rights conferred by the Plant Variety Rights Act 1987 (Cth) and the Plant Breeder's Rights Act 1994 (Cth) amounted to rights "by way of positive authority to sell and export the protected variety". It held that plant variety rights and plant breeder's rights are negative rights, like those found under patent law, which give the rights-holder the power to exclude others from using the particular plant material. The Grain Pool of Western Australia had a basic misunderstanding of the nature of intellectual property rights. The organisation laboured under the misapprehension that the powers granted under state legislation - the Grain Marketing Act 1975 (WA) - trumped federal laws regarding intellectual property.

### **Justice Kirby**

21. Justice Kirby also held that the Plant Variety Rights Act 1987 (Cth) and the Plant Breeder's Rights Act 1994 (Cth) were valid. His Honour reached this conclusion not on the basis of the meaning of s 51 (xviii) of the Constitution according, or even by reference, to the accepted understandings of the terms used in 1900. Justice Kirby instead interpreted the meaning of the phrase "patents of inventions", in its "really essential characteristics" as understood in a constitutional context in Australia today. He emphasized the need to be conscious of the future scientific, technological, and international developments.
22. Justice Kirby considers the debate in constitutional law over the scope of the intellectual property power. His Honour rejects the decision of the majority of the High Court in the Union Label case dealing with workers' marks.<sup>[36]</sup> He provides several reasons why this approach should no longer be observed as a criterion for constitutional elaboration of s 51 (xviii) of the Constitution. His Honour prefers the decision of Justice Higgins in that particular case. Justice Kirby comments:

Although it is sometimes helpful, in exploring the meaning of the constitutional text, to have regard to the debates in the Constitutional Conventions that led to its adoption and other contemporary historical and legal understandings and presuppositions, these cannot impose unchangeable meanings upon the words. They are set free from the framers' intentions. They are free from the understandings of their meaning in 1900 whose basic relevance is often propounded to throw light on the framers' intentions. The words gain their legitimacy and legal force from the fact that they appear in the Constitution; not from how they were conceived by the framers a century ago.<sup>[37]</sup>

Justice Kirby concludes that the court must characterise the limits of the legislative power over "patents", "trade marks" and copyright law" by identifying the "really essential characteristics" of the notion referred to. His Honour observes: "What constitute such 'really essential characteristics' may grow and expand, or may contract over time. But the key to finding the meaning is not to be discovered in the statutes and case books before and at

1900 or in the inventions of the framers of the Constitution adopted immediately before and given effect in that year."[\[38\]](#)

23. Justice Kirby takes the futuristic view that the legislative powers provided for under the Australian Constitution should be read in such a way as to promote scientific innovation and technological development. He maintains that the objects of the intellectual property power would be destroyed if the notions of "copyright, patents of inventions and designs and trade marks" were limited to their meaning in 1900. Justice Kirby rhapsodizes:

A universal feature of the twentieth century has been the dynamic progress and momentum of science and technology. The principal inventions of the century, which include flight, applied nuclear fission, informatics and biogenetics were all undiscovered, and for the most part unconceived, in 1900. Yet the Constitution certainly envisaged that the Commonwealth was entering an age of special technological inventiveness. So much can be seen in the specific provision of the post and telecommunications power in such wide terms.[\[39\]](#)

24. Justice Kirby refers to Lawrence Lessig's book, *Code And Other Laws Of Cyberspace*, as a general source of authority for a discussion of intellectual property and constitutional law.[\[40\]](#) The joint judgment provides a qualified endorsement of the codified vision of the constitutional power regarding intellectual property. They seem to rely heavily upon historical accounts of intellectual property. By contrast, the judgment of Justice Kirby seems to adopt a transformative approach. He focuses upon the future developments of technology and science.
25. Justice Kirby considers developments in the United States - including the *Diamond v Chakrabarty* decision.[\[41\]](#) His Honour notes that the Supreme Court of the United States initially took a narrow construction the intellectual property power under the American Constitution in order to promote the development of the public domain and the freedom of competition. However, Justice Kirby comments that this view was superseded by a broader conception of intellectual property power:

The advent of biogenetically engineered organisms and of inventions in the field of information technology have stimulated an apparently increased willingness on the part of United States courts to recognise the way in which patents and analogous forms of legal protection can sometimes encourage technological innovation to the economic and social benefit of the United States and beyond. The specific inclusion of s 51 (xviii) in the Australian Constitution affords a further reason for assigning to s 51 (xviii) a meaning that permits the protection of "products of intellectual effort" in the variety in which such products now manifest themselves and the even greater variety in which they can be expected to appear in the future. [\[42\]](#)

26. Parenthetically, Justice Kirby observes that there has been some discussion of copyright protection in relation to the field of biotechnology: "The provision of copyright protection of genetically modified organisms had certainly not been contemplated before 1900. This is for the very good reason that the science and technology of genetic modification was unknown at that time. It is unnecessary now to decide whether copyright law does or could extend to genetically modified organisms. It is sufficient to note the issue is one of lively intellectual debate".<sup>[43]</sup> The debate is most acute in relation to the protection of scientific and genomic databases.<sup>[44]</sup>
27. Unlike the joint judgment, Justice Kirby does not dwell upon the text of the Plant Variety Rights Act 1987 (Cth) and the Plant Breeder's Rights Act 1994 (Cth). His Honour nevertheless questioned counsel in oral argument about the range of exceptions available under patent law and plant breeder's rights. Mr Bennett replied that the exceptions for plant breeder's rights are "necessary and appropriate in relation to a self-propagating product".<sup>[45]</sup> The barrister elaborates upon the nature of farmers' privileges - "the farmer can plant the seed and grow them and the farmer can use the surplus seed each year to regrow and one can regrow as often as the farmer likes but, if he or she sells the product, that is all right but the seed cannot be sold for the purpose of reproduction".<sup>[46]</sup> Mr Bennett suggests that there would have to be "a different range of exceptions than one has in relation to a mouse trap".<sup>[47]</sup> He notes that the exclusive rights in relation to patents are not absolute - they are subject, for instance, to the compulsory licensing provisions. Such discussions about exceptions to plant breeder's rights do not obtain the same prominence as in the counterpart cases in the United States of America and Canada. Nonetheless, the relationship between patent law and exceptions under plant breeders' rights has since become the subject of political debate in Australia.<sup>[48]</sup>
28. Justice Kirby addresses the relationship between intellectual property rights and freedom of speech. If a criticism is to be made of the High Court, it is not that it has struck down legislation, which exceeds the scope of the intellectual property power, it is that it has failed to address the interaction between intellectual property and freedom of communication. Justice Kirby observes in an oblique footnote:

The protection of intellectual property rights must be afforded in a constitutional setting which upholds other values of public good in a representative democracy. In the United States the relevant head of constitutional power has been viewed as containing in-built limitations many of which are derived from the competing constitutional object of public access to information. In Australia the constitutional setting is different but the existence of competing constitutional objectives, express and implied, is undoubted.<sup>[49]</sup>

29. Australian academic Brian Fitzgerald has lauded this statement as a "landmark footnote".<sup>[50]</sup> He speculates upon the implications of this marginalia: "This reasoning suggests that doctrines such as copyright misuse, which has emerged in the United States in the context of the new technologies, may have relevance in Australia. It also opens up a space for arguments concerning the

balancing of copyright, fair dealing and free speech, as well as arguments relating to the constitutional power to enact database rights".<sup>[51]</sup> This discussion of intellectual property and freedom of speech is not applied, though, in the context of agriculture and biotechnology. There has been some international debate as to whether farmers rights should be properly conceived of as a form of human rights related to food security.<sup>[52]</sup>

30. Justice Kirby was sensitive to the international dimensions of the case. The main problem was that the Federal Government had not ratified the UPOV Convention 1991. Justice Kirby was sensitive to the ironies of the Tasmanian Government arguing that the Federal Parliament is able, in exercise of the external affairs power, to legislate in relation to matters which are of international concern to Australia. His Honour quipped: "This is a somewhat different view of the power that was advanced by the Tasmanian State in the Tasmanian Dam Case."<sup>[53]</sup> In the end, the High Court found it unnecessary to consider the application of the power of parliament in s 51 (xxix) of the Constitution with respect to external affairs. Nonetheless, Justice Kirby elaborated:

Full argument was heard on the external affairs power. The position so far as that source of constitutional validity of the federal laws is complicated by revision of the applicable international convention and by the fact that Australia had not, at the time the matter was argued before the court, subscribed to the convention as altered in 1991.<sup>[54]</sup>

He concluded that "it would suffice for the Commonwealth and Cultivaust to support the federal laws by reference to the patents power alone. This would leave the question of the ambit of the external affairs power in respect of the subject matter of an international treaty to be elucidated in a future case where such elucidation was essential".<sup>[55]</sup> Justice McHugh raised concerns about the High Court validating international treaties being captured by special interests.<sup>[56]</sup> This discussion raises the larger question of the external affairs power and treaty-making in relation to intellectual property.

31. Extra-judicially, Justice Kirby has expressed support for sui generis protection of biotechnological inventions in a number of forums. His Honour observed in his role as a rapporteur of the UNESCO Committee on Ethics and Intellectual Property:

The Committee furthermore wants to look into the need to extend the intellectual property rights approach. Many applications, needs and expectations in this field cannot be accommodated within the framework of intellectual property as it is currently defined. In some cases, responses to such requests for protection could stem from a development of the intellectual property approach. In others, intellectual property could be made to evolve towards the definition of new sui generis schemes tailored to the subject matter to be protected, ie genetic resources, along the lines of previous developments aiming to protect plant varieties. One could also contemplate

extending intellectual property by adapting existing schemes so as to include, to the largest extent possible, subject matter that is currently not covered.[57]

32. Justice Kirby has considered whether there is a need for sui generis protection of biological inventions. His Honour has been willing to contemplate that it might have been better if special legal regimes had been created to deal with the novel intellectual property questions presented by genomics.[58]

### **Sui Generis Regimes**

33. The decision of the High Court lays to rest some of the fears that intellectual property legislation would be vulnerable to constitutional challenges. Jill McKeough and Andrew Stewart, for instance, complained: "This formula has the disadvantage of being limited to those forms of protection which were familiar at the turn of the century, preventing expansions in traditional areas, certainly precluding the adoption of entirely new regimes".[59]
34. Such a pall has been lifted by the High Court decision. It seems that there will be no constitutional obstacles to the introduction of legislation dealing with subject matter on the outer limits of intellectual property - such as certification trade marks, databases, publicity rights, and the so-called "neighbouring rights", "performers' rights".[60]
35. In light of this decision, there does not seem to be quite the same urgency to implement the recommendation of the Australian Constitutional Commission that s 51 (xviii) be amended to enable the Commonwealth to legislate for: "Copyright, patents of inventions and designs, trade marks, and other like protection for the products of intellectual activity in industry, science, literature, and the arts".[61] The High Court has given a clear signal that it will interpret the intellectual property power in a broad and flexible fashion.

### **FIRST THE SEED: JEM AG SUPPLY V PIONEER HI-BRED INTERNATIONAL INC**

In the case of JEM Ag Supply Inc v Pioneer Hi-Bred International Inc, the Supreme Court of the United States considered whether utility patents can be granted in respect of plants.[62]

36. Pioneer Hi-Bred International Inc had obtained 17 utility patents for its inbred and hybrid corn seed products. It sold the patented hybrid seed to merchants and growers under a limited licence, the terms of which only permitted the production of grain and forage from that seed and prohibited re-sale and use of that seed for propagation, seed multiplication or the production or development of a new hybrid or variety. The value of such hybrid seeds was emphasized in the legal action.
37. Hybrid seeds are produced by crossing two inbred corn plants and are especially valuable because they produce strong and vibrant hybrid plants with selected highly desirable characteristics. For instance, Pioneer's hybrid corn plant 3394 is "characterized by superior yield for maturity, excellent seedling vigor, very good roots and stalks, and exceptional stay green." [63] Hybrid plants, however, generally do not reproduce true-to-type, i.e., seeds produced

- by a hybrid plant do not reliably yield plants with the same hybrid characteristics. Thus, a farmer who wishes to continue growing hybrid plants generally needs to buy more hybrid seed.<sup>[64]</sup>
38. JEM Ag Supply Inc. - trading as Farm Advantage - bought patented seed from Pioneer under such a licence and resold it. Pioneer brought proceedings against Farm Advantage alleging patent infringement. In reply, Farm Advantage counter-claimed that Pioneer's patents were invalid, because sexually reproducing patents were not patentable subject-matter.
  39. The District Court granted summary judgment to Pioneer, relying on a broad construction of the decision in *Diamond v Chakrabarty* in finding that utility patents covered plant life. It found that in enacting the [Plant Patent Act 1930 \(US\)](#) and the [Plant Variety Protection Act 1970 \(US\)](#). Congress had not expressly or impliedly removed plants from the scope of patent protection. The United States Court of Appeals affirmed this decision. JEM Ag Supply appealed to the Supreme Court of the United States.
  40. For the petitioners, the Corn Growers Association and the National Farmers Union expressed their concerns about the potential impacts of utility patents upon agriculture - in particular upon genetic erosion, plant uniformity, and the exchange of information and germplasm. They were also alarmed that the expansion of intellectual property rights would result in a consolidation of the seed industry, and undermine traditional farming practices of saving seed. Malla Pollack and other law professors also supported the case of JEM Ag Supply.
  41. For the respondents, a number of amicus curiae supported the submission of Pioneer Hi-Bred International. Corporate firms such as Monsanto and Delta and Pine Land Company argued that utility patents should be granted in respect of plants. Trade organisations like the American Crop Protection Association, the American Seed Trade Association, and the Biotechnology Industry Association also stressed the importance of general patent protection in respect of agriculture and biotechnology. Furthermore law groups such as the American Intellectual Property Law Association and the American Bar Association supported the case of the respondent. Finally, the United States Government lent its support to Pioneer Hi-Bred International.

### Justice Thomas

42. Justice Thomas delivered the opinion of the majority of the United States Supreme Court, in which Chief Justice Rehnquist and Justices Kennedy, Souter and Ginsburg joined. His Honour engaged in a historical review of the Plant Patent Act 1930 (US), the Plant Variety Protection Act 1970 (US), and *Diamond v Chakrabarty*.<sup>[65]</sup> and concluded that utility patents could be granted in respect of plant subject matter. Justice Scalia concurred with this position in a separate judgment.
43. Justice Thomas cites Jack Kloppenburg's groundbreaking book *First The Seed*, a social history of plant breeding and agricultural biotechnology.<sup>[66]</sup> The University of Wisconsin academic must be one of the few Marxists to be cited with approval by the Supreme Court of the United States. The book has been amazingly influential - surprisingly so, given its socialist bent. His work is widely cited amongst critics of biotechnology such as Richard Hindmarsh.<sup>[67]</sup> This lyricism of the writing carries the reader along - the descriptions of the

author gardening are charming. The subtitle of the book "The Political Economy of Plant Biotechnology 1492-2000", is somewhat portentous, especially given the book was written in 1988. The Marxist argument that intellectual property rights allow for the commodification of plants is somewhat unrelenting and distorting in its determinism. Nevertheless, the book contains some important insights into the historical development of plant patents and plant breeder's rights in the United States.

44. Justice Thomas alludes to the historical origins of intellectual property protection of plants. There were a number of legislative models proposed for protecting plants, which were modelled on trade mark law, unfair competition, patent law, and sui generis systems.<sup>[68]</sup> Kloppenburg comments upon the impetus for this legislation:

The Morrill Act of 1862 was intended, in the words of the legislation, to "assure agriculture a position in research equal to that of industry." Seedsmen were painfully aware that this was not the case. Private cereal and fruit breeders began calling for establishing of a plant patent system as early as 1885. A proposal that a committee of experts should be empowered to recommend new varieties of appropriate quality for patent registration was rejected in 1901 by the American Pomological Society as "socialistic"... Legislators were not ready to countenance proprietary rights to genetic information.<sup>[69]</sup>

45. Justice Thomas notes: "Furthermore, like other laws protecting intellectual property, the plant patent provision must be understood in its proper context. Until 1924, farmers received seed from the Government's extensive free seed program that distributed millions of packages of seed annually".<sup>[70]</sup> His Honour observes, citing Kloppenburg: "In 1930, seed companies were not primarily concerned with varietal protection, but were still trying to successfully commodify seeds. There was no need to protect seed breeding because there were few markets for seeds".<sup>[71]</sup>
46. Justice Thomas comments upon the significance of the United States Congress passing the Plant Patent Act 1930 (US).<sup>[72]</sup> This provided a special form of protection, which was limited to asexually reproduced varieties of plants which did precisely reproduce themselves and called a plant patent. Justice Thomas maintained that the Plant Patent Act 1930 (US) does not limit the scope of utility patents. His Honour noted: "Whatever Congress may have believed about the state of patent law and the science of plant breeding in 1930, plants have always had the potential to fall within the general subject matter of s 101, which is a dynamic provision designed to encompass new and unforeseen inventions".<sup>[73]</sup> Justice Thomas considered how Congress passed the Plant Variety Protection Act 1970 (US) in an effort to harmonise with a number of European countries which protected plant breeder's rights under sui generis legislation. This legislation provided protection to developers of novel, sexually reproduced plants. Kloppenburg observes of the impact of the legislation:

It bears repeating that the PVPA is less a research act than a marketing act. If there is inefficient redundancy of research

effort in American plant breeding, it would seem to be in the private, not the public, sector. The PVPA has also facilitated the elaboration of a social division of labor in which public research has been progressively subordinated to private interests. The evident demise of public varietal release removes the disciplinary effect that public breeders had exerted on the seed market and eliminates constraints on existing trends to concentration, rising prices, and genetic uniformity.<sup>[74]</sup>

47. Justice Thomas held that the Plant Variety Protection Act 1970 (US) did overlap with utility patents, but the conflicts were not irreconcilable. His Honour observed: "It is much more difficult to obtain a utility patent for a plant than to obtain a plant variety certificate because a utility patentable plant must be new, useful, and non-obvious".<sup>[75]</sup> Justice Thomas therefore deduced: "Because of the more stringent requirements, utility patent holders receive greater rights of exclusion than the holders of a PVP certificate. Most notably, there are no exceptions for research or saving seed under a utility patent."<sup>[76]</sup>
48. Justice Thomas denies that granting utility patents in respect of plants will render the exceptions under plant breeder's rights obsolete. He acknowledges that the Plant Variety Protection Act 1970 (US) also contains exemptions for saving seed and for research. A farmer who legally purchases and plants a protected variety can save the seed from these plants for replanting on his own farm.<sup>[77]</sup> In addition, a protected variety may be used for research.<sup>[78]</sup> The utility patent statute does not contain similar exemptions. In footnote number 12, Justice Thomas denies that utility patents will undercut farmer's rights and the breeders' exception:

The dissent argues that our "reading would destroy" the PVPA's exemptions. Yet such bold predictions are belied by the facts. According to the Government, over 5,000 PVP certificates have been issued, as compared to about 1,800 utility patents for plants. Since 1985 the PTO has interpreted § 101 to include utility patents for plants, and there is no evidence that the availability of such patents has rendered the PVPA and its specific exemptions obsolete.<sup>[79]</sup>

His Honour maintains that the Plant Variety Protection Act 1970 (US) continues to co-exist happily alongside the system of utility patents.

49. Justice Thomas stressed that the language in *Diamond v Chakrabarty* was extremely broad and noted that the Court explicitly rejected the argument in that case that Congress must expressly authorize protection for new patentable subject matter.<sup>[80]</sup> Chief Justice Burger delivered the opinion of the majority of the Supreme Court of the United States *Diamond v Chakrabarty*.<sup>[81]</sup> His Honour maintains that there is nothing in the language or the history of the Plant Patent Act 1930 (US) and the Plant Variety Protection Act 1970 (US) to suggest that the Patent Act 1952 (US) does not include living organisms. Chief Justice Burger puts forward corroborating evidence - for instance, finding that the patent office had previously granted in patents in respect of yeast and

living micro-organisms as a manner of manufacture. His Honour dismisses conflicting evidence - such as the statement by United States Secretary of Agriculture Hyde in 1930 that "the patent laws... at the present time are understood to cover only inventions or discoveries in the field of inanimate nature".[\[82\]](#)

50. Famously, Chief Justice Burger stressed that it was not the role of the court to entertain policy arguments about the effects of patents:

The choice we are urged to make is a matter of high policy for resolution within the legislative process after the kind of investigation, examination, and study that legislative bodies can provide and courts cannot. That process involves the balancing of competing values and interests, which in our democratic system is the business of elected representatives. Whatever their validity, the contentions now pressed on us should be addressed to the political branches of the Government, the Congress and the Executive, not the courts.[\[83\]](#)

51. Justice Thomas is sympathetic towards such sentiments about dealing with the balancing of competing policy interests. His Honour gives short shrift to the arguments made in the amicus curiae submissions - such as by the Corn Growers Association, the National Farmers Union, and the coalition of law professors.

### **Justice Breyer and Justice Stevens**

52. Dissenting, Justice Breyer and Justice Stevens held that the two specific plant statutes - namely the Plant Patent Act 1930 (US) and the Plant Variety Protection Act 1970 (US) - embodied a legislative intent to deny coverage under the Utility Patent Statute to those plants covered in existing legislation.
53. Justice Breyer and Justice Stevens seek to determine the original intent of the Plant Patent Act 1930 (US). They observe that the legislation provides patent protection for any person "who has invented or discovered and asexually reproduced any distinct and new variety of plant, other than a tuber-propagated plant". It is particularly helpful to those breeders who reproduced plants through grafts - such as, say, apple trees. Justice Breyer and Justice Stevens observe:

Given these characteristics, the PPA is incompatible with the claim that the Utility Patent Statute's language ("manufacture, or composition of matter") also covers plants. To see why that is so, simply imagine a plant breeder who, in 1931, sought to patent a new, distinct variety of plant that he invented but which he has never been able to reproduce through grafting, i.e. asexually. Because he could not reproduce it through grafting, he could not patent in under the more specific terms of the PPA.[\[84\]](#)

54. Justice Breyer and Justice Stevens consider whether such a breeder could nonetheless patent the plant under the more general Utility Patent Statute

language "manufacture, or composition of matter". They conclude: "Even a prescient court would have had to say, as of 1931, that the 1930 Plant Patent Act had, in amending the Utility Patent Statute, placed the subject matter of the PPA - namely, plants - outside the scope of the words 'manufacture, or composition of matter'".<sup>[85]</sup>

55. Justice Breyer and Justice Stevens argue that nothing in the history, language or purposes of the Plant Variety Protection Act 1970 (US) suggests an intent to enlarge and expand the scope of patentable subject matter:

The PVPA proved necessary because plant breeders became capable of creating new and distinct varieties of certain crops, corn, for example, that were valuable only when reproduced through seeds--a form of reproduction that the earlier Act freely permitted. Just prior to its enactment a special Presidential Commission, noting the special problems that plant protection raised and favoring the development of a totally new plant protection scheme, had recommended that "[a]ll provisions in the patent statute for plant patents be deleted ...."<sup>[86]</sup>

Instead Congress kept the PPA while adding the PVPA.<sup>[87]</sup>

56. The judges note that it is an interesting quirk of history that the United States should have both plant patents and plant variety protection. They observe that the Plant Variety Protection Act 1970 (US) gave protection to plants reproduced by seed, and it excluded the requirement that a breeder have "asexually reproduced" the plant. It imposed certain specific requirements - notably that the variety must be new, distinct, uniform, and stable. Furthermore, the Plant Variety Protection Act 1970 (US) also created two important exceptions - the farmer's right and the breeder's research exception.
57. The two judges were concerned that the expansion of utility patents to include plant subject matter would undermine the exceptions provided for under the Plant Variety Protection Act 1970 (US):

Why would anyone want to limit the exemptions - related to seedplanting and research - only to those new plant varieties that are slightly less original? Indeed, the research exemption would seem to be more useful in respect to more original, not less original, innovation. The Court has advanced no sound reason why Congress would want to destroy the exemptions in the Plant Variety Protection Act that Congress created. And the Court's reading would destroy those exemptions.<sup>[88]</sup>

58. The judges were conscious that the defence of farmers' privilege had been read down and limited in a previous Supreme Court of the United States decision. In *Asgrow Seed Company v Winterboer*, the respondents contended that they were entitled to a statutory exemption from liability under s 2543, which provides that a farmer may save seed and use such saved seed in the production of a crop for use on his farm, or for sale for reproductive purposes.<sup>[89]</sup> The majority of the Supreme Court of the United States held that a farmer who meets the requirements set forth in s 2543's proviso may sell

for reproductive purposes only such seed as he has saved for the purpose of replanting his own acreage. It found that the respondents were not eligible for the exception because their planting and harvesting were conducted as "a step in marketing". However, Justice Stevens dissented that Congress intended to preserve the farmer's right to engage in so called 'brown-bag' sales of seed to neighbouring farmers. His Honour believed that Congress would have used a term such as "sale" if they intended the farmer's privilege exemption to have a narrow operation.

59. Justice Breyer and Justice Stevens argue that the decision in *Diamond v Chakrabarty* does not control the outcome in the case, because its impact is limited to micro-organisms.<sup>[90]</sup> They champion the dissenting judgment of Justice Brennan in that case. In *Diamond v Chakrabarty*, Justice Brennan maintained that the scope of patentable inventions did not include living organisms.<sup>[91]</sup> His Honour comments that the Patent Act 1952 (US) should be read in light of the Plant Patent Act 1930 (US) and the Plant Variety Protection Act 1970 (US):

In this case, however, we do not confront a complete legislative vacuum. The sweeping language of the Patent Act of 1793 as re-enacted in 1952, is not the last pronouncement Congress has made in this area. In 1930 Congress enacted the Plant Patent Act affording patent protection to developers of certain asexually reproduced plants. In 1970 Congress enacted the Plant Variety Protection Act to extend protection to certain new plant varieties capable of sexual reproduction... These Acts strongly evidence a congressional limitation that excludes bacteria from patentability.<sup>[92]</sup>

60. Justice Brennan draws two findings from the existence of such legislation. First, he infers that the legislation is evidence that Congress was of the understanding that the Patent Act 1952 (US) did not include living organisms. Second, he notes that Congress had specifically addressed bacteria in the Plant Variety Protection Act 1970 (US), saying that it was excluded from the scope of protection. Justice Brennan concludes: "It is the role of Congress, not this Court, to broaden or narrow the reach of the patent laws. This is especially true where, as here, the composition sought to be patented uniquely implicates matters of public concern".<sup>[93]</sup>
61. Finally, Justice Breyer and Justice Stevens emphasized that the majority wrongly relied upon the canon of implied repeal:

Those who write statutes seek to solve human problems. Fidelity to their aims requires use to approach an interpretive problem not as if it were a purely logical game, like a Rubik's Cube, but as an effort to divine human intent that underlies the statute. Here that effort calls not for an appeal to canons, but for an analysis of language, structure, history, and purpose. Those factors make clear that the Utility Patent Statute does not apply to plants. Nothing in *Chakrabarty* holds to the contrary.<sup>[94]</sup>

### Legal Hybrids

62. Mark Janis and Jay Kesan comment in *Nature Biotechnology* [95] that the decision of the Supreme Court in *JEM Ag Supply v Pioneer Hi-Bred International* leaves a number of issues unresolved:

As fundamental as the JEM decision may be, the Supreme Court confronted only one relatively narrow issue of patent acquisition in JEM. It will now fall to the lower courts to work out how numerous other issues of patent law doctrine apply to patents, and to Congress to consider broader policy issues concerning the relationship among IP regimes for plants. [96]

Janis and Kesan raise a number of outstanding questions - such as the protection of non-obvious plants; patent infringement via pollen drift, plant breeding research and seed saving; and the enforceability of technology user agreements.

63. In the wake of the Supreme Court decision, Mark Janis and Jay Kesan consider whether there remains a meaningful long-term role for plant variety protection under the Plant Variety Protection Act 1970 (US). [97] The authors expect that plant breeder's rights will diminish in importance relative to utility patent protection at least in some sectors of the plant breeding industry:

Whereas plant variety protection was initially designed as the primary (or even exclusive) form of intellectual property protection for seed-grown plants, the coming of plant biotechnology, and the dawning acceptance of utility patents for plants, has relegated plant variety protection to a secondary role. Modest statutory amendments to the PVPA have shown no real promise of lifting the PVPA up from this secondary status. [98]

64. Nonetheless, the authors believe that the Plant Variety Protection Act 1970 (US) will not disappear altogether because of the international obligations of the United States under the UPOV Convention. They argue that the legislation will still fill a niche role, because plant breeder's rights protection is cheaper to obtain than is utility patent protection, and may facilitate branding and marketing. Nonetheless, the authors have doubts about the viability of sui generis systems of intellectual property: "Our thirty-year PVP experience suggests that narrow, Swiss-Cheese like, intellectual property protection does not promote excludability and, consequently, does not permit appropriability". [99]
65. Charles McManis also questions the appropriateness of future experimentation with sui generis intellectual property rights. [100] He applies J.H. Reichman's studies of legal hybrids between the patent and copyright paradigms, citing his comment: "Tinkering with the dominant paradigms or concocting hybrid variants lacking any solid theoretical or economic foundations merely aggravates the long-term disutilities resulting from a progressive inability of ancillary liability rules to mediate effectively between legal incentives to create and free competition". [101] McManis concludes that reformers should

instead elaborate upon existing dominant forms of intellectual property - such as patent protection.

66. The status of plant breeders' rights has been derided by the tendency to prioritise patents and copyright over all other forms of intellectual property. Sherman and Bently argue that the classical model of J.H. Reichman is pervasive but historically inaccurate:

This bipolar model, which is embodied in the Berne and Paris Conventions, shapes both the way contemporary law is understood and the way the history of intellectual property is written. Indeed for some, the ontological reality of intellectual property law is only imaginable through this single, privileged system of representation.[\[102\]](#)

67. As such, there should be room for sui generis intellectual property regimes, which are hybrids of the dominant regimes of patent law, trade mark law, and copyright law.

### **ONCOMOUSE: HARVARD COLLEGE V COMMISSIONER OF PATENTS**

68. In Harvard College v Canada (Commissioner of Patents), the Supreme Court considered an appeal against the decision of the Full Federal Court that the Harvard oncomouse was patentable subject matter under Canadian law.[\[103\]](#)
69. The Harvard oncomouse has an active oncogene in order to give it a genetic disposition to develop cancerous tumours and hence be a better laboratory animal for testing new anti-cancer drugs and therapies.[\[104\]](#) The transgenic animal has been the subject of great public controversy in a number of jurisdictions.[\[105\]](#) The litigation surrounding the Harvard oncomouse has attracted much academic debate.[\[106\]](#)
70. Harvard College sought to protect the process by which oncomice are produced and the end product of that process - the founder mice and the offspring whose cells are affected by the oncogene. The patent examiner refused to accept the claims that pertained to transgenic mammals as the products of the invention. The Commissioner of Patents in Canada refused to grant a patent for the product claims in 1995. The Federal Court of Canada dismissed an appeal by Harvard College on April 21, 1998.[\[107\]](#) The judge decided that a transgenic mammal is not truly reproducible because too much is left to chance, including the chromosomal location of the transgene, and the degree of transgene expression. Consequently, the judge concluded that the transgenic mammal was not sufficiently reproducible to be a "composition of matter" or an "article of manufacture" under the Patent Act 1985 (Can). Harvard then appealed its case to the Canadian Federal Court of Appeal.
71. On the 3rd August 2000, the majority of the appellate court determined that the oncomouse was a composition of matter and sent the case back to the Commissioner of Patents with the direction to grant a patent on the transgenic animal claims.[\[108\]](#) In the name of the Commissioner of Patents, the Attorney General of Canada filed an application to seek appeal to the Supreme Court of Canada. On June 14, 2001, the Supreme Court of Canada granted the application for appeal.

72. A number of submissions were made to the Supreme Court of Canada from friends of the court. The amicus curiae included religious groups such as the Canadian Council of Churches and the Evangelical Fellowship of Canada, environment organisations like Greenpeace Canada and the Canadian Institute for Environmental Law and Policy, and animals' rights activists such as the Animal Alliance of Canada, the International Fund for Animal Welfare, and Zoocheck Canada.
73. The Supreme Court of Canada ruled by a five to four majority that the Harvard oncomouse was not patentable subject matter.<sup>[109]</sup> The majority consisted of judges trained in the civil law tradition - including Justices Bastarache, Gonthier, Iacobucci, L'Heureux-Dube, and Le Bel. The minority was composed of judges with a background in the British common law - including Chief Justice McLachlin, and Justices Binnie, Major and Arbour dissenting. The division between the judges represented major ideological differences as to the patenting of biotechnological inventions. It is worth considering the discussion of the protection of plant varieties and agricultural patents in the decision. A comprehensive discussion of this case is beyond the scope of this article.

### **Justice Bastarache**

74. Justice Bastarache emphasizes that Parliament must give an express legislative direction to authorise the patenting of higher life forms:

Patenting higher life forms would involve a radical departure from the traditional patent regime. Moreover, the patentability of such life forms is a highly contentious matter that raises a number of extremely complex issues. If higher life forms are to be patentable, it must be under the clear and unequivocal direction of Parliament. For the reasons discussed above, I conclude that the current Act does not clearly indicate that higher life forms are patentable. Far from it. Rather, I believe that the best reading of the words of the Act supports the opposite conclusion - that higher life forms such as the oncomouse are not currently patentable in Canada.<sup>[110]</sup>

75. Justice Bastarache indicates that there are also a number of reasons why Parliament might want to be cautious about encouraging the patenting of higher life forms - such as plants, seeds, animals, and human beings. In his view, whether higher life forms such as oncomouse ought to be patentable is a matter for Parliament to determine. However, Justice Bastarache affirms that it is acceptable to engage in the patenting of lower life forms - like bacteria, yeast, and moulds. His Honour observes that "it is far easier to analogize a micro-organism to a chemical compound or other inanimate object than it is to analogize a plant or an animal to an inanimate object".<sup>[111]</sup>
76. Justice Bastarache assumes that the distinction between lower and higher life forms is defensible on the basis of "common sense" differences between the two. However, this judgment has been criticised for its vagueness and arbitrariness.<sup>[112]</sup> William Leiss, for instance, says acerbically: "There is no place in the book of DNA for such brittle categories as 'higher' and 'lower' life

forms. This is a metaphysical or religious distinction, not a scientific one".[\[113\]](#)

77. Justice Bastarache considered whether the words "manufacture" and "composition of matter", within the context of the Patent Act 1985 (Can), are sufficiently broad to include higher life forms such as "inventions". He engages in statutory interpretation to determine the meaning of these key words. Justice Bastarache observes that biological inventions cannot be analogized with mechanical works: "With respect to the meaning of the word 'manufacture' (fabrication), although it may be attributed a very broad meaning, I am of the opinion that the word would commonly be understood to denote a non-living mechanistic product or process".[\[114\]](#) His Honour adds that "composition of matter" does not include a higher life form such as oncomouse. Justice Bastarache maintains that such a literal interpretation of the Patent Act 1985 (Can) is supported by the higher policy objectives of the legislation:

This conclusion is supported by the fact that the patenting of higher life forms raises unique concerns which do not arise in respect of non-living inventions and which are not addressed by the scheme of the Act. Even if a higher life form could, scientifically, be regarded as a "composition of matter", the scheme of the Act indicates that the patentability of higher life forms was not contemplated by Parliament. Owing to the fact that the patenting of higher life forms is a highly contentious and complex matter that raises serious practical, ethical and environmental concerns that the Act does not contemplate, I conclude that the Commissioner was correct to reject the patent application. This is a policy issue that raises questions of great significance and importance and that would appear to require a dramatic expansion of the traditional patent regime. Absent explicit legislative direction, the Court should not order the Commissioner to grant a patent on a higher life form.[\[115\]](#)

78. Justice Bastarache agrees that the definition of "invention" is broad enough to encompass unforeseen and unanticipated technology. However, he disagrees with the suggestion that the definition is unlimited in the sense that it includes "anything under the sun that is made by man".[\[116\]](#) The decision reflects concerns about the patenting of gene therapy, germline treatments, stem cell research, and human cloning.[\[117\]](#)
79. Justice Bastarache maintains that the existence of the [Plant Breeders' Rights Act 1990 \(Can\)](#) is relevant to the issue of whether Parliament intended higher life forms to be patentable under the Patent Act 1985 (Can):

Far more significant, in my view, is that the passage of the Plant Breeders' Rights Act demonstrates that mechanisms other than the Patent Act may be used to encourage inventors to undertake innovative activity in the field of biotechnology. As discussed above, the Plant Breeders' Rights Act is better tailored than the Patent Act to the particular characteristics of plants, a factor which makes it easier to obtain protection. The

quid pro quo is that a narrower monopoly right is granted. For example, the monopoly right relates only to the propagating material (the seed and the cuttings) and not to the actual plant. As explained by Derzko,<sup>[118]</sup> "[t]his is done because, unlike inert objects that are patentable, and unlike unicellular organisms that replicate into exact copies of each other, higher organisms such as plants start off from a cell and then grow and differentiate into a complete plant". <sup>[119]</sup>

80. Justice Bastarache cites the opinion of the Minister of Agriculture Honourable Donald Mazankowski that the Plant Breeders' Rights Act 1990 (Can) was passed to accommodate the special characteristics of crossbred plants as self-reproducing higher life forms while at the same time striking an appropriate balance between the holder of the monopoly right and others: "The legislation is designed to deal with the complexities of the issue and that is why we have chosen this route rather than to amend the Patent Act." <sup>[120]</sup> His Honour concludes that the special regime for plant breeder's rights provided a model for sui generis protection of biological inventions.
81. Justice Bastarache comments that there is a need to reform the patent system to include defences in respect of agricultural biotechnology:

Two of the issues addressed by the Canadian Biotechnology Advisory Committee (farmers' privilege and innocent bystanders) arise out of the unique ability of higher life forms to self-replicate. Because higher life forms reproduce by themselves, the grant of a patent covers not only the particular plant, seed or animal sold, but also all of its progeny containing the patented invention. In the Canadian Biotechnology Advisory Committee's view, this represents a significant increase in the scope of rights offered to patent holders that is not in line with the scope of patent rights provided in other fields. <sup>[121]</sup>

82. Justice Bastarache emphasizes that there is a need for farmers' privilege provision to be included within the scope of the patent legislation. He envisions that the privilege would permit farmers to collect and reuse seeds harvested from patented plants and to breed patented animals for their own use, so long as these were not sold for commercial breeding purposes. <sup>[122]</sup> Justice Bastarache also stresses the need for a defence of innocent infringement in respect of agricultural biotechnology patents. He recommends that the Patent Act 1985 (Can) contain a provision that would allow the so-called "innocent bystander" to rebut the usual presumption concerning knowledge of infringement in respect of inventions capable of reproducing, such as plants, seeds and animals. <sup>[123]</sup>
83. Finally, Justice Bastrache commented that the special regime for plant breeder's rights provided a model for sui generis protection of biological inventions:

Many of the issues that arose with respect to intellectual property protection for plant varieties also arise when

considering the patentability of other higher life forms (e.g. impact on farmers and on research and development). If a special legislative scheme were needed to protect plant varieties, a subset of higher life forms, a similar scheme may also be necessary to deal with the patenting of higher life forms in general. As noted above, only Parliament is in the position to respond to the concerns associated with the patenting of all higher life forms, should it wish to do so, by creating a complex legislative scheme as in the case of crossbred plants or by amending the Patent Act. Conversely, it is beyond the competence of this Court to address in a comprehensive fashion the issues associated with the patentability of higher life forms.<sup>[124]</sup>

Nonetheless his Honour seems attracted to the development of a special legislative regime to deal with the novel questions of intellectual property raised by biological inventions.

### **Justice Binnie**

84. Justice Binnie wrote the minority opinion on behalf of the dissenting judges. It is a mixture of tenacious argument and eloquent exasperation. In a rebuttal of the arguments of Justice Bastarache, Justice Binnie contends that there is no prohibition on the patenting of higher life forms under the Patent Act 1985 (Can).
85. Emphasizing the commercial and scientific context of intellectual property and biotechnology, Justice Binnie argues that "the massive investment of the private sector in biotechnical research is exactly the sort of research and innovation that the Patent Act was intended to promote".<sup>[125]</sup> His Honour observes that intellectual property rights are an important contributor to financing research and development:

Nevertheless it is indisputable that vast amounts of money must be found to finance biomedical research. It is necessary to feed the goose if it is to continue to lay the golden eggs. The Patent Act embodies the public policy that those who directly benefit from an invention should be asked, through, the patent system, to pay for it, at least in part.<sup>[126]</sup>

There is a range of genetic research that depends upon animal subject matter - especially in relation to model organisms such as drosophilia,<sup>[127]</sup> mice,<sup>[128]</sup> mammals,<sup>[129]</sup> and zebra fish.<sup>[130]</sup> Justice Binnie emphasizes: "One would think it in the public interest to shorten the time and reduce the cost of research designed to minimize human suffering, and to reward those who develop research tools that might make this possible".<sup>[131]</sup> His Honour fears that Canada will be deprived of the benefits of biotechnology if the patenting of higher life forms is banned.

86. Justice Binnie engages in statutory interpretation of the definition of "invention" under the Patent Act 1985 (Can). The key provision is section 2 of

the Patent Act 1985 (Can), which provides that an "'invention' means any new and useful art, process, machine, manufacture, or composition of matter, or any new and useful improvement in any art, process, machine, manufacture, or composition of matter". Justice Binnie facetiously ridicules the majority decision for being too narrow in its interpretation of "composition of matter" and "manner of manufacture":

'Matter' is a most chameleon-like word. The expression 'grey matter' refers in everyday use to 'intelligence' - which is about as incorporeal as 'spirit' or 'mind'... If the oncomouse is not composed of matter, what, one might ask, are such things as oncomouse 'minds' composed of? The Court's mandate is to approach this issue as a matter (that slippery word in yet another context!) of law, not murine metaphysics. In the absence of any evidence or expert assistance, the Commissioner now asks the Court to take judicial notice of the oncomouse, if I may use Arthur Koestler's phrase, as a 'ghost in the machine' but this pushes the scope of judicial notice too far. With respect, this sort of literary metaphor (or its dictionary equivalent) is an inadequate basis on which to narrow the scope of the Patent Act, and thus to narrow the patentability of scientific invention at the dawn of the third Millennium.[\[132\]](#)

Justice Binnie maintains that "manufacture" and "composition of matter" should necessarily include biological inventions. He notes that the tradition of patent jurisprudence has been expansive, not restrictive - citing the opinion of the 1851 text Godson on Patents that the possible objects of "manner of manufacture" are "almost infinite".[\[133\]](#) Justice Binnie argues that the distinction between lower and higher life forms is not axiomatic, counting at least ten possible positions: "With respect, there seems to be as many versions of 'common sense' as there are commentators".[\[134\]](#)

87. Taking an international perspective, Justice Binnie emphasizes that patents have been granted on higher-life forms in comparable jurisdictions. His Honour notes that a patent for the Harvard oncomouse was issued in the United States on the 12 April 1988, and by the European Patent Office on the 13 May 1992. He notes that there is continuing litigation over the Harvard oncomouse in the European Court of Justice.[\[135\]](#) Justice Binnie comments:

The oncomouse has been held patentable, and is now patented in jurisdictions that cover Austria, Belgium, Denmark, Finland, France, Germany, Greece, Ireland, Italy, Luxembourg, The Netherlands, Portugal, Spain, Sweden, the United Kingdom and the United States. A similar patent has been issued in Japan. New Zealand has issued a patent for a transgenic mouse that has been genetically modified to be susceptible to HIV infection. Indeed, we were not told of any country with a patent system comparable to Canada's (or otherwise) in which a patent on the oncomouse had been applied for and been refused.[\[136\]](#)

88. Justice Binnie contends that Canada is out of step with comparable jurisdictions with similar intellectual property legislation. He observes that there is nothing unique about the definition of "invention" in Canadian legislation: "The truth is that our legislation is not unique. The Canadian definition of what constitutes an invention, initially adopted in pre-Confederation statutes, was essentially taken from the United States Patent Act of 1793, a definition generally attributed to Thomas Jefferson".<sup>[137]</sup> Justice Binnie dismisses the objections of anti-globalization groups that the patenting of life forms will disadvantage the interests of developing countries. His Honour concludes that the mobility of capital and technology make it desirable for there to be international harmonisation in relation to intellectual property and biotechnology.
89. Justice Binnie denies that the court should take from the passage in the Plant Breeders' Rights Act 1990 (Can), the negative inference that plants were not intended by Parliament to be patentable under the Patent Act 1985 (Can). Firstly, he argues that there is nothing in the Plant Breeders' Rights Act 1990 (Can) that expressly bars an application under the Patent Act 1985 (Can) which confers much more exclusive and valuable rights. The Plant Breeders' Rights Act 1990 (Can) merely grants protection for 18 years on the sale and propagation for sale of enumerated new plant varieties - cultivars, clones, breeding lines, or hybrids that can be cultivated. Secondly, he maintains that the use of specific terms such as "strain" or "hybrid" would undermine the generality that s. 2 seeks to achieve by use of the term "composition of matter". Thirdly, he maintains that rights acquired under both Acts can live together. He noted that similar arguments about inconsistency were rightly rejected by the United States Supreme Court in *J.E.M. AG Supply Inc. v. Pioneer Hi-Bred International Inc.*<sup>[138]</sup>
90. Justice Binnie acknowledges there has been much scholarly controversy in Canada over the role of intellectual property in biotechnology.<sup>[139]</sup> He notes that there some thoughtful critics suggest that patents in this field may in fact deter rather than promote innovation.<sup>[140]</sup> Justice Binnie recognises that there have been advocates in Canada of the "farmers' privilege" to avoid farmers being subject to patent enforcement in the case of the progeny of patented plants and animals. Others advocate protection for "innocent bystanders" who inadvertently make use of a genetically engineered plant or animal, unaware of its being patented. His Honour argues, though, that such proposals for legislative reform have not been adopted by Parliament to date, and neither the Commissioner of Patents nor the courts have the authority to declare, in effect, a moratorium on life (or "higher" life) patents until Parliament chooses to act: "The respondent is entitled to have the benefit of the Patent Act as it stands."<sup>[141]</sup>
91. Finally, Justice Binnie was unwilling to entertain the policy submissions from amicus curiae who were concerned about the impact of the decision upon animals' rights, the environment and the sanctity of life. His Honour stressed:

In this appeal, however, we are only dealing with a small corner of the biotechnology controversy. The legal issue is a narrow one and does not provide a proper platform on which to engage in a debate over animal rights, or religion, or the arrogance of the human race.<sup>[142]</sup>

92. Justice Binnie notes that Parliament may instead wish to regulate the creation and use of higher life forms outside the framework of the Patent Act 1985 (Can). He observes: "Even a partial listing of the possibilities demonstrates why it should occasion no surprise that such regulatory structures are not crammed into the Patent Act, which has always had the more modest and focussed objective of simply encouraging the disclosure of the fruit of human inventiveness in exchange for the statutory rewards."[\[143\]](#) Such comments echo the admonitions of Justice Burger in *Diamond v Chakrabarty* against judicial dabbling in matters of politics and ethics.[\[144\]](#)

### Percy Schmeiser Case

93. Justice Binnie argued that the Commissioner of Patents was inconsistent in opposing the Oncomouse patent in respect of a transgenic animal, when supporting the Monsanto patent in relation to round-up ready canola: "While refusing to issue a patent for a higher animal life form in this case, the Commissioner has issued patents under the Patent Act for higher plant life forms: see, e.g., Canadian Patent 1,313,830 issued February 23, 1993 for "Round-up Ready Canola", a genetically modified plant, recently before the courts in *Monsanto Canada Inc. v. Schmeiser*."[\[145\]](#)
94. Justice Binnie alludes to recent litigation between the biotechnology company Monsanto and a Saskatchewan canola farmer called Percy Schmeiser.[\[146\]](#) Monsanto were granted a Canadian patent for an invention named "Glyphosate-Resistant Plants". The patent was for "man-made genetically engineered genes, and cells containing those genes which, when inserted in plants, in this canola, make those plants resistant to glyphosate herbicides such as Monsanto's product Roundup. Monsanto claimed that Percy Schmeiser planted glyphosate-resistant seeds to grow a crop of canola, for harvest, having a gene or cell that is the subject of the plaintiff's patent. It claimed that the defendants used, reproduced, and created genes, cells, plants and seeds containing the genes and cells claimed in the plaintiff's patent.
95. Justice Mackay of the Federal Court found that, on the balance of probabilities, the appellants had infringed a number of the claims under the respondents' patent by planting, in 1998, without leave or licence, canola fields with seed saved from the 1997 crop which was known, or ought to have been known by the appellants to be Roundup tolerant and, when tested, was found to contain the gene and cells claimed under said patent.[\[147\]](#) The trial judge held that the growing and sale of Roundup tolerant canola by the defendants infringed the exclusive rights of the plaintiffs to use the patented gene and cell.
96. Citing the Canadian decision of *Pioneer Hi-Bred v Canada* (Commissioner of Patents)[\[148\]](#) and the United States decision of *Pioneer Hi-Bred International Inc. v J.E.M. Ag Supply Inc.*[\[149\]](#) Justice Mackay discussed the dual relationship between the Plant Breeder's Rights Act 1990 (Can) and the Patent Act 1985 (Can) in Canada:

In my opinion the Plant Breeder's Rights Act was not intended to, and by its terms it does not, preclude registration under the Patent Act of inventions that relate to plants, and that may lead to new varieties or characteristics of plants. The plaintiffs point to a similar issue raised under United States' statutes of the

same general nature which was resolved in an analogous manner. The court there concerned found no conflict in the application of the patent and plant breeders' legislation in that country.[150]

97. The Full Federal Court held that Percy Schmeiser knew or should have known that those plants were glyphosate resistant when he saved their seeds in 1997 and planted those seeds the following year.[151] It was the cultivation, harvest and sale of the 1998 crop that made Percy Schmeiser vulnerable to Monsanto's infringement claim.
98. The Supreme Court of Canada has agreed to hear an appeal against the judgment of the Federal Court in Percy Schmeiser v Monsanto.[152] The judgment of the Full Federal Court has been thrown into doubt by the majority opinion of Justice Bastarache in Harvard College v Canada (Commissioner of Patents).[153] The supporters of the farmer are hopeful that the superior court will overturn the past judgments. Nadège Adam, a biotechnology campaigner for the Council of Canadians, said:

We are very confident that the Supreme Court will do the right thing by reversing the Federal Court of Canada's decision, and exonerating Mr. Schmeiser and all farmers. The Oncomouse case last December demonstrated how inadequate the federal patenting legislation is vis-à-vis genetic engineering.[154]

This appeal of Percy Schmeiser has undoubtedly been strengthened by the recent decision made in relation to the transgenic animal oncomouse.

99. However, Monsanto remain confident of victory in the Supreme Court of Canada. Trish Johnson, a spokesperson for Canada Monsanto, said:

We were hopeful the unanimous decision of the Federal Court of Appeal would have put an end to unnecessary and costly legal action in this case. However, we look forward to the opportunity to complete the final stage of the legal process and are confident the decision of the Federal Court of Appeal will be upheld once the Supreme Court has had the opportunity to review evidence in the case.[155]

100. The case of Monsanto has some new hope. There has been a new appointment to the Supreme Court of Canada. Justice Morris Fish has replaced one of the judges who was in the majority in Harvard College v Canada (Commissioner of Patents).[156] This Jewish anglophone criminal lawyer from Quebec remains an unknown quantity in matters of intellectual property. His judgment will prove to be decisive in the outcome of the appeal of Percy Schmeiser.

### **The Canadian Biotechnology Advisory Committee**

101. The decision of the Supreme Court of Canada in Harvard College v Canada (Commissioner of Patents) will undoubtedly have wider implications

for the patenting of plants, animals, and human genes in the jurisdiction of Canada.<sup>[157]</sup> The judgment has alarmed many in the biotechnology industry. The lawyers for Harvard College, David Morrow and Colin Ingram of the Ottawa firm Smart and Biggar, said: "There is no rational basis for interpreting the definition of 'invention' in a manner which excludes higher life forms from patentability".<sup>[158]</sup> The patent holder Harvard College was understandably disappointed by the outcome of the case:

The Court's disappointing narrow decision leaned on technical aspects of a 19th century patent law and is counter to the recommendations made earlier this year by the Canadian government's own biotech committee. As the Court did, we would encourage the Canadian Parliament to reconsider this issue.<sup>[159]</sup>

102. The president of BIOTEC Canada, Janet Lambert, was livid at the decision, contending that it was bad news for the Canadian biotechnology community and consumers. She said: "This decision stops our pursuit of knowledge and innovation dead in its tracks. It is a great loss to Canada at both the social and economic level".<sup>[160]</sup> There has been a push in industry for the Canadian government to pass legislation to provide parliamentary sanction for the patenting of higher life forms.
103. However, other commentators have been pleasantly surprised by the decision of the Supreme Court of Canada. Professor Martin Phillipson of the University of Saskatchewan welcomed the judgment: "I am not anti-biotech or some sort of Neo-Luddite. I just think that the decision will force the government to engage in widespread consultation on what is a hugely significant question".<sup>[161]</sup> Similarly, Montreal lawyer Helen D'Iorio of Gowling Lafleur Henderson suggested that any adverse impact on the biotechnology industry had been exaggerated: "The decision will not, in all likelihood, have a major impact on the intellectual property and research and development communities".<sup>[162]</sup>
104. In response to the decision, the Canadian Biotechnology Advisory Committee has released an advisory memorandum on "Higher Life Forms and The Patent Act".<sup>[163]</sup> It seeks to allay fears that the decision of the Supreme Court of Canada spells the ruin of the Canadian biotechnology industry:

Sorting out the implications of the special characteristics of higher life forms for the patent regime will not be accomplished overnight. Taking the time to do so carefully and thoroughly, however, is, in Canadian Biotechnology Advisory Committee's view, a worthwhile endeavour. Working through the questions raised by CBAC and mentioned in the Supreme Court decision does not mean that researchers, inventors, and industry are unprotected in the meantime. Most patent applications contain many claims. For example, although Monsanto was not granted a patent on Round-Up Ready canola, its patent on the particular modified gene sequence which conferred the 'readiness' enables it to exercise its patent rights over the plants in which that modified gene sequence appears.<sup>[164]</sup>

The Committee concludes: "If the Government of Canada wishes higher life forms to be patentable, it must propose amendments to the Patent Act and gain Parliament's agreement".<sup>[165]</sup> It stresses that Canada has an unprecedented opportunity to define the special characteristics of biological inventions at the legislative level.

## CONCLUSION

105. The superior courts have been required to consider the historical development of intellectual property. They have been required to determine the significance of such landmarks as the Plant Patent Act 1930 (US), the Plant Variety Protection Act 1970 (US), and the case of *Diamond v Chakrabarty*. Keith Aoki comments in a survey of the recent skirmishes in the "seed wars":

Chakrabarty left a lacuna: if living organisms transformed by human agency were patentable subject matter under the Patent Statute, 35 USC 191, what was the relation of the Plant Patent Act and the Plant Variety Protection Act?<sup>[166]</sup>

106. There has been a noted divergence in the approach of superior courts to this lacuna. The High Court of Australia, the majority of the Supreme Court of the United States, and the minority of the Supreme Court of Canada have taken a broad reading of *Diamond v Chakrabarty*,<sup>[167]</sup> and concluded that patents can be granted in respect of plant subject matter. They support the co-existence of a number of over-lapping regimes of protection - plant breeder's rights, plant patents, and standard patents. By contrast, the majority of the Supreme Court of Canada and a vocal minority of the Supreme Court of the United States conclude that plants are exclusively protected by the Plant Patent Act 1930 (US) and the Plant Variety Protection Act 1970 (US). They are reluctant to draw the implication from *Diamond v Chakrabarty* that plants could be additionally protected under patent law. They would prefer that the legislatures provide express direction to the courts.

107. There have been reservations expressed in the superior courts that the unchecked expansion of patent law would render the exceptions provided under plant breeder's rights obsolete. Margaret Llewelyn comments upon the resistance within rural and regional communities to the imposition of patent law to plant subject matter:

To impose the strict patent ideal of an absolute monopoly is likely in this instance to have the effect of alienating a farming community already suspicious of the motives lying behind the need to obtain patent protection over crops, fodder material and farm animals. It is important to remember that the farming community is not experienced in dealing with patent law principles, nor does it automatically see how the patent system has a direct application in the context of farming. Simply to state that the rights which a patent holder has will be enforced regardless of the wishes or traditional practices of the farmers would, it is submitted, be both arrogant and foolish.<sup>[168]</sup>

108. In the case of *Grain Pool of Western Australia v Commonwealth*, Justice Kirby highlighted the disparities between the range of exceptions under patent law and plant breeder's rights.<sup>[169]</sup> In the case of *JEM Ag Supply Inc v Pioneer Hi-Bred International Inc*, Justice Thomas denied that the farmers' privilege and the research exemption were under threat.<sup>[170]</sup> Justice Breyer and Justice Stevens were concerned that the patent system will override the exceptions granted under plant breeder's rights. In *Harvard College v The Commissioner of Patents*, Justice Bastarache proposes a number of reforms to patent law - such as the introduction of farmers' rights and a defence for innocent bystanders.<sup>[171]</sup> His Honour believes that such modifications to the patent system will ensure a greater level of harmonisation with the system of plant breeder's rights.

109. The superior courts have considered the relationship between the intellectual property regimes of patent law and plant breeders' rights. They have examined the role of a *sui generis* system of protection alongside a general regime of intellectual property protection. Graham Dutfield poses the question: are plant breeders' rights obsolete in light of developments in patent law and the science of biotechnology? He observes:

It is tempting to assume that a system that is dear to the hearts of many plant breeders but not to those of corporate patent lawyers or to the businesses they all work for is doomed to wither away and be replaced by patents, which provide stronger and broader protection. After all, so many seed companies have been taken over by the life science and other corporations that now dominate this industrial sector. Why should the views of breeders and the no longer independent seed companies carry any weight within the corporations they are now part of when they contribute such a small share of the profits of these giants?<sup>[172]</sup>

110. However, Graham Dutfield maintains that the plant breeders' rights scheme remains a viable scheme. He notes that the advantages of the plant breeders rights system are better understood by the patent lawyers and the life science corporations. Alternatively, in his view, "these corporations are happy to let their seed subsidiaries do what they think is right with respect to IP protection without interfering".<sup>[173]</sup> He concludes: "But wherever the truth lies, it seems that, as long as an IP system has corporate users who believe they benefit from its existence, its future is secure".<sup>[174]</sup>

111. Indeed, a number of judges believe that the plant breeder's rights system provides an ideal model for the development of *sui generis* protection of biological inventions. Far from being redundant, the regime of plant breeder's rights may show the way forward for the future development and evolution of intellectual property.

## **NOTES**

[1] Margaret Llewelyn, "The Legal Protection Of Biotechnological Inventions: An Alternative Approach", *European Intellectual Property Review*, 1997, Vol. 19 (3), p. 115.

- [2] International Union for the Protection of Varieties of Plants, <http://www.upov.int/>
- [3] Bernard Edelman. "Vers Une Approche Juridique Du Vivant", in Bernard Edelman and Marie-Angele Hermitte (eds) *L'Homme, La Nature Et Le Droit*. Paris: Christian Bourgois, 1988, p. 28-29, as translated by John Frow. *Time And Commodity Culture: Essays In Cultural Theory And Postmodernity*. Oxford: Oxford University Press, 1997, p 195-197.
- [4] Bernard Edelman. "Entre Personne Humaine et Matériau Humain: Le Sujet de Droit", in Bernard Edelman and Marie-Angele Hermitte (eds) *L'Homme, La Nature Et Le Droit*. Paris: Christian Bourgois, 1988, p. 142, as translated by John Frow. *Time And Commodity Culture: Essays In Cultural Theory And Postmodernity*. Oxford: Oxford University Press, 1997, p 197.
- [5] *Diamond v Chakrabarty* (1980) 447 US 303.
- [6] Bernard Edelman, "International Symposium on Ethics, Intellectual Property, and Genomics", February 2001, as reported by the rapporteur Justice Kirby. "Intellectual Property And The Human Genome", *Australian Intellectual Property Journal*, May 2001, Vol. 12, p. 61 at 77.
- [7] *Grain Pool Of Western Australia v Commonwealth* (2000) 46 IPR 515.
- [8] *JEM Ag Supply v Pioneer Hi-Bred International Inc* (2001) 534 US 124.
- [9] *Harvard College v Canada (Commissioner of Patents)* [2002] SCC 76.
- [10] *Monsanto v Percy Schmeiser* (2001) FCT 256; and *Percy Schmeiser v Monsanto* [2002] FCA 309.
- [11] *Grain Pool Of Western Australia v Commonwealth* (2000) 46 IPR 515.
- [12] Department of Primary Industry Tasmania. "Franklin Barley", *Plant Varieties Journal*, Vol. 2 (2), Application No. 1989/018, Received: 04-Apr-1989, Accepted: 06-Apr-1989, and Granted: 19-Jan-1990.
- [13] *Cultivaust Pty Ltd v Grain Pool of WA* [2000] FCA 974.
- [14] The joint judgment consisted of Chief Justice Gleeson and Justices Gaudron, McHugh, Gummow, Hayne and Callinan.
- [15] *Attorney-General (NSW) v Brewery Employees Union of NSW (the Union Label Case)* (1908) 6 CLR 469.
- [16] *Australian Tape Manufacturers Association Ltd v Commonwealth* (1993) 176 CLR 480.
- [17] *Nintendo v Centronics Systems* (1994) 181 CLR 134.

[18] George Williams, "Are Service Marks Trade Marks? Commonwealth Power Over Intellectual Property", *Australian Intellectual Property Journal*, 1995, Vol. 6, p 133.

[19] Geraldine Chin, "Technological Change And The Australian Constitution", *Melbourne University Law Review*, 2000, Vol. 24 (3), p. 609-644.

[20] *Ibid.*

[21] *Grain Pool Of Western Australia v Commonwealth* (2000) 46 IPR 515 at 522.

[22] *Grain Pool Of Western Australia v Commonwealth* (2000) 46 IPR 515 at 520.

[23] Brad Sherman and Lionel Bently. *The Making Of Modern Intellectual Property Law: The British Experience, 1760-1911*. Cambridge: Cambridge University Press, 1999, p 138-139.

[24] *Imazio Nursery Inc. v Dania Greenhouses* (1995) 69 F 3d 1560

[25] *Grain Pool Of Western Australia v Commonwealth* (5 October 1999) transcript.

[26] *Grain Pool Of Western Australia v Commonwealth* (2000) 46 IPR 515 at 523.

[27] *NRDC v the Commissioner of Patents* (1959) 102 CLR 252.

[28] There has been a similar enthusiasm for following United States patent law in the field of information technology. Justice Heerey in *Welcome Real Time SA v Catuity Inc* [2001] 51 IPR 327 comments: " It may be true, as the respondents argue, that US patent law has a different historical source owing little or nothing to the Statute of Monopolies... But the social needs the law has to serve in that country are the same as in ours. In both countries, in similar commercial and technological environments, the law has to strike a balance between, on the one hand, the encouragement of true innovation by the grant of monopoly and, on the other, freedom of competition". By contrast, the Australian courts display a great reluctance to adopt United States copyright law.

[29] *Grain Pool Of Western Australia v Commonwealth* (2000) 46 IPR 515 at 527-528.

[30] *Diamond v Chakrabarty* (1980) 447 US 303.

[31] *JEM Ag Supply v Pioneer Hi-Bred International Inc* (2001) 534 US 124.

[32] *Harvard College v Canada (Commissioner of Patents)* [2002] SCC 76.

[33] S 43 of the *Plant Breeder's Rights Act 1994* (Cth).

[34] *Grain Pool Of Western Australia v Commonwealth* (2000) 46 IPR 515 at 534.

- [35] Sun World International Inc v Registrar, Plant Breeder's Rights (1995) 33 IPR 106; (1997) 39 IPR 161; (1998) 42 IPR 321 [1998].
- [36] Attorney-General (NSW) v Brewery Employees Union of NSW (the Union Label Case) (1908) 6 CLR 469.
- [37] Grain Pool Of Western Australia v Commonwealth (2000) 46 IPR 515 at 544.
- [38] Grain Pool Of Western Australia v Commonwealth (2000) 46 IPR 515 at 549.
- [39] Grain Pool Of Western Australia v Commonwealth (2000) 46 IPR 515 at 550.
- [40] Lawrence Lessig. Code And Other Laws Of Cyberspace. New York: Basic Books, 1999.
- [41] Diamond v Chakrabarty (1980) 447 US 303.
- [42] Grain Pool Of Western Australia v Commonwealth (2000) 46 IPR 515 at 551.
- [43] Grain Pool Of Western Australia v Commonwealth (2000) 46 IPR 515 at 550.
- [44] Matthew Rimmer. "Beyond Blue Gene: Intellectual Property And Bioinformatics", International Review of Industrial Property And Copyright Law, January 2003, Vol. 34 (1), p. 31-49.
- [45] Grain Pool Of Western Australia v Commonwealth (5 October 1999) transcripts.
- [46] Grain Pool Of Western Australia v Commonwealth (5 October 1999) transcripts.
- [47] Grain Pool Of Western Australia v Commonwealth (5 October 1999) transcripts.
- [48] Advisory Council on Intellectual Property. Innovation Patent - Exclusion Of Plant And Animal Subject Matter. Canberra: Department of Industry, 2002, <http://www.acip.gov.au/library/Innovation%20Patent%20Issues%20Paper.PDF>
- [49] Grain Pool Of Western Australia v Commonwealth (2000) 46 IPR 515 at 551.
- [50] Brian Fitzgerald. "Case Comment: Grain Pool Of WA v The Commonwealth: Australian Constitutional Limits Of Intellectual Property Rights", European Intellectual Property Review, 2001, Vol. 23 (2), p. 103.
- [51] Ibid.
- [52] Vandana Shiva, for instance, has written: "Patents on seed are a direct undermining of the human rights of farmers to save, exchange, and multiply seed. Patents allow corporations to prevent farmers from saving seed. When those patents are broad species patents, it is not just the human rights of farmers but everyone's right to food security that is threatened". Vandana Shiva. "Food Rights, Free Trade, And Fascism", In Matthew Gibney (ed). Globalizing Rights: The Oxford Amnesty Lectures 1999. Oxford: Oxford University Press, 2003, p 97.

- [53] Grain Pool Of Western Australia v Commonwealth (6 October 1999) transcripts.
- [54] Grain Pool Of Western Australia v Commonwealth (2000) 46 IPR 515 at 539.
- [55] Grain Pool Of Western Australia v Commonwealth (2000) 46 IPR 515 at 539.
- [56] Grain Pool Of Western Australia v Commonwealth (6 October 1999) transcripts.
- [57] Justice Kirby. "Report of the International Bioethics Committee on Ethics, Intellectual Property and Genomics", International Bioethics Committee, 10 January 2002, p 6,  
[http://portal.unesco.org/shs/en/file\\_download.php/0f8d8bed17083342b45db84beef431acFinalReportIP\\_en.pdf](http://portal.unesco.org/shs/en/file_download.php/0f8d8bed17083342b45db84beef431acFinalReportIP_en.pdf)
- [58] Justice Kirby. "The Human Genome And Patent Law", Reform, 2000, Issue 79, p. 10.
- [59] Jill McKeough and Andrew Stewart. Intellectual Property In Australia: Second Edition. Sydney: Butterworths, 1997, p. 3.
- [60] Grain Pool Of Western Australia v Commonwealth (5 October 1999) transcripts.
- [61] Australian Constitutional Commission. Final Report of the Constitutional Commission. Canberra: Australian Government Publishing Service, 1988, Vol. 2, paras 10.140-10.153.
- [62] JEM Ag Supply Inc v Pioneer Hi-Bred International Inc (2001) 534 US 124
- [63] William Niebur, Raymond Riley and Stephen Noble. "Hybrid Corn Plant And Seed", US Patent No 5,491,295, 13 February 1996.
- [64] Justice Thomas in JEM Ag Supply Inc v Pioneer Hi-Bred International Inc (2001) 534 US 124 at 127.
- [65] Diamond v Chakrabarty (1980) 447 US 303.
- [66] Jack Kloppenburg, First The Seed: The Political Economy of Plant Biotechnology 1492-2000. Cambridge: Cambridge University Press, 1988.
- [67] Richard Hindmarsh and Geoffrey Lawrence (ed.). Altered Genes II: The Future? Melbourne: Scribe Publications, 2001.
- [68] Mark Janis and Jay Kesan. "U.S. Plant Variety Protection: Sound And Fury...?", Houston Law Review, 2002, Vol. 39, p. 730-745.
- [69] Jack Kloppenburg, First The Seed: The Political Economy of Plant Biotechnology 1492-2000. Cambridge: Cambridge University Press, 1988, p 132.
- [70] JEM Ag Supply Inc v Pioneer Hi-Bred International Inc (2001) 534 US 124 at 127.

- [71] Jack Kloppenburg, *First The Seed: The Political Economy of Plant Biotechnology 1492-2000*. Cambridge: Cambridge University Press, 1988, p 132.
- [72] Cary Fowler. "The Plant Patent Act of 1930: A Sociological History Of Its Creation", *Journal of the Patent and Trademark Office Society*, 2000, Vol. 82 (9) p. 621-644.
- [73] *JEM Ag Supply v Pioneer Hi-Bred International Inc* (2001) 534 US 124 at 135.
- [74] Jack Kloppenburg, *First The Seed: The Political Economy of Plant Biotechnology 1492-2000*. Cambridge: Cambridge University Press, 1988, p 151.
- [75] *JEM Ag Supply v Pioneer Hi-Bred International Inc* (2001) 534 US 124 at 142.
- [76] *JEM Ag Supply v Pioneer Hi-Bred International Inc* (2001) 534 US 124 at 143.
- [77] See § 2543 ("[I]t shall not infringe any right hereunder for a person to save seed produced by the person from seed obtained, or descended from seed obtained, by authority of the owner of the variety for seeding purposes and use such saved seed in the production of a crop for use on the farm of the person ..."); see also *Asgrow Seed Company v Winterboer et al* (1995) 513 US 179.
- [78] See 7 U.S.C. § 2544 ("The use and reproduction of a protected variety for plant breeding or other bona fide research shall not constitute an infringement of the protection provided under this chapter").
- [79] *JEM Ag Supply v Pioneer Hi-Bred International Inc* (2001) 534 US 124 at 140.
- [80] *JEM Ag Supply v Pioneer Hi-Bred International Inc* (2001) 534 US 124 at 130
- [81] The judgment of Chief Justice Burger was joined by Justices Stewart, Blackmun, Rehnquist and Stevens.
- [82] *Diamond v Chakrabarty* (1980) 447 US 303 at 312.
- [83] *Diamond v Chakrabarty* (1980) 447 US 303 at 317.
- [84] *JEM Ag Supply v Pioneer Hi-Bred International Inc* (2001) 534 US 124 at 152.
- [85] *JEM Ag Supply v Pioneer Hi-Bred International Inc* (2001) 534 US 124 at 152.
- [86] President's Commission on the Patent System, *To Promote the Progress of Useful Arts*, S. Doc. No. 5, 90th Cong., 1st Sess., 20-21 (1967).
- [87] *JEM Ag Supply v Pioneer Hi-Bred International Inc* (2001) 534 US 124 at 153.
- [88] *JEM Ag Supply v Pioneer Hi-Bred International Inc* (2001) 534 US 124 at 155.
- [89] *Asgrow Seed Company v Winterboer et al* (1995) 513 US 179; and Seth Shulman. *Owning The Future*. New York: Houghton Mifflin, 1999, p 83-106.

- [90] *Diamond v Chakrabarty* (1980) 447 US 303.
- [91] The judgment of Justice Brennan was joined by Justices White, Marshall, and Powell.
- [92] *Diamond v Chakrabarty* (1980) 447 US 303 at 319.
- [93] *Diamond v Chakrabarty* (1980) 447 US 303 at 322.
- [94] *JEM Ag Supply v Pioneer Hi-Bred International Inc* (2001) 534 US 124 at 156.
- [95] Mark Janis and Jay Kesan. "Intellectual Property Protection For Plant Innovation: Unresolved Issues After *JEM v Pioneer*", *Nature Biotechnology*, November 2002, Vol. 20, p. 1161-1165.
- [96] *Ibid.*
- [97] Mark Janis and Jay Kesan. "U.S. Plant Variety Protection: Sound And Fury...?", *Houston Law Review*, 2002, Vol. 39, p. 727.
- [98] *Id.*, at 776.
- [99] *Id.*, at 770.
- [100] Chris McManis. "Are There TRIPS-Compliant Measures For A Balanced Co-Existence Of Patents And Plant Breeders' Rights Some Lessons From The U.S. Experience To Date", *WIPO-UPOV Symposium On The Co-Existence Of Patents And Plant Breeders' Rights In The Promotion Of Biotechnological Developments*, Geneva, 25 October 2002.
- [101] J H Reichman, "Legal Hybrids Between The Patent And Copyright Paradigms", *Columbia Law Review*, 1994, Vol. 94, p 2432.
- [102] Brad Sherman and Lionel Bently. *The Making Of Modern Intellectual Property Law: The British Experience, 1760-1911*. Cambridge: Cambridge University Press, 1999, p. 211.
- [103] *Harvard College v Canada (Commissioner of Patents)* [2002] SCC 76.
- [104] Philip Leder et al, "Transgenic Non-Human Mammals", US Patent No: 4,736,866, 12 April 1988.
- [105] Mark Leese. "Is An American Mouse A European Mouse? Towards A Sociology Of Patents", in Andrew Webster, and Kathryn Packer. (ed.) *Innovation And The Intellectual Property System*. London: Kluwer Law International Ltd, 1996, p 171; and Barry Mandelker. "Commentary: *Harvard College v Canada*", *Intellectual Property Journal*, 1998, Vol. 13, p 87.

[106] Donna Haraway. *Modest Witness, Second Millennium: FemaleMan Meets OncoMouse. Feminism And Technoscience*. New York: Routledge, 1997 and, George Myerson. *Donna Haraway And GM Foods*. Cambridge: Icon Books, 2000.

[107] *Harvard College v Canada (Commissioner of Patents)* [1998] 3 FC 510 (Fed T.D.).

[108] *Harvard College v Canada (Commissioner of Patents)* [2000] 4 FC 528 (Fed C.A.)

[109] *Harvard College v Canada (Commissioner of Patents)* [2002] SCC 76.

[110] *Harvard College v Canada (Commissioner of Patents)* [2002] SCC 76 [166].

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