



INDUSTRIAL PROPERTY ADVISORY COMMITTEE

**PATENTS,  
INNOVATION AND  
COMPETITION  
IN AUSTRALIA**

A report to  
the Hon Barry O Jones MP  
Minister for Science and Technology  
29 August 1984

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## PART A

### REVIEWING THE AUSTRALIAN PATENT SYSTEM

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#### 1 PATENTS IN THE AUSTRALIAN ECONOMY

##### 1 Introduction

There is a growing recognition within Australia that the nation's future prosperity will depend upon its ability to innovate, take advantage of technological change, and develop export markets in skill-intensive goods and services. This implies acceptance of the need for a move away from **inward-looking** protection-oriented policies to **outward-looking** competition and innovation-oriented policies. By conferring property rights in new technology, the patent system can serve the interests of the entrepreneur wishing to break into new or established markets in Australia or abroad, but it can also further entrench the position of established industry. Moreover, over 90% of Australian patents are granted to foreigners, and many have been used to protect export markets in Australia rather than for local **manufacture**. Our task in this review is to seek better to adapt the Australian patent system to foster innovation, at the same time bearing in mind the need to safeguard the interests of the Australian consumer.

Australia's patent law was inherited from Britain through the colonies at the time of federation, and Australia has always been a supporter of the international patent system in the creation of which Britain played an important part. The essence of the system is embodied in the Paris Convention for the Protection of Industrial Property (1883) which lays down certain principles to be followed by member countries. The provisions of the Convention have come **under** increasing attack during the past decade by developing countries which see it as serving the purposes primarily of the technology exporting nations.

**The** economic significance of patents has at times been obscured by a haze of assumptions about rights and rewards for inventors, special pleading by those directly involved, and a plethora of legal procedures and criteria in the Patents Act. Patents are commonly assumed to confer social benefits arising from greater incentive to industrial innovation and from disclosure of inventions, but there are social costs which may be associated with the monopoly power which patents confer - for example, higher prices and restricted outputs.

A patent confers upon an inventor the right to exclude others for a limited period (16 years in the case of Australia) from making, using or selling the invention claimed. This is a property right in the sense that it can be sold, assigned or licensed to others by the inventor. Like other property rights, its use is subject to limitations designed to safeguard the public interest by, for example, restricting certain anti-competitive activities. Also with the public interest in mind, patent applications and specifications are examined in the Patent Office to ensure that, as far as possible, patent monopolies are only granted for "**inventions**" that were not known or available to others before the priority date of the application. In due course the application documents are made public. Once the application has **been "accepted"** by the Office, but before a patent has been granted, an opportunity is given to others to oppose grant on a variety of grounds set out in the Patents Act, including obviousness of the invention. After grant, a patent may be enforced in an infringement action and the validity of a patent may be challenged in a revocation action in

the courts. Throughout the life or "**term**" of a patent, renewal fees must be paid annually to keep the patent in force, and, in exceptional circumstances, a patentee can apply to the court to extend the life of the patent beyond 16 years.

In 1979, a second type of patent was introduced. This is the "**petty** patent<sup>n</sup> which is distinguished from the "**standard** patent<sup>v</sup> by its simple and rapid examination procedure, shorter term (up to 6 years) and a restricted number of claims. **It was** intended that the petty patent scheme would particularly suit the needs of those **Australian** inventors with relatively simple inventions.

## 1.2 The economic perspective

Various justifications have been claimed for national patent legislation. It has been viewed, for example, as giving legal effect to the natural rights of inventors, as rewarding inventors for their efforts, as a contract between the State and individuals giving limited monopoly rights in return for the disclosure of information, and as a means of promoting the national interest by encouraging innovation. Our Terms of Reference take the last-mentioned perspective; we must examine ways in which the patent system might enhance Australia's long term economic **prosperity** through technological innovation; we must **be** concerned with the development and adoption of new products and techniques by business and industry (which is innovation) and not merely the generation of ingenious ideas (which is invention).

This perspective is concerned both with the efficient allocation of resources and with attempts to gain benefits from new products and new processes that technological change can bestow. It is a national perspective rather than sectoral; long-term and broad-brush rather than short-term and case-specific. A similar emphasis was given by the Senate Standing Committee on Science and the Environment when it stated: "**The** primary function of patent legislation should be to serve **as** an instrument of national economic policy aimed at the stimulation of indigenous industrial innovation not **as** a means for giving effect to the 'natural rights' of **inventors**".(1)

The willingness of the majority of countries to operate such a policy instrument as the patent system is a consequence in part of historical circumstances and in part of peer pressure arising from increasing internationalisation of the patent system. But it stems also from a belief **that**, from a national viewpoint, too little is invested in the generation, exchange and **utilisation** of new technology. The reasons for this underinvestment are widely held to **be** -

- the uncertainty of payoff from R&D and innovative activity;
- the limited ability of the **inventor/innovator** to appropriate profits arising from the use of the new knowledge generated; and
- the advantage that imitators **gain** if they can use new technology without sharing in its cost of production - the so-called "free rider" problem.

Technological innovation is **assumed** to lead to greater economic and social welfare. Patents are **intended** to stimulate such innovation by offering the possibility of greater profits than could have been obtained if open competition existed. But the benefits gained from innovation **fostered** by the existence of the patent system must **be** balanced against the costs to society caused by the restrictions which patents place upon the use of the inventions to which they relate. **For** while the purpose of the patent system is to provide an incentive to innovation, patents also create entry barriers which prevent or retard the diffusion of innovation by imitation; that is to say, a patent confers a degree of monopoly power which has inherent anti-competitive effects. It has both social benefits and social costs.

**The** intended benefits of the patent system arise from the incentive effects on investment in innovation and from disclosures of knowledge, subject to the qualification that social benefit cannot be attributed to a patent where the same development and disclosure would have taken place without patent protection. However, it cannot be expected that the benefits will operate across the board, in every case, or in every industry. The patent system does not, apart from a general selectivity for **manufacturing** industry, discriminate between industries and, as a result of international treaties, the scope for discrimination between nationals and foreigners is restricted.

Although the monopoly power made available **by** the patent system may operate to induce innovation and disclosure, it must be borne in mind that society pays a price in terms of economic efficiency. The costs are the social costs which may arise from a monopoly - higher prices, restricted outputs, and the losses, from a national viewpoint, when the benefits of the monopoly accrue to foreigners - plus the "**dead weight**" direct costs of administering the system.

Innovation and the possession of monopoly power interact in a number of **ways.(2)** Existing monopoly power can be extended to **new** products by means of established reputation or distribution arrangements. Sales of **new** products may be tied to existing product lines. Many other market factors may also have anti-competitive effects - for example, control over raw material supplies, use of advertising, or the achievement of substantial economies of scale or of a **position** of technological dominance. Such conditions of imperfect competition may discourage innovation by others, and patent rights may further entrench the position of those who already enjoy a degree of monopoly power in the market place.

Only in a competitive market economy where there are actual or potential innovators and imitators can rivalry take place, patent rights stimulate additional innovation, and disclosed technology become building **blocks** in further development. While the commercial uncertainty provided by a competitive environment can act as a spur, it can also discourage the necessary investment in innovation - an effect which patent rights can mitigate by providing a measure of protection against imitators. **But** this depends upon the confidence which companies and inventors have in obtaining and enforcing patent rights. That depends in turn on factors such as standards of search and examination; the performance of the Patent Office, the courts, patent attorneys and the legal profession; the business expertise and financial resources possessed by or available to the patentee; and the commercial quality of the innovation.

Participation in the international patent system, established and maintained under the Paris Convention, adds a further dimension with special importance for a country such as Australia. It is claimed that participation, and the consequent availability in Australia of patent protection for foreign inventions comparable to that provided in other Convention countries, is a vital factor in the encouragement of foreign capital investment and in relation to the licensing and other transfer of technology into Australia. **But** while there are benefits of this nature, costs are also involved which may outweigh the benefits depending on the circumstances.

The costs of participation include the higher cost of patented technology compared to patent information which is freely available to non-participants, the exclusion of **imports** of cheaper infringing products, the inability of Australian enterprise to manufacture, sell and export imitations, and restrictions on the use of imported technology in Australia.

The assurance of equivalent privileges in other countries **party** to the Paris Convention is a purported benefit of membership of the Convention. **Possible** advantages particularly associated with participation include the protection of exported **goods** covered by patents, of exported technology (including licences), and of investment abroad. But the advantages which might be gained must be distinguished from the advantages which are in fact gained. The degree of benefit depends among other things on the extent to which Australians patent overseas.

### 13 **The "national interest"**

The task which is set for the Committee by the Terms of Reference is, from the viewpoint of the Australian national interest, to evaluate the patent system **as** it exists in the Australian context and to determine whether and in what ways it should be changed so as to meet economic objectives. This is a complex task requiring interpretation of the **"national interest"**, criteria of performance of the patent system, and facts about the operation of both the system and the economy. Debate about the patent system has not always measured up to this standard, especially the need to apply objective economic criteria.

Interpretation of the national interest and development of criteria of performance are interwoven. Criteria that have been considered include economic efficiency, the promotion of invention, the promotion of innovation, technological advance, administrative simplicity, historical continuity, international conformity, national self-sufficiency, and impact on employment. **As** in any multiple criteria decision, there is a need for a means of reducing such a list to a manageable dimension.

In this context, Johns has observed

**"[E]conomists** tend to employ rather simple criteria. That is to say, they tend to judge the result of any system by the contribution it will make to the increase in the national income or **gross** national product of a country ... So we judge the patent system in exactly the same way. We say: What possible benefits can accrue in **terms** of national income of Australian residents? Of course when you get down to specifics, that becomes a very complex question, one element of which is dependent on just what stimulus it provides to new investment in technology, research and development expenditure, and so **on.**"(3)

It should also be observed that the individual interests of those involved in the conception, development, marketing, and eventual purchase and use of inventions or their products, do not necessarily coincide. Inventors, producers and consumers have certain separate interests which might be reflected in or furthered by the structure of the patent system. These were summarised in the recent Nicholson Report in the UK:

**"[T]he** inventor, insofar as he is not the producer:

- wants the highest price possible for his invention and the credit for it, even if he may not be aware of its ultimate commercial potential.

The producer:

- wants ready access to new inventions which he can **incorporate** in his products in order to gain market advantage;
- wants to hold on to this advantage **as** long as **possible** against **competitors** capable of using the same invention;
- may want to delay exploitation of an invention until a moment of his **own** choosing (or even indefinitely).

The **consumer** on the other hand:

- wants a continuing flow of improved products at the lowest **possible** prices;
- to that end wants a wide dissemination of the state of the art on existing products and the potential for future ones so that continued product development is stimulated and **consumer** choice guaranteed;
- may not mind if the products derive from copying others' **work".(4)**

Ultimately, however, inventors, producers and consumers will have a common interest as citizens in economic prosperity and growth.

These considerations suggest that we can evaluate the patent system by seeking to judge the effect it will have on the increase in the national income or *gross* national product of the country. Imprecise though it will be in many ways, this perspective does strive for the application of a legitimate basic economic criterion from which it is possible to develop a manageable approach to reform.

At the same time, **allowance does** need to be made for equity aspects, for not everyone benefits uniformly from the operation of the system. One obvious illustration is that account must be taken of the fact that the majority of the participants (as applicants and patentees) in the **Australian** patent system are foreigners. Where **national** and global interests diverge, there is a need to value the **welfare** of nationals more heavily than that of foreigners.

#### L4 **Patents** in Australia's economic circumstances

In attempting to determine whether the Australian patent system adequately contributes to the national income **by** stimulating innovation, **Australia's** national and international circumstances must **be** considered and it must be asked whether we should continue to **be** party to the Paris Convention or even to retain a domestic patent system. While the present unhealthy state of Australian manufacturing industry cannot be ignored, weight must also **be** given to national aspirations for a more significant role in the region, more open trading conditions and a greater role in **technology-based** exports.

In considering what stimulus to investment in innovation is provided by the patent system, it must not **be** forgotten that the Australian Government, like that of **most** other nations, is consciously trying to promote innovation in other and more direct ways. These include research in government laboratories, the IR&D Incentives Scheme, tax concessions, the provision of venture capital, procurement policy, export development grants, and tariffs and **bounties.(5)** Such measures may be less important than the broader dimensions of national economic policy which, by affecting taxation, exchange rates, interest rates, employment, and demand, set the climate for investment in innovation. Moreover, too much security may in fact inhibit innovation if it removes or lessens international competition or weakens the pressures of significant changes in costs. It can **be** argued that the "**slow progress**" of the Australian economy is attributable to preoccupation, in a sheltered environment, with "**responding** to developments in the rest of the world, instead of trying to anticipate developments and to promote the production of those commodities which in the future we shall be able to produce in competition with other **countries".(6)**

Given the diversity and complexity of modern industry and the array of policy instruments employed at any one time, it is not surprising that such economic assessments as have been attempted of patent systems in other countries have been inconclusive, and **evidence** for change is difficult to assess. **Machlup's** conclusion is often cited:

"If we did not have a patent system, it would **be** irresponsible, on the basis of our present knowledge of its economic consequences, **to** recommend instituting one. But since we have had a patent **system** for a long time, it would be irresponsible, on the basis of our **present** knowledge, to recommend abolishing it."(7)

It is important to **observe**, though, that **Machlup** then immediately added:

"**This** last statement refers to a country such as the United States of America - not to a small country and not a predominantly nonindustrial country, where a different weight of argument might well suggest another **conclusion**".(7)

The following **remarks** by **Penrose** develop this point:

"**Any** country must **lose** if it grants **monopoly** privileges in the domestic market which neither improve nor cheapen the goods available, develop its own productive capacity nor obtain for its producers at least equivalent privileges in other markets. No amount of talk about the 'economic unity of the world' can **hide** the fact that some countries with little export **trade** in industrial **goods** and few, if any, inventions for sale have nothing to gain from granting patents on inventions worked and patented [abroad] except the avoidance of unpleasant foreign retaliation in other directions".(8)

After attempting to take account of Australia's circumstances, a research study by **Mandeville**, Lamberton and Bishop, commissioned for the Committee, concluded:

"While ultimately a matter of judgment, this study leaves little room for doubt that the **benefit/cost** [margin] of the patent system in Australia is negative, or at the very best, in balance. However, this conclusion does not necessarily imply an economic justification for abolishing the patent system. The **costs** and benefits of an institution need to be distinguished from the costs and benefits of abolishing that institution. In the perspective of the national economy, the economic effects - both costs and benefits - of the patent system in Australia are quite **modest**. However, the costs of unilateral abolition of the patent system to Australia's international commercial relations could possibly be much larger ...".(9)

Australia is a small high-income economy with a local market of limited size and industries that are highly **concentrated**. The development of its **manufacturing** has been much dependent **upon** direct foreign investment for both capital and technology, while the conditions of technology transfer to Australia have often included prohibitions on export.

The extent of structural change in manufacturing has been less than in most OECD countries. **Low** and declining private sector expenditure on R&D suggests failure generally both to initiate indigenous innovation and to adapt imported technology. There has been heavy reliance on research performed by government with consequential problems both in the setting of R&D objectives and the later transfer of research results to the private sector.

There is little **export** of manufactured goods. In broad terms Australia's comparative advantage is seen to lie mainly in natural resources availability and geographic location. (In the latter respect, it is noted that a significant **proportion** of existing exports of manufactured goods goes to New **Zealand** and the Pacific Islands).

These various considerations are consistent with the suggestions made by **Mandeville, Lamberton** and Bishop that the existence of the patent system in Australia has contributed little to widening the range of, improving, or cheapening the goods available, improving productive capacity or stimulating **export** market development. Generally, the history and characteristics of the Australian economy, singly and in combination, with heavy emphasis upon protection, foreign investment and technology importation, do not provide encouragement for the **view** that there are **substantial** benefits attributable to the operation of the Australian patent system, while actual and potential costs can be more easily identified.

**As** we have already observed, Australia's patent system should not be assessed independently of its interaction with the international patent system. Withdrawal from the Paris Convention would be a consequence of abandoning the patent system altogether. On the other hand, it would be possible to make major changes to the Australian law, if that were considered to be desirable, while continuing to remain a member of the Convention and conforming to its broad terms.

**The** Convention has been perceived as benefiting countries with large, highly industrialised economies. Having both local development and **export** markets to foster and protect, such countries may certainly stand to gain, both at home and abroad, from retention, and indeed, wider adoption, of patent systems **observing** the principle of "**national** treatment". Attempts by the "**Group of 77**", over the last decade or so, to secure amendments to the Paris Convention to bias it more towards the economic interests of developing countries, have been unsuccessful. More recently, a wider divergence of interests among **member** countries of the Convention has been emerging. Different countries have different economic needs and priorities. Australia **must** assess its interests from a position intermediate between the industrialised and less developed nations.

No doubt, in Australia's case, participation in the international system provides a means of protection abroad for Australian goods, services and investment. However, it also entails the obligation to treat foreign applicants on an equal footing with domestic applicants. Notwithstanding the compulsory licensing provisions of the Australian Patents Act, many patents granted to foreigners in Australia (for example, relating to agrochemical and pharmaceutical products) frequently are utilised not to support the establishment of local enterprises or export trade but rather as non-tariff barriers to provide protection for imported products.

These considerations invite one to question Australia's continued **participation** in the international patent **system** which, it could be argued, should be dependent upon an examination of the costs and benefits arising from continued participation compared to those which would **flow** from withdrawal.

On the other hand, it is extremely difficult to know what effects would result from withdrawal from the international patent system. Clearly there would be much concern and no doubt threats of reprisals of one sort or another from foreign **countries** and Australian interests alike. These would carry political weight; indeed, **withdrawal** would probably be politically impossible. Whether or not other nations would refuse to grant patents to Australians, there would certainly be a psychological effect upon the willingness of foreign firms to supply technology to Australian firms. They would point to higher commercial **risks** as justifying greater restrictions on what technology could be made available and a greater price for what **was** made available, at least in the short to medium term. Conversely, Australians would become less patent conscious and less able to exploit foreign **patents** to their own advantage. Indeed,

strong representations were **made** at the Commercial Implications Seminar (see Appendix C) by **small** Australian firms who argued that patent protection **was** most important to their ability to penetrate large foreign markets with innovations originating in Australia. No submission received by the Committee proposed abolition of the patent system in Australia or withdrawal from the international patent system.

As indicated in the passage quoted above from Mandeville, **Lamberton** and Bishop, the transition costs of withdrawal from the patent system by Australia need to be distinguished from the economic effects of the continued existence of the system. While it appears that the latter effects - both costs and benefits - are currently quite modest, the transition costs of withdrawal **might** be much larger.

[1] WE RECOMMEND that Australia continue to operate a patent system and to **participate** in the international patent system.

## 2 APPROACH TO REFORM

### 21 Australia's aspirations in **innovation**

While Australia has made poor use of the patent system in the past and its overall effects may not have been **positive**, we must take into account aspirations to become a significant exporter of skill-intensive goods and services. Given this situation, the most critical element may be Australia's potential capacity to become technologically competitive.

Australia is experiencing markedly changing investment and trading relationships with other **countries**, more especially those of Asia and the Western Pacific region. Given these dynamic conditions, it must be asked seriously whether **Australia's** comparative advantage is restricted to natural resource availability and location. Present aspirations are for a future in which the growth of technology-intensive industries will lead the way toward a major growth of innovation-based exports. Opportunities are also seen for **up-grading** the value of Australia's present exports of raw materials by means of process and other innovation. If these aspirations should be fulfilled, a more favourable **benefit/cost** margin from the operation of the patent system would eventuate.

This prospect does need to be evaluated against a stream of official reports and recommendations favouring expansion of innovation-based exports which as yet have not produced any major structural change. Moreover, alternative policy instruments of a more selective kind than the patent system are available.

However, recent Australian export statistics indicate that the share of natural resource **exports** has declined while that of technology-intensive exports has **increased**.<sup>(10)</sup> While the change is of **modest proportions** and some uncertainty attaches to what "technology-intensive" means in the Australian situation, an outward- and forward-looking policy will seek early and maximum benefit from this possible shifting in the basis of Australia's comparative advantage. To some extent it may be reinforced by **locational** circumstances and its future may well be bound up with small and medium business less dominated by foreign investment. It appears that success to date has come in **middle** rather than **high technology**,<sup>(10)</sup> and in adaptation in situations in which there are links with past experience as in mining and agriculture.

Public and industrial awareness of technology issues has increased dramatically since the time when we first undertook the task of preparing this Report, and positive government measures are now being taken to promote technological development.