

**Pacific Rim Innovation Conference
University of Melbourne,
Australia**

**Measuring the value of IPR:
theory, business practice and public policy**

21-22 January 2010

**“In the national interest”:
is inventiveness a good proxy?**

Hazel V J Moir
Regulatory Institutions Network
The Australian National University
Canberra ACT 0200, Australia



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Correspondence to: hazel.moir@anu.edu.au

Or

hazelmoir@innovationperspectives.com.au

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1. Introduction

Perhaps the shortest and clearest statement of the economic rationale underlying the grant of monopolies for inventions is that of the General Court of Massachusetts in 1641:

"There shall be no monopolies granted or allowed among us, but of such new inventions *as are profitable to the country*, and that for a short time"

(Warshofsky 1994: 32, emphasis added).

This statement focuses attention on the most important policy issue for patent systems—that there should be a net social gain to the nation from the grant of such monopolies. This utilitarian outcome is the *raison d'être* of patent policy. Few economists would argue with this fundamental objective—indeed a requirement of a clear net social gain is a *sine qua non* of regulatory intervention in any market, and has been included as a fundamental principle in the National Competition Policy. This paper looks at whether the current design of patent policy makes it likely that this objective is delivered. A major focus is on the effectiveness of inventiveness as a proxy for whether an application generates a net national welfare benefit.

The perspective taken here is economic. This contrasts sharply with legal approaches to patent policy, where detailed analyses of specific policy rules (doctrines) predominates.¹ There is little, if any, attention in the legal literature to whether patent grants in general (or in particular) create any net national economic gain.

The Cutler review of Australia's innovation policies and practices clearly stated that patent policy is economic policy, and it put forward recommendations for improving the economic outcomes of the patent system (Cutler et al. 2008: 83-86). Under the shelter of being a legal subject, patent systems have not been subject to hard economic evaluation, in contrast to the continual assessment of other innovation policies (R&D tax concessions, R&D grants etc). In part this is because the available data does not support such assessments, despite the development of the major National Innovation Survey.²

Nothing approaching a welfare analysis, or even a cost-benefit analysis, can be undertaken with the existing data. However it is possible to assess the likely impact of the patent system from another perspective—by evaluating the operating rules. It is not necessary to understand every aspect of the complex edifice that has been built by the legal/administrative system over the past 150 years. It is, however, necessary to consider those operating rules which most critically determine eligibility for a patent monopoly. This

¹ For example, distinctions between novelty, inventiveness and the inventiveness threshold.

² There is some evidence, at least in the USA, that the patent bar and other beneficiaries of the patent system have actively prevented the collection of appropriate data (see Kahin 2003a in respect of data on software and business method patents). No information is available on why the Australian government did not implement the 1984 IPAC recommendation to collect periodic data on patent use. The government accepted most of IPAC's recommendations; indeed they were supported on a bi-partisan basis.

paper considers these rules from an economic perspective, focusing on whether they are likely to lead to outcomes which are welfare-enhancing from a national perspective. It draws on an empirical assessment of a small universe of granted business method patents in investigating and illustrating how these rules operate.

This paper is presented as follows. The next section reviews briefly the key policy principles relevant to evaluating patent policy from an economic perspective. Section 3 identifies the critical rules used in determining which applications achieve grant of a patent monopoly. The detailed effect of these rules are then assessed drawing on an in-depth study of a small universe of business method patents granted in Australia. Section 5 draws out some of the implications for ensuring that patent policy increases rather than reduces national economic welfare.

2. Policy fundamentals: the additionality principle

Most economic discussion of patent systems skips over the question of whether patent policy is effective in inducing additional investment in innovation and simply creates windfall gains for innovation that would take place absent patents. The standard, uninterrogated, view is that because of excludability problems once knowledge has been disclosed, there is substantial market failure in the generation of new knowledge. It is usually also acknowledged that non-rivalry in consumption provides a strong presumption towards maximising *distribution* of the new knowledge. However statistical studies showing that the social returns to innovation exceed the private returns are usually used to justify a variety of forms of intervention in the market, including interventions which directly impede the dissemination of the new knowledge.³ An exception is the recent report on Australia's innovation systems, which sets up a robust set of design principles for innovation programs, including the principles of additionality and evaluation (Cutler et al. 2008: 37-44). While directed to subsidy programs rather than patent policy, these principles could as usefully be applied to patent policy.

The additionality principle is extremely important in assessing the economic impact of patent policy, as many innovations with high positive externalities may also have high private returns, and so will proceed without the need for any patent monopoly. This is rarely mentioned in the economic literature on patent policy, despite having been clearly identified as an issue at least some 60 years ago (Penrose 1951). As Penrose pointed out, where the bulk of patent monopolies are held by overseas-based inventors, the cost to a nation of a strong patent policy is likely to be high, because the inducement impact will be small.

The critical issue for a welfare-enhancing patent policy is not whether the social returns to industrial innovation exceed the private returns, but to what extent this occurs *in combination with low private returns*. If private returns are sufficiently high to induce the

³ This is despite the many measurement problems involved in such studies. There are well discussed by the US Congressional Budget Office, and their analysis also considers seriously the implications of the much weaker R&D/productivity relationship outcomes shown in time-series analyses compared to cross-sectional analyses (US CBO 2005). These studies use formal private R&D expenditure as the key independent variable, capturing both the effect of R&D investment in generating new knowledge and its effect in increasing the capacity to absorb knowledge produced by others. The CBO is, however, highly skeptical of the evidence on knowledge spillovers.

investment, then there is no need for the intervention. Mansfield's seminal study of 17 innovations assessed social returns in terms of changes to consumer surplus, not knowledge externalities (Mansfield et al. 1977). He found that in five cases social returns were negative or lower than private returns. While the other 12 cases all had greater social than private returns, in six of these cases private returns exceed 25% and the investment would have proceeded. Only in six cases might the innovations not have proceeded without some kind of intervention.

The Bureau of Industry Economics undertook a similar study, of 16 industrial innovation in Australia in the early 1990s, but assessed the likelihood and magnitude of both knowledge spillovers and changes to consumer surplus (BIE 1994). Of the 16 innovations 14 were intermediate products. Knowledge spillovers were found to be low or very low for 13 of the innovations, and consumer surplus increases were low for six and moderate for another three. General community spillovers (improved quality of life or environment impacts) were low or non-existent for 14 of the innovations. Conditions required for the identified benefits to eventuate differ. For net increases in consumer surplus there needs to be at least a reasonable degree of market competition, while for knowledge spillovers to be realised a reasonable industry depth is required.

There is now a large empirical literature on the relative role of patent policy in ensuring a return to industrial innovation. With few exceptions these studies report that senior figures in manufacturing generally do not report any substantial reliance on patents to achieve returns to innovation.⁴ They suggest that there is little likelihood that patent policy induces much innovation, outside of highly codified technologies such as pharmaceuticals.

In combination, these various empirical studies suggest that although some innovations may produce high social returns, the role of patent policy in generating this is likely to be marginal, except in highly proscribed circumstances. They also suggest a strong likelihood that patent policy may produce substantial windfall gains, especially where threshold standards for patent grant are low.

While care needs to be taken in estimating the extent to which behaviour is changed by any policy intervention, particularly where there are no counter-factuals, such work has been done in respect of tax-expenditure programs supporting industrial R&D (see, for example, BIE 1993). In respect of the patent system it is possible to make some rough estimates of the proportion of patents induced, drawing on the results of large-scale surveys on the reasons companies take out patents.

⁴ This is not the place to provide details of the large volume of evidence that patents are, in most industries, relatively unimportant in addressing appropriability issues. This evidence is assessed elsewhere, for example, Moir 2008b. Apart from the seminal UK study by Taylor and Silberston, and the two large-scale studies undertaken in the USA (the Yale and Carnegie-Mellon surveys), the results are also confirmed through the various National Innovation Surveys, such as the Community Innovation Survey. The one study reporting different results is a survey of 105 firms carried out by the Business and Industry Advisory Committee to the OECD (BIAC), which reports an increase in patent effectiveness over the past 10 years, and that inventions which would never have been patented 10 years ago are now being patented. No information is provided about the methodology of this business association survey (Sheehan et al. 2003).

My own empirical estimates suggest that about 6% of Australian patents granted between 1990 and 2006 may be induced by the patent system.⁵ Of these some will be imported rather than produced in Australia, so that opportunities for knowledge spillovers to flow through the local industrial community will be limited. Taking this into account it is estimated that a maximum of 4.3% of standard patents granted in Australia might both be induced *and* provide possible spillover benefits to the nation.⁶ The comparable estimate for the USA, for the period 2000-2005, is between 18% and 25%.⁷

It is only induced innovations whose externalities can be included in any equation assessing whether a patent system operates to increase or reduce national economic welfare. On the other hand, the costs of a patent system are derived from all granted patents. Some argue that few granted patents give rise to any social costs because of complementary products and the ease of “inventing around” (e.g. Gans et al. 2004). This seems counter-intuitive—if a monopoly is necessary, then it needs to be used to deliver the expected return. Of course the *degree* of monopoly power exercised in the use of any individual patent can vary widely. Some assert that only 5% of patents are actually used, but provide no supporting evidence (e.g. Lemley 2001; Blonder 2005). The one major study of patent use found that 50% of Canadian patents were worked. Firestone also reported on the proportion of patents worked in the UK (30%) and the USA (49% for large and 71% for small companies) (Firestone 1971: 148-9).⁸

All this reinforces the assessment of the patent system as a very blunt instrument—likely to give rise to substantial windfall gains, and quite possibly producing negative outcomes even in countries such as the USA. It was introduced at a time when there was no other systematic government support for invention and innovation. There has been little attention paid to its interaction with the range of interventions to support industrial innovation, and no major re-assessment of patent policy following the substantial empirical research which took place through the 1980s and 1990s.

There has been no effort to collect data on the cost of used patents. We do not even know the proportion of patents that are used, or the manner of their use. We do know the outcomes of cases which reach court, but despite a new database on such cases, this includes no information on the costs to the losing party (Weatherall and Jensen 2005). Even a brief consideration of just a few seminal cases suggests the costs to the losing party are both unanticipated and could be substantial. The 1994 Full Federal Court decision in *CCOM* substantially extended the 1990 court-based extension of patenting to software, and the decision that the mere computerisation of a well-known process merited a petty patent

⁵ These estimates presume that all innovations in the pharmaceutical and fine chemicals areas are induced by patent protection (though the evidence is that some would occur anyway). They also assume that between 25% and 40% of innovations in other fields are patent-induced. These estimates are based on the inverse of the proportion of process and product patents taken out for defensive reasons as reported from the Carnegie-Mellon survey (Cohen et al. 2000: 18). They also make assumptions about whether an Australian (or US) patent is likely to induce innovation in overseas firms. For details see Moir 2008a: 269-274.

⁶ It is assumed that only the induced patents owned by Australian entities are produced locally.

⁷ Because of the very different conditions in the USA, it is assumed that half of innovations induced among non-US owners are actually produced in the USA.

⁸ And these figures are consistent with an earlier US study reported by Griliches (1990:1679) that 41-55 percent of patents were used commercially, with up to 71 percent used among small firms.

would have come as a surprise to many and at a real cost to Jiejing Pty Ltd.⁹ The 2001 case regarded as extending business method patents to Australia imposed real costs on Catuity for using an invention they had created themselves, and which all parties to the court case agreed was well-known in the IT industry.¹⁰ These cases are the tip of the iceberg. Despite substantial concerns about the costs of patent systems, patent offices have resolutely avoided acquiring any data on how the monopolies they hand out are used, and the costs imposed on other innovating firms.

In the absence of direct evidence, what can patent rules and procedures—the nitty-gritty of the policy parameters—tell us about whether the Australian patent system is likely be delivering gains or losses to the Australian economy and society?

3. What are the key rules determining patent monopoly grant

There are various procedural formalities with which a patent application has to comply to be eligible for a patent monopoly grant. There are not considered here. Rather the focus is on the substantive rules which determine whether an application will be successful or not. To be granted a patent monopoly, the application must describe an invention (“a manner of manufacture within the meaning of section 6 of the Statute of Monopolies”)¹¹ and meet four specific criteria: usefulness, novelty, inventiveness and not having been in secret use (Section 18(1)). There must also be disclosure of the invention for which a monopoly is claimed, and the claims must be fairly based on the described invention.¹²

These tests were all developed through case law and were subsequently imported into statute law. As such they were developed largely in the context of argumentation between private parties as to who could claim a monopoly for their invention. While some cases involve a dispute with a patent office, in most cases there is no representation of the public interest in the case. Nonetheless these decisions have been the major influence on the design of patent law.¹³ There is no evidence of any scrutiny of the economic impact of these individual case decisions prior to their general import into statute law. This appears to be the case in all jurisdictions, not just in Australia.

Given these changes in the policy rules (doctrines) over time, what is the current situation with regard to the key threshold requirements for grant of a patent monopoly? Do the current rule specifications for manner of manufacture, utility, novelty, and inventiveness operate in such a way that patent monopolies are granted only (or mostly) where they will benefit the nation by generating a net improvement in national economic wellbeing? Not all of these rules are relevant to determining whether or not to grant a patent monopoly.

⁹ CCOM Pty Ltd v Jiejing Pty Ltd (1994) 27 IPR 577; (1994) 28 IPR 481.

¹⁰ *Welcome Real-Time v Catuity*, [2001] FCA 445 (17 May 2001).

¹¹ Section 18, Patents Act 1990 (see Appendix). In fact the relevant section of the Statute of Monopolies refers to “a manner of new manufacture” but some legal commentators seem to have difficulty with the inclusion of an adjective indicating newness as an essential criterion in defining that the *subject matter* of patents is inventions (see, for example the discussion in the recent ACIP paper on patentable subject matter, ACIP 2008b).

¹² The rules about secret use, fair basis and fair disclosure affect a minority of patent applications, and are not further discussed in this paper.

¹³ Excepting, of course the trade negotiations which led to the adoption of the TRIPS Treaty. In practice this Treaty has not affected either the scope of patentable subject matter or the thresholds of utility, novelty or inventiveness.

Section 45 of the Patents Act defines the matters that should be assessed before granting a patent (see Appendix). There is no reference to assessing usefulness or having been in secret use, so neither of these threshold criteria actually prevents issue of a patent monopoly.

Usefulness is not actually defined in the Australian Patents Act, though in other Common Law countries the meaning of the term useful is not the normal dictionary one, but rather means “does it work as described”?¹⁴ There are proposals currently on the table for adopting the US approach to defining useful (ACIP 2008b:23). However as it is not currently used as a criterion for issuance of a patent, it is not considered here.

The substantive issues that are actually used to determine grant of a patent monopoly reduce to three inter-related issues:

- Is a manner of manufacture as per section 6 of the Statute of Monopolies?
- Is it novel?
- Is it inventive?

These three criteria overlap to some extent as the definition of a manner of manufacture in the Statute of Monopolies includes the word new, thus incorporating aspects of at least novelty if not inventiveness. It also includes aspects of usefulness in the requirement that it be a “manufacture”. In effect any element of usefulness assessed in examination is considered only as part of the “manner of manufacture” test.

These rules are discussed briefly in the remainder of this section. The objective of this discussion is to inform the economics community of the extremely circumscribed limitations that each has acquired. This limits their effectiveness in protecting the public interest and preventing the grant of monopolies to trivial inventions. This discussion shows that a large weight rests on the concept of “inventiveness” in determining balance in the patent system, and so this is the major focus of the discussion here.

Before turning to this discussion it is interesting to consider whether one can assess the standards used by the Australian patent office by looking at those applications which are effectively rejected. Unfortunately there is little systematic information available about applications that are effectively rejected. IPAustralia appears to avoid outright refusal of applications, with most not-accepted applications being either lapsed or withdrawn. The category “refused” appears to be largely reserved for applications which were accepted but subsequently opposed.¹⁵ Effectively where an examiner maintains objections to grant of a patent, the application is likely to lapse (non-payment of continuation fees) or be actively withdrawn (the applicant formally writes withdrawing the application). There are no data to sort lapsed and withdrawn applications by whether there have been one or more negative examiner reports.

¹⁴ For example, in Canada “[a] patent will fail for lack of utility if it can be shown that “the invention will not work, either in the sense that it will not operate at all or, more broadly, that it will not do what the specification promises that it will do” (*Consolboard Inc. v. MacMillan Bloedel (Saskatchewan) Ltd.*, (1981) 56 CPR (2d) 145 (S.C.C.)).” http://www.patentdocs.org/classic_biotech_opinions/ [accessed 12 Jan 2010].

¹⁵ Of 1,372,709 standard patent applications on the AusPat database at 14 January 2010, a mere 86 are listed as refused. Of these 7 appear to be erroneous as the details also show examination was never requested. Of the remaining 79, 57 show details of an opposition. The remaining 22 show an acceptance date, but provide no other information showing the path between acceptance and refusal. AusPat shows 3 refused petty/innovation patents.

In rare instances an applicant challenges the patent office's refusal to grant a patent in the courts, the most recent case being the *Grant* innovation patent.¹⁶ In this case the Full Federal Court confirmed that business methods are patentable in Australia, and questioned whether a science or technology basis was necessary for eligibility for an Australian patent. It did however determine that the *Grant* invention—for a method of hiding one's assets from legitimate creditors—was unpatentable because it did not have a physical effect. It also took the view that the law was not an appropriate subject matter for patent monopolies.

“Manner of manufacture”

The “watershed” 1959 High Court NRDC case has been analysed at length from a legal perspective. The most cited part of this decision is the court's view on the meaning of the phrase “manner of new manufacture” which the court said should be interpreted not in terms of the meaning intended by the legislators who drafted the Statute of Monopolies, but in terms of the body of case law built up since then. That is, preference should be given to the views of judges not parliamentarians. From this perspective the court argued that the meaning of the term “manner of new manufacture” was (and is) “a mode or manner of achieving an end result which is an artificially created state of affairs of utility in the field of economic endeavour.”¹⁷ Christie calls this a “bombshell” decision, removing all limitations on patentable subject matter (“inherent patentability”) (Christie 2000). This decision has been extremely influential in developing a view that any “invention” which could earn a dollar is potentially patentable.

A stronger influence in removing the traditional limits to patentable subject matter (methods of medical treatment, mathematical algorithms, methods of business) seems to have been the insertion of a single specific exclusion into the *Patents Act 1990* during its passage through a Senate where minor parties held the balance of power. Australian courts have taken the extraordinary view that this outcome of political negotiation reflected a considered view by the majority of parliamentarians that there should be no other exclusions to patentable subject matter, even those of long-standing. There is not one scrap of evidence to support this view.

In 1991 the Federal Court overturned the long-standing exclusion of software from patentability,¹⁸ as it had a commercially useful effect. This decision seems to derive strongly from the NRDC view that the effective criteria for being a “manner of manufacture” are artificiality (i.e. not found in nature) and earning power. The very broad acceptance of software as patentable subject matter in Australia was extended in an extraordinary decision in 1994 when the court held that computer programs involved more than a mental process.¹⁹ What this extra element was was not specified, but a careful reading seems to imply that because the software ran on a computer, driven by electricity, this became more than a mental process.²⁰

¹⁶ *Grant v Commissioner of Patents* (2005) FCA 1100: 20; FCAFC 120: 43. The 3 appeals, including the initial appeal within the Australian Patent Office are well discussed in Tyacke and Webb 2007.

¹⁷ *National Research Development Corporation v Commissioner of Patents* (1959) 102 CLR 252.

¹⁸ *International Business Machines Corporation v Smith, Commissioner of Patents* (1991) 33 FCR 218; (1991) 105 ALR 388; (1991) 22 IPR 417; (1992) AIPC 90-853.

¹⁹ *CCOM Pty Ltd v Jiejing Pty Ltd* (1994) 28 IPR 481.

²⁰ The Full Court based its decision on UK legal reasoning: “that more than a mental process was involved in claiming the process of application of certain steps represented by a computer program on a

Novelty

Both novelty and inventiveness rules are grounded in a presumption in favour of the applicant. This “reverse onus of proof” rule is set out in Section 7 of the *Patents Act 1990*, where the statute states an assumption of novelty and inventiveness.²¹ This presumption also exists in other jurisdictions.²² It is, of course, contrary to normal regulatory practice, where the seeker of regulation should demonstrate a clear national benefit—a principle very well set out in the National Competition Principles.²³ Applicants frequently rely on this presumption demanding that examiners identify exactly where (in the narrowly defined existing knowledge documents identified) it is shown that the application is either not novel or not inventive (Moir 2009).

Both the novelty and inventiveness tests are applied in relation to tightly constrained subsets of existing knowledge. The limitations on existing knowledge differ.

In the novelty test generally only one piece of written existing knowledge is considered at a time, and a cross-reference in that document to another (for example a citation or footnote) is not always sufficient for the knowledge in both documents to be allowed to be considered as a whole. This severe limitation to the social value of the novelty test was introduced by the English courts as early as 1880 and confirmed in 1929 (Bochnovic 1982: 20) The inventiveness test grew up at about the same time as this emasculation of the novelty test (Bochnovic 1982; Beier 1986). Many commentators today consider that the novelty test is ineffective in excluding trivial applications.²⁴ Indeed my study shows the ease with which the novelty test can be evaded. The applicant simply waits for the patent examiner to identify the relevant prior art, then amends the claims to introduce or change at least one minor feature of the invention so that the application is no longer precisely identical to any of the identified existing knowledge documents (Moir 2009).

Inventiveness

When it comes to the inventiveness test—widely considered to be the major threshold test for grant of a patent monopoly—there are a myriad of decision-making rules and procedures which radically constrain the definition of “inventiveness” under patent law. The presumption of inventiveness has been mentioned above. Other policy rules (doctrines)

standard computer, since the method as claimed was incorporated in the program and in apparatus in a physical form” (van Caenegem 2002: 46).

²¹ Section 7(2) states “... *an invention is to be taken to involve an inventive step when compared with the prior art base unless the invention would have been obvious to a person skilled in the relevant art in the light of the common general knowledge as it existed in the patent area before the priority date of the relevant claim, whether that knowledge is considered separately or together with the information mentioned in subsection (3).*” (emphasis added). A similar provision is spelled out in Section 7(1) with respect to novelty (see http://www.austlii.edu.au/au/legis/cth/consol_act/pa1990109/s7.html).

²² For example Section 3 of the 1977 UK *Patents Act* (O’Connell and Murray 2003: 482).

²³ The Commonwealth-State Competition Principles Agreement requires that “legislation should not restrict competition unless it can be demonstrated that: (a) the benefits of the restriction to the community as a whole outweigh the costs; and (b) the objectives of the legislation can only be achieved by restricting competition (Competition Principles Agreement, <http://www.ncc.gov.au/pdf/CPAam-001.pdf>, clause 5.1.).

²⁴ And the case showing that an application can pass the novelty test yet not be an invention seems to demonstrate this vividly (see *Philips v Mirabella: NV Philips Gloeilampenfabrieken and Another v Mirabella International Pty Ltd*, (1992) 24 IPR 1; (1993) 44 FCR 239; and (1995) 132 ALR 117).

that constrain the patent law definition of inventiveness are limits on the sub-set of knowledge regarded as the base for the test; narrow limits as to the relevant area of technology (which further limits relevant existing knowledge); very severe limits on the ability to find a combination of known elements uninventive; a refusal to apply the analogous use test to processes, methods and systems; acceptance of trivial difference (often only in the words not the invention) as sufficient to pass the test; and a confusion as to specification of a “problem” with the “inventiveness” of any solution. There are also rules as to the decision-making perspective—for example, the judge should be skilled in the relevant technology field but must have no imagination. The increase in the decision-making test from “benefit of the doubt” to the applicant to “balance of probabilities” does not appear to have had any impact on the frequent acceptance of not merely incremental, but trivial, “inventions” as worthy of a patent monopoly.

A similar situation has developed through case law in the USA, and the US Federal Trade Commission has concluded that “[a] plethora of presumptions and procedures tip the scales in favor of the ultimate issuance of a patent, once an application has been filed” (US FTC 2003 :8). There is a substantial doctrinal literature on the US inventive step arguing that since 1982 the inventive step has fallen to very low levels (see, e.g., Hunt 1999; Barton 2000; Lunney 2001).²⁵ This is associated with many comments on a high volume of “obvious” patents issuing from the US Patent and Trademark Office (USPTO). For example, Jaffe and Lerner comment on the famous “sealed crustless sandwich” patent (Jaffe and Lerner 2004: 26-27); Dreyfuss describes several highly obvious “business method” patents;²⁶ and Lerner reviews two financial patents, citing pre-existing academic knowledge indicating that both the novelty and the inventiveness of these patents are problematic.²⁷

Although the impact of these rules is best illustrated by examples of how they operate, anecdote and individual cases do not form a sufficient evident base for sound policy. The next section of this paper explores the inventiveness policy rules in some depth, illustrating the problems with examples from an in-depth study of business method patents.

4. Does inventiveness work as a proxy for national benefit?

It can be seen from the brief description above that the current rules for determining inventiveness include a range of limiting parameters. These are discussed in more depth below, but first a brief word about the data used to illustrate this discussion.

Despite the importance of the inventive step in patent policy it has not been subjected to robust analysis. A major reason for this is the time required to read and assess patent

²⁵ It is as yet too early to tell how much influence the recent Supreme Court *KSR v. Teleflex* decision (127 S.Ct. 1727 (2007)) will have on the height of the inventive step in the USA (for a discussion of the judgement and its implications for balance in the patent system see Dreyfuss 2008).

²⁶ She discusses examples such as the architectural patent for saving hall space by building external stairs and the famous priceline.com reverse auction system, which she points out had for some time been used by the US Treasury which “sells hundreds of billions of dollars' worth of securities each year” (Dreyfuss 2000: 268).

²⁷ U.S. Patent 5,884,286 awarded to Vergil Daughtery III in 1999 for the valuation of infinitely lived call and put options and U.S. Patent 5,940,810 awarded to Joseph Traub, Spassimir Paskov and Irwin Vanderhoof in 1999 (assigned to their employer Columbia University) covering the use of advanced simulation techniques to value securities (Lerner 2002: 922-924).

specifications and claims, and the need for the judge to have sufficient relevant technical knowledge. As a result the experts who have commented on trivial patents have tended to select one or two examples. It also means that any single judge can probably only make assessments in respect of a particular “technology” field.

To date I have found only one study which takes a systematic sample of granted patents and assesses this for the overall quantum of inventiveness. This was a study of 50 of the best-quality US software patents, identified from forward citations.²⁸ These 50 patents were assessed against the USPTO’s obviousness standard, which the authors point out is low (Campbell-Kelly and Valduriez 2005). One major finding was that all 50 inventions are only incremental.²⁹ This implies that the bulk of software patents granted in the USA are even more incremental. That is, they may well offer so little new knowledge or know-how that they produce no social benefits.

The “technology” field of business methods is perhaps more open to assessment of patent inventiveness standards than other fields as it only requires a basic understanding of software and a good general knowledge of business methods and systems. It is thus possible for a wider set of people to consider the essence of business method inventions and to draw their own conclusions as to what these say about the quantum of inventiveness required for grant of a patent monopoly.

Some argue that business method patents are “different” from patents in other fields of technology, but the TRIPS Treaty clearly states that there shall be no discrimination between fields of technology in patent law, and Australia and all other WTO members are signatories to this treaty. IPAustralia certainly takes the view that it applies the eligibility rules equally to all technology fields. Australia thus applies the same rules to assessing inventiveness to business method patents as it does to other technology fields and so appears reasonable to use a dataset of such patents to explore the general impact of this important policy issue.

Patents are very diverse in character. Unless the set examined is large, there is a reasonable chance that the examined set will be unrepresentative. The methodology used here was to “construe” the patent specification to determine the essence of the invention, then assess whether this contained any new knowledge or know-how. No artificial rules were used to constrain this judgement. The question addressed was “is there any evidence that the invention contributes new knowledge or know-how as at the priority date”?

The methodology thus involved a careful reading of patent specifications together with correspondence between the applicant and the examiner. This is both tedious and time-consuming. A balance thus had to be drawn between a sufficiently large dataset from which to be able to generalise, and a sufficiently small set to be manageable. It was also important that the selected patents be recent, because of the higher risk of missing known knowledge at older priority dates. The dataset used is the universe of Australian business method patents accepted or sealed by 30 June 2007 from filings in 2003-06. This identified 72 business method patents, of which 13 had priority dates in 2000 or earlier.³⁰

²⁸ In subsequent software patent applications. Software is based on IPC Class G06F (for all USPTO grants in the period 19760-2000).

²⁹ Though only two are obvious in terms of the USPTO criteria.

³⁰ This is of course only a universe at a point in time. Subsequent processing will have led to many more

Existing knowledge rules

As noted above patent policy rules reduce the existing knowledge that can be used in assessing novelty or inventiveness from all existing knowledge to sub-sets of this. In determining the base for assessing inventiveness the rule is the knowledge that a person who is skilled in the technology would normally consider in their work. Unfortunately the exact wording of the statute has led Australian courts to the view that, in low technology fields, existing knowledge embodied in patent applications or grants is not part of the allowable knowledge base for assessing inventiveness.³¹ Until this part of Section 7(3) of the *Patents Act 1990* is amended, in low technology fields applications for invention that have already been patented will pass the Australian inventiveness test.

Another aspect to limiting the relevant existing knowledge is a very narrow definition of what constitutes the “technology field”. Bagley has pointed out the extent to which this policy has changed over time in the USA, and the strong impact this has had in reducing the quantum of inventiveness required for a US patent monopoly grant (Bagley 2001). The same rule changes have occurred in Australia and are well illustrated in the *Welcome Real-Time v Catuity* case, where the judgement shows that all parties agreed that the essence of the invention, dynamic storage, was well known in the IT field but not among practitioners of customer loyalty programs. On this basis Heerey J determined the patent to be valid, even though it was well-known. To a non-lawyer this is a very strange definition of inventive, but it follows from considering the relevant existing knowledge to be that known to loyalty program experts, rather than that which would be known to any expert embodying an invention in a “smart chip”.

In practice these problems also combine both with the “reverse onus of proof” problem and with allowing amendments to patent specifications. In combination these factors ensure that many patents are only very trivially different from existing processes or products. In responding to examiner objections on novelty and inventiveness grounds, the applicant’s patent attorney often asks the examiner to demonstrate exactly where in the relevant existing knowledge documents the exact details of the new claim are provided. In the case of an “invention” for turning a magazine into a lottery ticket,³² the attorney actually thanked the examiner for drawing five documents with closely related knowledge to his attention, before arguing “... that individual patent specifications and their contents do not normally form part of the relevant common general knowledge...” for the inventiveness test.³³ The attorney then went on to argue that the five steps in the patent claim, viewed

patents being granted from these 4 years of applications. A planned future project is to compare the inventiveness of these initially granted patents with those granted later. Further details on the methodology used in this study are in Moir 2008a: 101-132.

³¹ *Commissioner of Patents v Emperor Sports* (2006) 225 ALR 407; (2006) 67 IPR 488; [2006] FCAFC 26. This wording was introduced at a time when patents were largely limited to technology fields, so did not become a problem until the courts determined patents could be provided for computer programs. IPAustralia has finally taken preliminary action to propose a revision to this welfare-reducing decision in its 2009 series of proposals for minor amendment of the patent system (IP Australia 2009: 11).

³² AU2004203807, priority 7 May 2004 (“A Method of Commerce”). The claims revolve round the identifier for the magazine and the purchaser, selection of the winner from the database, and publicity about the winner. In other words it parallels well-known systems for lotteries.

³³ Citing the 1972 case *General Tire & Rubber Company v Firestone Tyre and Rubber Company Ltd* (1972) RPC 457: 482.

together, did not constitute common general knowledge, even if individual steps such as purchasing a magazine were well-known.

Some patents in my dataset are so similar to known systems and methods that it is hard to identify any differences, let alone any contributions to knowledge. Perhaps the leading example is an online airline booking service.³⁴ A number of travel agencies had on-line offerings well before the 2004 priority date, some with spectacular commercial success. The system covers varying numbers of passengers and checks enquiries against databases of travel availability (including prices). The potential traveller is offered available options around the desired date. The system prints a travel document and/or a receipt. The application was rejected as lacking in novelty and inventiveness, citing one US patent (6,304,850, Keller et al.). The response from the applicant's attorney is worth quoting in some detail for its demonstration of how minute are the differences involved in passing the threshold tests for a patent. He said (emphasis added):

- "(1) Keller teaches how a *fare availability search* can be conducted, whereas the present invention goes beyond this by combining a *fare search* with an *availability search*.
- (2) Keller requires the user to enter a target price for the booking, whereas the present invention provides a list of possible fares ...
- (3) The fare search phase in the present invention is conducted over an extended time period that is larger than the time period specified by the user ..."

And in regard to inventiveness, the attorney stated "the Examiner has provided no evidence that a skilled address[ee] could have ascertained, understood and regarded as relevant US patent documents, and in particular the Keller reference."

An "invention" for a method for purchasing spare parts also highlights the triviality of the differences argued in examiner-applicant correspondence.³⁵ In this "invention" a broker negotiates with a manufacturer to sell spare parts from inventory. The manufacturer answers a set of multiple-choice questions, and the answers are scored to reveal whether the part is excess to manufacturing needs. If it is, a means is provided for the buyer and seller to negotiate purchase and transfer. The method can operate over the internet, and includes a facility for the buyer to continuously monitor the broker's progress in obtaining the part. The Australian examiner rejected this as being the mere technical equivalent of a previously patented invention. The attorney replied with an amendment merging claims 1 and 4, and disagreed strongly with the view that "... the step of asking the specific questions required in the claimed method is a technical equivalent to the practice in the [prior art] document of assessing a potential seller's spare parts surplus by directly examining the potential seller's inventory and product planning databases." He argued that asking questions elicited higher value information than inspecting databases, and thus "... provides a more refined understanding of whether a particular spare part is excess to the foreseeable needs of the potential seller than would be achieved by simply examining the potential seller's inventory and product planning databases, which does not involve a score based system for determining relative importance of a part." The patent was accepted within a week of this response being received by the examiner.

³⁴ AU2004202066, priority date 17 March 2004 ("Online fare booking method and system").

³⁵ AU2004202060, priority date 14 May 2004 ("Spare part procurement method").

During the examination process claims are frequently amended to overcome examiner objections. In its ultimate form this strategy can include withdrawal of an application that is about to be rejected once a “divisional” has been filed, thus setting up a new opportunity to refine the wording.³⁶ The ability to amend specifications during the processing stage was introduced in Australia in the *Patents Act 1952*. There was no substantive discussion during the parliamentary debate, and this change seems never to have been evaluated. Yet it is clear from the cases investigated here that the ability to continually amend claims and specifications leads to a substantial under-mining of the overall goals of the patent system. Some such amendments seem only tangentially related to the core “invention”, yet suffice to pass through the monopoly granting gate. Examples are an expert medical system where the application was finally accepted after insertion of the limitation that the server sending the data reverted to standby mode after sending the medical data³⁷ and a system for directing ambulances to the most appropriate hospital which was accepted after amendment to define a single satellite communication gateway for data transmission.³⁸

Of the 44 applications that were known to have been rejected at least once for want of novelty or inventiveness, 11 were amended once and 26 were amended at least twice (see table). Only seven were not amended. The extent of amendment varies considerably. Sometimes the claims are deleted in their entirety, and replaced by completely new claims or claims from a successful overseas version. Other times the amendments are minor. One of the most astonishing examples is a case where the movement of 9 words from claim 2 to claim 1 overcame the European Patent Office’s objection that the invention made no technical contribution. This “invention” uses fingerprints to authenticate identity prior to secure internet transactions. In Australia it was rejected twice on novelty and inventiveness grounds. The claims were substantially amended, the applicant arguing these created the critical distinction of “*the transmission of the fingerprint to a central location for matching against a database, in contrast to storing the fingerprints in the fingerprint authentication device.*” The 9 magic words which achieved an EPO monopoly related to the fact that the fingerprints were in encrypted form.³⁹

This policy of allowing frequent and trivial amendments is long overdue for evaluation.

³⁶ AU2003244578, filed 28 August 2003, priority 23 October 2000 (“System and method of attracting and lodging PCT national phase applications (II)”) was possibly never examined in Australia. The Australian examiner identified two ‘inventions’ and searched and examined for one, which was rejected as being neither novel nor inventive—in fact only common business practice in attorney firms. However that was the version that the applicant deleted. There is no evidence that any search or examination was done on the remaining (closely similar) set of claims. In its EPO version (publication EP1340174) advice of an oral hearing was issued in June 2008, and it was clear from this that it would be most unlikely the application would be granted. The applicant responded by filing a Divisional and withdrawing the parent. The “new” application is not yet open for public inspection.

³⁷ AU2003281184, priority 15 July 2002 (“Medical data warning notifying system and method”). The claims were amended twice. The first amendment reduced the scope of the claims from all medical data to data on peritoneal dialysis. Following a second rejection the applicant amended the claims by limiting them to “*a system with a server giving a warning message, then reverting to stand-by mode*” after sending the data. In arguing this’ now differed from previous patents, the attorney emphasised that identified ‘prior art’ documents *did not include a server reverting to stand-by mode.*

³⁸ AU2003248001, priority 30 September 2002 (“Emergency communication service providing method and device”).

³⁹ “Method of conducting transactions over a network” (AU2004203415, filed 26 July 2004, priority 23 February 2000).

Amendment frequency: Australian business method patent dataset

# examiner rejections for novelty or inventiveness	Claims amendment frequency				Total
	1	2	3 +	no evidence	
1	9	11	6	7	33
2	2	4	4	--	10
4	--	--	1	--	1
Not rejected	7	2	3	14	26
Total	18	18	14	22	70*

Source: Based on Moir 2008a

* Rejection status not known for 2 cases (1 modified examination).

Combining known elements (combinations)

Another policy rule requires examiners to accept applications which combine well-known elements in new ways even if the combination is no more than the sum of the parts. Thus examiners are warned against determining that a marginally different combination of characteristics is uninventive, unless the idea of that particular combination has been written down.⁴⁰ In Australia this doctrine derives from a 1980 High Court decision,⁴¹ warning against the straightforward rejection of combinations. It was introduced a few years later (1984) in the USA,⁴² where it is known as the “suggestion” doctrine (Lunney 2004: 21). The earlier test—that a combination of known elements have an unexpected (inventive) effect or produce a result greater than the sum of the parts (the “synergy” doctrine)—still holds under the European Patent Convention (EPC). A particularly insidious version of the “suggestion” doctrine is in respect of computer programs, which often take well-known methods and apply them in an electronic environment. In the USA computer programs per se are not patentable, but simple re-drafting of the claim language suffices to overcome this exception. In Australia no pretence that a computer program is not a computer program is needed. Australian courts consider there is no subject matter exception to the patentability of computer programs.

An example of a trivial combination patent is a system for reducing the number of plastic cards one carries by combining a normal credit card and a store-specific card.⁴³ In responding to the examiner’s rejection in the light of four US patent documents the attorney argued this existing knowledge *allow[ed] for multiple accounts* rather than a *single account*

⁴⁰ There is not a large market for written documentation of the obvious (see, e.g. Ullman 2000).

⁴¹ *Minnesota Mining and Manufacturing v Beiersdorf* (1980) 144 CLR 253, cited in Australian Patent Manual, 2.5.3.5 (see <http://www.ipaustralia.gov.au/resources/manuals.shtml>).

⁴² *ACS Hospital Sys, Inc*, 732 F2d at 1577.

⁴³ AU2003262344, priority 5 September 2003 (“Payment card processing system and methods”).

on a *multi-use card*; that none *specifically combined a store card and a credit card*, even though they loaded a range of functions and accounts onto a single card; and that *specific details were not ‘taught’ in the prior art*. These specific details were an upgrade process for converting current store cards to dual cards; migration of data; in-store issuance of a card; and activation on customer request. All these are, of course, very well-known processes. However because the examiner was unable to find written evidence of the exact combination, the patent monopoly was granted.

Westpac’s combination of three bank products provides rewards for moving money between the loan and credit card accounts (which have a combined loan limit).⁴⁴ Following argument from the applicant, the examiner withdrew novelty objections but maintained inventiveness objections, citing a similar Commonwealth bank product (Viridian). In their lengthy reply to this second rejection, Westpac’s attorney presented a detailed comparison of the two products. This focused heavily on extremely narrow readings of the meaning of specific features: for example that customers *can* link credit cards to the Viridian product, but that they are not part of the Viridian product *per se*; that Viridian’s reduced loan debt *benefit* is not a *reward* as there is no “reward currency” or “reward program rules”. These arguments successfully overcame the examiner’s objections.

Two others in this category, both owned by Australian-based Shaw IP Pty Ltd, are information systems for tracking items. One stores, links and monitors data between producers, retailers and customers, allowing owners to track information about goods they have bought.⁴⁵ The system uses a device attached to the goods by the manufacturer (i.e. like a barcode), which could be a radio-frequency identification (RFID) device. Retailers have IDs and add customer ID through receipts. The 74 claims relate to how the IDs are developed, attached, read/scanned, stored and remotely accessed. No new technical advances are identified in any aspect of the supply and management of the various ID options—it is simply an information management system, perhaps similar to the tracking systems used by post offices for registered mail over many years. It is hard to understand how the UK Patent Office determined there was a technical contribution contained in this “invention”. This “invention” has also been granted a UK patent.⁴⁶ Surprisingly this was granted after the introduction of the 4-step patentable subject matter test designed to eliminate the grant of patents to pure software or business method “inventions”.⁴⁷

The other Shaw IP Pty Ltd patent is another system for tracking items, this time those used by celebrities at public events.⁴⁸ The system incorporates an identification means into item(s) prior to an event, stores the data, and allows for updating. The subsidiary claims cover sporting and a range of other events, the type of item, the stored data, the

⁴⁴ AU2005204292, priority 26 August 2005 (“Integrated financial service product”).

⁴⁵ AU2003302490, priority 4 June 2003 (“A system for and method of monitoring an item”).

⁴⁶ It is pending at the EPO. Amendments have been submitted after a rejection for lack of inventiveness.

⁴⁷ The 4-step test for patentable subject matter was introduced in the UK in November 2006 after Prescott J’s trenchant comment that “you are not allowed to get round the objection—that you are attempting to patent a computer program—by claiming it as a physical artefact, a mere change of form” ([2005] EWHC 1589 (Pat) at 36). The four steps are: 1) properly construe the claim; 2) identify the actual contribution; 3) ask whether it falls solely within the excluded subject matter; and 4) check whether the actual or alleged contribution is technical in nature (see <http://www.ipo.gov.uk/p-pn-subjectmatter>, accessed 27 August 2009).

⁴⁸ AU2003207780, priority 10 April 2002 (“A system for and method for authenticating items”). This “invention” has also been granted patent monopolies in New Zealand, the USA and the UK.

“identification means” and so on.⁴⁹ The “identification means” includes a RFID tag and tamper minimisation. As found in other patents, the claims do not cover the “identification means” themselves, but rather a *database system* within which such means are used. This “invention” has also received patent monopolies in New Zealand, the USA and the UK. In Australia an enquiry was made about re-examination, but the enquirer was advised the fee for this was \$A1,300, and nothing further was heard.

Both these “inventions” have very lengthy claims, respectively 74 and 76.⁵⁰ In each case the claims are effectively duplicated for a system and a method, with a small number of other claims. Considering only the method or system claims (that is the main description of the claimed monopoly) there are 31 and 35 claims respectively. This allows for substantial trivial detail to be included in the claim, making it almost impossible for an examiner to find a written suggestion that all these elements be combined in exactly this way. As a direct consequence these two trivial variations, contributing no new knowledge to the community, have been granted monopolies.

Mere computerisation

Cases where the combination takes the form of mere computerisation are also extremely obvious, and it is clear that the simple computerisation of well-known methods contributes no new knowledge. In most cases the cost of developing the “invention” is likely to be modest—implying that these costs can be recouped from a short period of first mover market advantage. Examples of business methods granted in Australia which involve simple computerisation include: the mental steps involved in valuing a building,⁵¹ writing a sales contract for copyrighted goods;⁵² managing an internet advertising campaign,⁵³ the mental steps involved in implementing contractual obligations⁵⁴ and an expert medical system.⁵⁵ Where very well-known methods are combined with the power of electronic networks, the suggestions doctrine also gives rise to very obvious patents. Examples are a system for the remote ordering, checking and acceptance of ID cards which simply uses the

⁴⁹ Other subsidiary claims include such ordinary features as scanning, on-line access to the database and on-line purchasing, including a bidding facility.

⁵⁰ AU2003302490 has 74 claims: 1-31 are system; 32-62 method; 63-67 systems information re storage and item records; 68-72 as per 63-67 but method, 73-74 omnibus. AU2003207780 has 76 claims: 1-35 are for a system; 36-70 for an identical method; 71-73 are for a management system for the same invention and 74-76 are standard omnibus claims.

⁵¹ AU2005203023, priority 12 July 2005 (“A method for performing an asset valuation”). Granted after minor amendment and argument that valuers often cut corners and failed to keep proper records.

⁵² AU2003290930 priority 18 November 2002 (“System and method for granting access to an item or permission to use an item based on configurable conditions”). No novelty or inventiveness objections raised in Australia, but the USPTO has rejected this application and an appeal is pending.

⁵³ AU2003200436, priority date 8 February 2002 (“Automatic Flight Management in an Online Marketplace”). After rejection on novelty grounds the claims were replaced by those from US patent 7,231,358. While the formal databases indicate either withdrawn or refused in the UK, material on the Australian file indicates that the UK Patent Office advised this invention was not patentable subject matter.

⁵⁴ AU2003204278, priority 21 May 2002 (“Distributed Transaction Event Matching”). The claims were amended and the patent was granted.

⁵⁵ AU2003281184, priority 15 July 2002 (“Medical data warning notifying system and method”), see footnote 37 above.

power of networks with traditional methods of supplying certain types of goods,⁵⁶ and a networked system for comparison shopping between providers of services rather than goods.⁵⁷

The analogy policy not used

If the “analogous use” principle were applied to these cases it would prevent the grant of monopolies to many uninventive “inventions”. This doctrine developed as a means of rejecting applications involving obvious variants on how knowledge was used. As the Australian High Court said in 1959:

"If stainless steel and its properties were known, and many kinds of articles had been made of it, it would not be possible for a man to claim a monopoly for making kitchen sinks of stainless steel merely because he was the first man who ever thought of doing this. ... *It is not an inventive idea for which a monopoly can be claimed to take a substance which is known and used for the making of various articles, and to make out of it an article for which its known properties make it suitable, although it has not been used to make that article before.*"

(1959) 102 CLR 232, 248 and 249 (emphasis added)⁵⁸

It is unclear why this policy is not applied to these business method applications, as many of them seem to be merely the use of well-known processes in marginally different environments—exactly the kind of analogy identified by the High Court as being unpatentable. ACIP, in its issues paper on patentable subject matter suggests:

"... ‘analogous uses’ became a category of inventions considered inherently unpatentable. These were improvements to existing processes or devices which replaced a particular element with another element, the properties of which were already known. Such inventions were considered to be inherently unpatentable because the ‘abstract principle’ of the replacement element was already known. By contrast, for combinations of two or more elements the focus was on whether the physical form was new and useful, rather than whether the underlying principles of the elements were new. Consequently, whether an invention was classified as a combination or a use was critical in whether it would be considered inherently patentable."

(ACIP 2008a: 18)

This suggests that, where business method applications are specified in detail, the quantum of detail becomes the justification to use the “suggestion” policy not the analogous use policy. There are several examples in the dataset of “inventions” where the analogous use policy might have been deemed appropriate.

In one case the well-known technique of benchmarking is used to determine sustainability in property developments.⁵⁹ Benchmarking was very popular in the 1990s in Australia—

⁵⁶ AU2004201620, priority 20 April 2004 (“An Identification Card Production and Distribution Method”).

⁵⁷ AU2003200220, priority 23 May 2002 (“System and method for selecting a service provider”).

⁵⁸ *Commissioner of Patents v Microcell Ltd*. The principle dates from an 1838 English case, re-confirmed by the British Lord Chancellor in 1965 (Brennan and Christie 1997).

⁵⁹ AU2004200942, priority 7 March 2003 (“Method and Tool for Assessing the Sustainability of a Development”).

widely used to monitor micro-economic reform.⁶⁰ Like audit, financial ratios, expert systems and general ledger codes, it is a widely known and used technique. Here the applicant successfully argued that because the cited existing knowledge was used in respect of operational efficiencies in a firm, not assessing the sustainability of a property development, the application was sufficiently inventive to merit a monopoly. Given the objective of measuring the sustainability of proposed developments, a possible alternative approach would have been some form of checklist—an inferior kind of benchmarking.

Another example is the use of the centuries old technique of audit to determine the presence of chemicals in foodstuffs.⁶¹ The examiner found three patent documents and a conference paper relating to the audit of chemicals. The applicant argued that these did not cover the full supply chain, as they commenced tracking only at the farm. At the same time the claims were narrowed from auditing chemicals in materials to auditing chemicals in foodstuffs. The patent was then granted. Again there was no use of the analogous use policy despite the clear suitability of this very old and well-known technique—indeed it appears that this is only one of many patent monopolies using this technique in this specific field.

It is unfortunate that this doctrine is not used to prevent the grant of monopolies which so clearly provide no public benefits and no positive spillovers to offset the costs of these interventions in the market. It appears that the addition of minor elements to an “invention” allows a particularly welfare-reducing policy rule to predominate, the “suggestions” policy for combinations.

Patenting problems or solutions

The final pattern emerging from my in-depth study is a set of cases where the monopoly grant is for an idea or the spelling out of a “problem”. This issue—of whether business method patents are effectively granted for the identification of a “problem” rather than a solution—has been suggested by Kahin. He quotes an IBM representative as saying “it is possible to obtain exclusive rights over a general business model, which can include ALL solutions to a business problem, simply by articulating the problem” (Kahin 2003b: 214). This can be tantamount to allowing patenting of an idea or principle, rather than an artefact using that idea or principle.

One example is a patent which uses electronic networks to arrange for the physical production of electronic documents closer to the point of final receipt prior to mailing.⁶² This is clearly a useful service, as it reduces unnecessary travel for postal items. The application makes much of overcoming “problems” in an earlier PCT application by the same company (which does not appear to have been granted anywhere).⁶³ These “problems” are failure to verify correct address positioning for the envelope window, no

⁶⁰ The BIE’s International Benchmarking Overview 1995 report, for example, is available at http://www.pc.gov.au/__data/assets/pdf_file/0003/5808/95-20.pdf.

⁶¹ AU2004233489, priority 26 November 2004 (“A system for validation of chemical usage in the production of foodstuffs”). The one non-standard feature is subsidiary claim 12 requiring the auditor to be employed by a chemical company (i.e. not independent).

⁶² AU2003254402, priority date 4 October 2002 (“Means to facilitate delivery of electronic documents into a postal network”).

⁶³ WO99/21330.

ability to reposition portions of the document, no forwarding rules or quarantine processes, no software for managing documents, etc. Other unspecified earlier systems are criticised for deficiencies such as not handling the billing for the service. This discussion of deficiencies in the existing systems demonstrates very clearly the focus on not merely incremental, but minute, changes in basic business processes. It also sets up trivial “problems” then argues “inventiveness” in solving these.

Another example is an “invention” for persuading consumers to watch internet advertising.⁶⁴ Consumers choose what advertisements to view and are recompensed (with rebates on internet connection time) proportionate to the time spent looking at advertisements. The core of the “invention” is that the viewer responds to a random invitation to view advertisements, *and does not need to download any program to see them*. This non-problem seems central to the drafting of claim 1. Subsidiary claims concern the form, location, timing and re-appearance of the ads, that they disappear, that the computer could alternatively be a range of other devices, that the consumer provides data to the advertiser, and so on. The idea in claim 1 is a very straightforward and ancient one: do this for me and I will recompense you.

Another “invention” claims both computerised and manual versions of a system for scheduling deliveries into sections of a container which has an electronic lock.⁶⁵ The claims cover the steps required to perform such an operation. Several well-known elements are combined: traditional delivery systems, sending electronic signals and confirming that delivery has been made. Despite this being a very trivial “problem” several patent offices perceived more than one invention.⁶⁶ The EPO considered the problem addressed was managing a delivery system for scheduling the time of deliveries, and that the proposed solution involves an inventive step as no previous documents teach “identifying, using the scheduler, a first time interval during which the first delivery can be made and accessing the first locked storage container only during the first time interval.” The examiner went on to comment “[t]he skill [sic] man would not derive these features from the available prior art, nor would he combine these documents to arrive at the solution of the invention.”⁶⁷ Quite how the EPO determined that there was a *technical* problem to overcome is unclear from the documentation. Perhaps the business process of delivery became technical because of the electronic lock?

Where to from here?

Given the large doctrinal literature strongly criticising the very low standard of the inventive step, it seemed sensible to step aside from this and ask instead whether granted

⁶⁴ AU2004210528, filed 9 September 2004, *priority 24 September 1999* (“Interactive System and Method for Viewing On Line Advertising”).

⁶⁵ AU2003262357, filed 19 November 2003, *priority 9 November 1999* (“Automated receiving and delivery system and method”).

⁶⁶ The Australian examiner perceived two inventions (checking for space *and* sending a delivery made advice); the EPO examiner also found two ‘inventions’ (a time scheduler for delivery and a system dependent on the size of items being delivered). All these systems are database systems setting out the steps involved in a business process—delivery of goods to a location.

⁶⁷ EP application 00977142.0, report of 11 July 2005, p. 3. The ‘prior art’ identified two documents and the examiner advised that the elements of delivering to multiple locked containers, delivering goods to customers, delivering to locked containers and sending delivery made signals were not novel.

patents deliver sufficient new knowledge and know-how to be more than offsetting the cost of patent monopoly grants. Using this yardstick a small universe of recent Australian business method patents were assessed for their contribution to knowledge and know-how. None was found. There is one possible new idea—scanning a barcode to link directly to a web address. The implementation of this new idea involves neither large expense nor developing any new knowledge. The net result is that there is no possibility that these patents, either singly or as a set, provide knowledge spillovers to offset the costs of the grant of a monopoly. The reason for the grant of most of these patents is not the absence of documented existing knowledge, but a set of rules and procedures that effectively lead to acceptance of trivial differences as sufficiently “inventive” for grant of a monopoly.

Some commentators say that such uninventive (but valid) patents are most unlikely to cause any economic damage to other innovators. Setting aside their contribution to the cost of searching patent databases to discern the kernel of genuine invention among the trivial variations, court cases such as *Welcome Real-Time* show that uninventive patents impose costs on other innovating firms. In this case it was accepted that the technology was well-known, but that it had not previously been used in the field of consumer loyalty programs. While the details and quantum of these costs remain secret, clearly Catuity would have either had to pay royalties to Welcome, or modify the direction of the technology they had developed to avoid Welcome’s monopoly. There are simply no data on the number of firms experiencing these or similar problems, nor on the quantum of costs involved. What we do know is that only innovating firms will face such costs (Bessen and Meurer 2008).

How could the patent system be modified to reduce such unwelcome costs, while continuing to provide a monopoly where it might produce net social benefits?

To a non-lawyer it is striking that the Patents Act states no objectives. Given this vacuum it is perhaps not surprising that so many of Australia’s legal decisions on the patent system appear to be welfare-reducing. My first proposal is therefore that the legislation be amended to include a clear statement of the twin goals of patent policy—to induce innovation that would not otherwise occur and which is likely to have spillover benefits possibly in the form of new knowledge.

Inventiveness was a concept introduced to assist judges in determining if grant of a patent monopoly was warranted. As this time there was a strong view on the bench that granting patents for trivial inventions was far from the purpose of the patent system. For example, in a patent judgement in the House of Lords in 1865 the Lord Chancellor said:

“Upon that I think that the law is well and rightly settled, *for there would be no end to the interference with trade, and with the liberty of any mechanical contrivance being adapted*, if every slight difference in the application of a well-known thing were held to constitute a patent ...”⁶⁸

We have moved a very long way from this situation, with trivial patents seeming to be the norm rather than the exception. It is clear from the data presented here that we need a major revamp of the inventiveness test—the major test for grant of a patent monopoly. The details rules involved in the inventiveness test have grown up over a period of some 130 years.

⁶⁸ *Hamilton E. Harwood and Another v The Directors, etc of the Great Northern Railway Company*, (1865) 11 HLC 654 at 682-3, 11 ER 1488 at 1499 (emphasis added).

The kind of tinkering around the margins involved in the “substantial” upgrading in the 1990 revisions to the Patents Act,⁶⁹ or the further minor changes introduced as a result of the IPCRC Report (IPCRC 2000) have had no visible impact on the low quantum of inventiveness required in Australia. What is needed is a complete rethink of an appropriate proxy variable that will work as an effective gauge of Australia’s net economic benefit and be relatively robust to administer. My own recommendation is to totally replace the novelty and inventiveness tests with a contribution to new knowledge test whose stated goal is to act as a proxy to ensure that patent monopolies are only granted to those inventions where there is likely to be a net social benefit to Australia. This contribution to knowledge test should be made with respect to the whole body of existing knowledge, not a delimited subset.

An alternative would be to retain the existing system, but to add the proviso that a patent monopoly could not be enforced unless it could be demonstrated that the patented invention had been copied rather than independently invented.

Two further propositions which would ensure a better balance between costs and benefits in the patent system would be to use the normal onus of proof arrangements for regulatory interventions—that the would-be recipients of a benefit prove that there is some element of new knowledge (rather than the more appropriate test that the likely benefits exceed the likely costs). Further it would make sense that a sound technology basis be re-inserted into the patent system. Prior to the active judicial decision-making of the last 20 or so years, there was wide agreement that patent monopolies could only be obtained for technologies—the application of science to the development of practical artefacts. It was also widely understood that mathematics was a special branch of science—effectively an enabling tool—and that it would be dysfunctional to allow algorithms to be patented. A return to these limits would also assist in ensuring that the patent system operated in the national interest.

⁶⁹ The claim that the revisions to the patents Act in the 1989 and 1990 Bills would make it harder to obtain a standard patent is made in the Second Reading Speech (delivered on 1 June 1989 t by the Hon Mr Jones MP, Minister for Science, Customs and Small Business).

Attachment the current Australian Patents Act

The *Patents Act 1990*⁷⁰ states no objectives. The introductory chapter covers a mishmash of administrative details, in 12 sections, together with a detailed description of how the key requirements of novelty and inventiveness are to be met (Section 7). Section 7 sets up the presumptions of novelty and inventiveness and defines what sub-sets of existing knowledge can be considered (see below). Chapter 2 of the Act covers patent rights, ownership and validity, with the conditions of being eligible for a patent being listed in Section 18, reproduced below. Chapter 3 describes the processes that apply between application and acceptance, with the critical issue of what will be assessed prior to grant being set out in Section 45 (reproduced below). Chapter 4 covers matters in relation to publication of information about and from patent applications; 5 sets out the processes for opposing the proposed grant of a patent monopoly; and 6 sets out the procedures relating to the grant and term of a patent monopoly. The remainder of the Act covers certain special types of applications, such as “divisionals”, patents of addition, PCT and Paris Convention applications, re-examination, amendments, infringement, compulsory licenses, withdrawal and lapsing of applications and cessation granted patents, contracts, associated technology, the jurisdiction and powers of courts, Crown use, acquisition, prohibition; miscellaneous offences, the register and official documents, Patent Attorneys, transitional provisions.

7 Novelty and inventive step

Novelty

- (1) For the purposes of this Act, an invention is to be taken to be novel when compared with the prior art base unless it is not novel in the light of any one of the following kinds of information, each of which must be considered separately:
 - (a) prior art information (other than that mentioned in paragraph (c)) made publicly available in a single document or through doing a single act;
 - (b) prior art information (other than that mentioned in paragraph (c)) made publicly available in 2 or more related documents, or through doing 2 or more related acts, if the relationship between the documents or acts is such that a person skilled in the relevant art would treat them as a single source of that information;
 - (c) prior art information contained in a single specification of the kind mentioned in subparagraph (b)(ii) of the definition of *prior art base* in Schedule 1.

Inventive step

- (2) For the purposes of this Act, an invention is to be taken to involve an inventive step when compared with the prior art base unless the invention would have been obvious to a person skilled in the relevant art in the light of the common general knowledge as it existed in the patent area before the priority date of the relevant claim, whether that knowledge is considered separately or together with the information mentioned in subsection (3).

⁷⁰ (<http://www.comlaw.gov.au/comlaw/Legislation/ActCompilation1.nsf/0/9C912FCC83D9A498CA2572AA0014B839?OpenDocument> accessed 8 January 2010. This compilation is as at 27 March 2007 and so does not include the removal of the requirement to provide the patent office with the results of overseas searches on patentability, announced on 22 October 2007: (see (<http://www.ipaustralia.gov.au/pdfs/news/ON20071018%20Patents%20Amendments%20Regulations.pdf>, accessed 22 November 2007).

- (3) The information for the purposes of subsection (2) is:
 - (a) any single piece of prior art information; or
 - (b) a combination of any 2 or more pieces of prior art information;being information that the skilled person mentioned in subsection (2) could, before the priority date of the relevant claim, be reasonably expected to have ascertained, understood, regarded as relevant and, in the case of information mentioned in paragraph (b), combined as mentioned in that paragraph.

[Note: Sections 7(4), 7(5) and 7(6) are relevant only to innovation patents not standard patents]

18 Patentable inventions

Patentable inventions for the purposes of a standard patent

- (1) Subject to subsection (2), an invention is a patentable invention for the purposes of a standard patent if the invention, so far as claimed in any claim:
 - (a) is a manner of manufacture within the meaning of section 6 of the Statute of Monopolies; and
 - (b) when compared with the prior art base as it existed before the priority date of that claim:
 - (i) is novel; and
 - (ii) involves an inventive step; and
 - (c) is useful; and
 - (d) was not secretly used in the patent area before the priority date of that claim by, or on behalf of, or with the authority of, the patentee or nominated person or the patentee's or nominated person's predecessor in title to the invention.
- (2) Human beings, and the biological processes for their generation, are not patentable inventions.

45 Examination *[see also Table B]*

- (1) Where an applicant asks for an examination of a patent request and complete specification relating to an application for a standard patent, the Commissioner must examine the request and specification and report on:
 - (a) whether the specification complies with section 40; and
 - (b) whether, to the best of his or her knowledge, the invention, so far as claimed, satisfies the criterion mentioned in paragraph 18(1)(a); and
 - (c) whether, to the best of his or her knowledge, the invention, so far as claimed in any claim and when compared with the prior art base as it existed before the priority date of that claim:
 - (i) is novel; and
 - (ii) involves an inventive step; and
 - (d) such other matters (if any) as are prescribed.
- (1A) For the purposes of paragraph (1)(c), the prior art base is to be taken not to include information made publicly available only through the doing of an act (whether in or out of the patent area).
- (2) The examination must be carried out in accordance with the regulations.

- (3) The applicant must inform the Commissioner, in accordance with the regulations, of the results of the following searches carried out for the purpose of assessing the patentability of an invention disclosed in the complete specification or a corresponding application filed outside Australia:
 - (a) any documentary searches by, or on behalf of, a foreign patent office, other than searches prescribed by the regulations;
 - (b) the documentary searches prescribed by the regulations.
- (4) Subsection (3) only applies to searches completed before the grant of the patent.
- (5) In subsection (4):
completed, in relation to a search, has the meaning prescribed by the regulations.

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