Maintaining an effective research environment in Australia

This position paper is endorsed by the Group of Eight (Go8) universities, National ICT Australia (NICTA), the Commonwealth Scientific and Industrial Research Organisation (CSIRO) and the Society of University Lawyers (SOUL). The Go8 is a coalition of research-intensive Australian universities, which account for around 70 percent of university research. NICTA is Australia's ICT Centre of Excellence and Australia's largest organisation dedicated to ICT research. CSIRO is Australia's national science agency and one of the largest and most diverse research agencies in the world.

Universities and research organisations attach considerable importance to a clarification of the Patents Act which effectively protects the normal course of teaching and research from claims of patent infringement.

The organisations endorsing this paper consider that achieving clarity of the law in this area is fundamental to protecting research and innovation in Australian research institutions. In a letter to IP Australia dated 2 June 2009, Go8 observed that if the conduct of research was contingent on successfully negotiating licences from patent owners and paying associated licence fees, much research conducted at Australian universities would not be practically possible.

It is widely stated that a purpose of patent law is to encourage inventors to innovate and to disclose their inventions for the benefit of society. In return for this disclosure they receive a limited exploitation monopoly defined essentially by commercial pursuits. A necessary implication of the requirement of disclosure is that knowledge embodied in an invention is available to society to drive the process of innovation, even during the life of the patent.

Notwithstanding the lack of Australian judicial consideration of the issue, research organisations typically hold that research use of patented subject matter is not within the monopoly granted by the Patents Act. This current status quo is relied on by the research community, to ensure an unrestricted environment for research and to facilitate innovation. If research is not to be adversely affected, any clarification of the law must deliver an outcome which does not diminish this current freedom.

The comments in this paper respond to the second round of consultations invited by IP Australia. They also follow from discussions with IP Australia representatives at a meeting held on 3 February 2010 at the offices of the Go8.

IP Australia is to be commended for pursuing this issue and for the work undertaken to date in developing a proposal which seeks to ensure that research is not burdened by unwarranted extensions of patent monopolies beyond their traditional sphere. We welcome IP Australia proposals to the extent they:

(a) seek to introduce a clarification that research does not infringe patent rights;
(b) affirm that a commercial aspect to research should not alter its predominant research character;
(c) clarify that limited production of patented matter for research purposes does not infringe patent rights.

Nonetheless current proposals are of serious concern to our organisations for the following reasons:

(a) they do not resolve problems of uncertainty and would require subsequent court decisions to clarify their meaning;

(b) they are impracticable to implement and would therefore be of no assistance to researchers and research organisations;
(c) they would not be understood by researchers;
(d) they are highly likely to be interpreted restrictively by the courts leading to a more restrictive environment for research and innovation than is currently in place.

These concerns are described in more detail below.

IP Australia's Current Proposal

The "current proposal" is embodied in the Drafting Instructions prepared by IP Australia and summarised in language tabled in the meeting referred to above. The summary is as follows:

> **"The rights of a patentee are not infringed by acts done predominantly for experimental purposes on a patented invention.**
>
> **Acts done for experimental purposes on the patented invention include:**
> - **Determining how an invention works**
> - **Determining the scope of patent claims**
> - **Seeking an improvement to an invention**
> - **Testing the validity of a patent**
> - **Determining whether an act or product infringes a patent."**[1]

Legal Uncertainty

Two aspects of the current proposal make it uncertain:
(a) the phrase "on the patented invention"; and
(b) the phrase "for experimental purposes".

a) "on the patented invention"
The phrase "on the patented invention", is essentially introduced to deal with a sub-problem: that is the treatment of research tools[2]. That issue can be resolved by other means, to the extent that it may be necessary (see discussion below).

In the European Union a similar but broader phrase "The rights conferred by a Community patent shall not extend to … acts done for experimental purposes ***relating to the subject-matter of the patented invention."***, has been interpreted by courts in widely different ways.

For instance, in the United Kingdom, *Monsanto Co v Stauffer Chemical* at first instance, Justice Falconer interpreted it in the following way:

> *As a matter of language that limitation seems to me to restrict the paragraph to experiments directed to the patented invention as such, experiments such as testing whether a patented product can be made, or a patented article made to work, as described in the patent specification, or experiments to see whether the patented invention can be improved or testing the effect of a modification in some particular to see whether it is an improvement or not. But the limitation would, it seems to me, as a matter of language, exclude from the exemption of the paragraph use of a patented*

1 IP Australia current proposal tabled at the meeting on 3 Feb 2010 with representatives of universities, Go8, Universities Australia, CSIRO and NICTA.

2 As indicated by IP Australia in the meeting on 3 Feb 2010.

> *article or process in experiments to test or evaluate some other product or process – the purpose of any such experiments would not relate to the subject-matter of the patented invention.*[3]

Corresponding language was interpreted much more widely by German courts as follows:

> *… the Patents Act in principle exempts all experimental acts as long as they serve to gain information and thus to carry out scientific research into the subject-matter of the invention, including its use. There are then included, for example, utilization acts for experimental purposes undertaken with the subject-matter of the invention in order to discover the effects of a substance or possible new uses hitherto unknown. Since the provision makes no limit, either qualitative or quantitative, on the experimental acts, it cannot matter whether the experiments are used only to check the statements made in the patent or else to obtain further research results, and whether they are employed for wider purposes such as commercial interests.*
> *(Klinische Versusche I)*[4]

To adopt such language, thus inevitably implies uncertainty and the necessity of litigation to achieve certainty. Removing uncertainty is of course a key objective of the proposed legislative changes.[5] Further the language of the current proposal is at the narrow end of possible frameworks and the scope is likely to be treated as in the judgment of Justice Faulkner given above

b) "for experimental purposes"
The intention behind the current proposal is to support innovation by allowing research activities to be performed without unnecessary restrictions. As the current proposal stands, the scope of these activities is limited to "experimental purposes on the patented invention". In addition to the uncertainty created by "on the patented invention", there is also uncertainty created by "experimental purposes" as a court will need to decide whether a research activity is being performed for experimental purposes or not. Research activities are broader than just those for experimental purposes as is clear from widely accepted definitions, including those used in the research community (see Annexure C). This can be rectified by defining more broadly the scope of the research activities to include not only those for experimental purpose but those for "research or experimental purposes". This is the approach taken in Japan, Korea and some other jurisdictions (see Annexure B).

Given the wide diversity of judicial opinion that exists, it is essential to ensure that the courts are provided with explicit guidance as to the intended meaning of both the terms "research" and "experiment", which we believe should both be used as discussed above. Providing inclusive definitions of these terms will significantly reduce uncertainty as to the intended scope of the provision.[6] Crucially, such definitions should be consistent with how these terms are typically understood by the research community.

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3 Matthew Rimmer *The freedom to tinker: patent law and experimental use* Expert Opinion on Therapeutic Patents Feb. 2005: 167-200, p 179

4 Rimmer, p 183

5 See objectives set out in Exemptions to Patent Infringement Toward a Strong and More Efficient IP Rights system IP Australia Consultation Paper March 2009, p 4

6 See Annexure C, which provides examples of dictionary definitions and a definition from the Review of Australian Higher Education prepared for the Australian Government (Denise Bradley, Peter Noonan, Helen Nugent, Bill Scales. Review of Australian Higher Education: Final Report. Department of Education, Employment and Workplace Relations, December 2008).

Impracticability of Application

The current proposal includes "determining how an invention works", "determining the scope of patent claims", "seeking an improvement to an invention" "testing the validity of a patent", "determining whether an act or product infringes a patent" as tests of whether the provision applies. Presumably, this is meant to assist a party in determining whether research is or is not covered by the exemption.

Any amendment must be cast so as to capture how researchers typically frame their research, if it is to be of any value to them. Research is typically not defined by reference to any single invention, or the patent claims that may or may not exist in relation to that invention. Rather research typically refers to a problem from a broad research domain which the researchers seek to address. Annexure D, drawn from successful ARC linkage applications, gives typical examples of how researchers define their research.[7] It is very unusual to find the kind of questions addressed in the current proposal being the subject of research.

Patent specifications further are typically not the materials to which researchers refer in exploring a body of knowledge and in defining their research. Rather researchers typically refer to the scientific literature embodied in peer reviewed journal articles and other academic publications. This underlines the impracticability of applying categories which refer to patent law, as tests for whether research enjoys the benefit of the provision. It would be highly unlikely that a program of research, as typically defined, would unambiguously enjoy the benefit of a provision framed in the terms of the current proposal.

Understandability to Reseachers

Researchers, supported by their research organisations, will on a day to day level need to determine if they are free to conduct research or not. In this respect the patent questions set out above are problematic. They require researchers to have a knowledge of the existence and contents of specific patents as well as how patent law applies to those patents. At a minimum, in order to use the provision, research would be burdened, at considerable cost and distraction from research, with the need to undertake patent searches and to seek legal and patent advice. The provision would therefore fail in its objective of ensuring freedom to research.

Scope of Freedom

A further difficulty with the current proposal is the narrow scope of the law that seems likely to emerge, following court interpretation. Given the importance attributed to patent questions in the framing of the provision, it is difficult to conceive of courts giving other than very narrow readings to the proposed provisions. These readings would be narrower than the current freedom enjoyed by research organisations. Firstly, the need to give meaning to the phrase "on the invention", will confine the scope of the freedom more narrowly than research or experiment generally. Further a court will be invited to conclude from the extensive reference to patent questions, that the freedom is limited to the kinds of research addressed by those questions. As noted above, very little, if any, real world research is defined in such terms.

7 Further examples of recent successful ARC funding applications can be found at http://www.arc.gov.au/pdf/grants10/LP2010R1_allstate.pdf and http://www.arc.gov.au/pdf/grants10/DP10_allstate.pdf

Research Tools

It has been observed that "research tools" present a conundrum as far as patent law is concerned. Unlike other inventions which are "downstream" of research, "research tools" are inputs to research.[8] While on traditional patent theory, the ability to patent research tools creates an incentive to distribute and provide such tools, such patents may adversely affect research (and hence innovation) by monopolizing access to research tools. Although historically not problematic, the question of research tools has become an issue for freedom to research in recent times, given the emergence of low cost chemically based tools that are critical to research, such as strands of DNA. Taq is an example and led in 1995 to Roche filing against more than 40 US universities and 200 individual inventors in a claim of infringement of patent rights over Taq. Australia's research effort would be significantly impeded if such claims were given credence or support. Australia should follow jurisdictions such as Japan and Germany, which protect research from such claims.[9]

In this respect, it is appropriate to distinguish between use or small scale manufacture for research purposes, and commercial sale. The latter is within the traditional scope of the patent monopoly and deserves protection. The former is not and its introduction into the monopoly would undermine the freedom traditionally enjoyed by researchers to innovate.

To the extent that the research tool problem must be addressed, it should be addressed by a separate provision, rather than being collapsed into the overall principle that research does not infringe the rights of a patent holder. Seeking to deal with the two issues in a single provision is at the root of the difficulties with the current proposal.

Protecting Teaching

A further issue that is of significance to Australia's ability to research, is the ability to train future generations of researchers. In some cases experiments or demonstrations may involve the use or manufacture of patented subject matter simply for educational purposes. The students who benefit are the cohort from which future researchers are drawn. It is important therefore that teaching enjoy the same protection as research.

Annexures

In order to assist consideration of reframing the current proposal we provide a number of annexures:

A. A preferred drafting model which crystallises the matters raised in this paper.
B. Examples of how the provision has been cast in other jurisdictions
C. Examples definitions of research and experiment
D. Examples of successful ARC research applications

8 Peter Lee, Inverting the Logic of Scientific Discovery, School of Law Univesity of California, Davis UC Davis Legal Studies Research Paper Series Research Paper No. 92 October 2006 http://ssrn.com/abstract=897629 , Harvard Journal of Law and Technology Volume 19, No 1, Fall 2005, p 81

9 See for instance Richard Jahn, Experimental Use Exceptions: Changes in Research Tool Patent Protection in the United States and a Comparison to Japan,Delaware Journal of Corporate Law, Vol. 30, No. 3, pp. 925-948, 2005.

Annexure A: Preferred Model Provision

Research and Teaching Do Not Infringe Patent Rights

(1) Subject to sub-section (2), the rights of a patentee do not extend over acts done predominantly for the purposes of:

(a) research or experiment[10][11]; or

(b) teaching or education[12].

(2) To avoid doubt, sub-section (1) does not prevent the following acts infringing the rights of a patentee: hiring or selling a Research Tool, offering to hire or sell a Research Tool, or importing a Research Tool for the purpose of doing any of those things.

(3) In this section:

(a) "**research**" includes a diligent, critical, systematic or scientific enquiry or investigation of any subject or question in order to:

- discover facts
- discover, confirm or revise principles, theories or laws
- test any hypothesis
- develop new applications of any known facts, theories or laws;
- develop or improve any invention; or
- collect facts about any subject

(b) "**experiment**" includes a test or trial carried out under controlled conditions to discover or establish any fact, principle, theory or law, whether or not occurring as part of research.[13]

(c) "**Research Tool**" means any patented product capable of being used in carrying out research or an experiment.

(4) The existence of a commercial purpose, or commercial or financial outcome, in connection with an act of research or experiment, does not prevent it having a predominantly research or experimental character.

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10 An explicit reference to research, which is a concept distinct from experiment, is added. This language is similar to language adopted in Japan "The effects of the patent right shall not extend to the working of the patent right for the purposes of experiment and research." (Iles, 2005, p 74) Similar language is adopted in Korea. Following judicial interpretation in Germany the language is no broader than the law operating in that jurisdiction. The proposed language is TRIPS compliant given precedents in other jurisdictions. Also the words "on the patented invention" which are proposed by IP Australia (which are intended to address the issue of research tools), is replaced with sub-section (2) which provides an explicit provision for that purpose. The issue of a commercial purpose or commercial outcome are dealt with by reference to "predominant purpose" as proposed by IP Australia, and also by explicit reference in sub-section (4). .

11 Research includes both experimental and other acts. Such other acts may include use or manufacture of patented subject matter for the purposes of demonstration, the purposes of study (without the conduct of any experiment). Experiment may occur outside the context of a structured program of research and may typically arise in relation to serendipitous discovery or to test an isolated idea which may later found a course of structured research.

12 Switzerland adopts an explicit provision protecting teaching in teaching establishments. Innovation depends on the education of future generations of researchers. This depends on demonstrating existing technology or requiring students to use existing technology for the purposes of learning. Some of that existing technology may be patented, particularly at the cutting edge of innovation. It is critical students are exposed to such cutting edge technology.

13 It is essential to prescriptively define both research and experiment as experience in other jurisdictions shows that courts will reach very different conclusions on the meanings of these concepts without clear definition. The definitions must also conform to practice of researchers in order for the provision to be applied with minimal cost in research institutions.

Annexure B: Examples of legislative provisions in other jurisdictions

Legislation in other jurisdictions suggests the position proposed by IP Australia is at the conservative end of possible experimental use exemptions. Among the more expansive provisions are those in Japan, Germany (particularly as interpreted by its courts), Canada and Switzerland.

Japan:

> "The effects of the patent right shall not extend to the working of the patent right for the purposes of experiment and research."[14]

Korea:

> "The effects of the patent right shall not extend to the following:
> (i) working of the patented invention for the purposes of research or experiment …"[15]

Mexico

> The right conferred by a patent shall not have any effect against:
> 1. a third party who, in the private or academic sphere and for non-commercial purposes, engages in scientific or technological research activities for purely experimental, testing or teaching purposes, and to that end manufactures or uses a product or a process identical to the one patented …"[16]

European Union

> Most EU members base their legislation on article 27 of the Community Patent Convention:
> "The rights conferred by a Community patent shall not extend to: …
> (b) acts done for experimental purpose relating to the subject-matter of the patented invention …"[17]

Canada

> Patent Act RSC 55 section 55.2(6)
> "… acts done privately and on a non-commercial scale for a non-commercial purposes or in respect of any use, manufacture, construction or sale of the patented inventions solely for the purpose of experiments that relate to the subject-matter of the patent"[18]

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14 Kevin Iles, A Comparative Analysis of the Impact of Experimental Use Exemptions on Patent law on Incentives to Innovate Northwestern Journal of Technology and Intellectual Property, 2005, vol 4, no 1, pp 61-82, p 74

15 Chris Dent, Paul Jensen, Sophie Waller and Beth Webster, Research Use of Patented Knowledge: A Review STI Working Paper 2006/2 OCEC Directorate for Science, Technology and Industry, p 47

16 Dent, ibid

17 Dent, ibid.

18 Jordan Paradise and Christopher Janson Decoding the Research Exemption Nature Publishing Group February 2006, Volume 7, p 151

United Kingdom

states the exemption in the following terms:

> "[an act will not constitute an infringement of a patent] (a) if it is done privately and for purposes which are non-commercial; [or] (b) it is done for experimental purposes relating to the subject matter of the invention …"[19]

Germany

> "… acts done for experimental purposes which are related to the subject matter of the patented invention …"[20]

Switzerland

Swiss legislation provides that patent rights do not extend to:

> "acts undertaken for experimental and research purposes in order to obtain knowledge about the object of the invention, including its possible utilities; in particular all scientific research concerning the object of the invention is permitted"
>
> "use of the invention of the purpose of teaching in teaching establishments"
>
> "use of biological material for the purposes of selection or the discovery and development of plant varieties"[21]

19 Paradise, ibid

20 Paradise, ibid

21 Ann L. Monotti The Australian Experimental Use Exemption: A Current Overview The Journal of World Intellectual Property (2009) Vol 12 no 5 pp 422-445, p 437

Annexure C: Example definitions of research and experiment

The Macquarie Dictionary (Fourth edition) 2005

Defines "experiment":

1. a test or trial; a tentative procedure; an act or operation for the purpose of discovering something unknown or testing a principle, supposition, etc ..

3. to try or test in order to find something out: *to experiment with drugs in order to find a cure for a certain disease*

Defines "research":

1. diligent and systematic enquiry or investigation into a subject in order to discover facts or principles; research into nuclear physics

3. to investigate carefully: to research a subject exhaustively

The New Shorter Oxford English Dictionary 1993

Definition of "experiment" includes:

1. The action of trying something or putting it to the test: a test, trial

2. An action or procedure undertaken to make a discovery, test a hypothesis, or demonstrate a known fact

3. A procedure or course of action tentatively adopted without being sure that it will achieve its purpose

Definition of "research" includes:

2. A search or investigation undertaken to discover facts and reach new conclusions by the critical study of a subject or by a course of scientific inquiry.

3 Systematic investigation into and study of materials, sources, etc., to establish facts, collate information, etc.; formal postgraduate study or investigation; summary of opinions or background information relevant to a project etc.,

Review of Australian Higher Education, Final Report, December 2008

Research comprises creative work and artistic endeavours undertaken systematically in order to increase the stock of knowledge, including knowledge of humans, culture and society, and the use of this stock of knowledge to devise new applications. Research is characterised by originality and includes creative activity and performance. It has investigation as a primary objective, the outcome of which is new knowledge, with or without a specific practical application, or new or improved materials, products, devices, processes or services. Research ends when work is no longer primarily investigative.

There are three broad types of research activity:

- Basic research is experimental and theoretical work undertaken primarily to acquire new knowledge without a specific application in view. It consists of pure basic research which is work undertaken to acquire new knowledge without

looking for long term benefits other than advancement of knowledge and strategic basic research which is work directed into specific broad areas in the expectation of useful discoveries thus providing the broad base of knowledge necessary for the solution of recognised practical problems.

- Applied research is original work undertaken primarily to acquire new knowledge with a specific application in view. It is undertaken either to determine possible uses for the findings of basic research or to determine new ways of achieving some specific and predetermined objectives.

- Experimental development is systematic work, using existing knowledge gained from research or practical experience that is directed to producing new materials, products or devices, to installing new processes, systems and services, or to improving substantially those already produced or installed.[22]

22 http://www.deewr.gov.au/HigherEducation/Review/Documents/PDF/Higher%20Education%20Review_one%20document_02.pdf p 242

Annexure D: Examples of Successful ARC Applications

LP100100598 Prof Stephen J Foster, Dr Vute Sirivivatnanon, Prof Mark G Stewart
A Re-evaluation of the Safety and Reliability Indices for Reinforced Concrete Structures
2010 $77,000.00
2011 $73,000.00
Primary FoR 0905 CIVIL ENGINEERING
Partner Organisations
Cement Concrete and Aggregates Australia
Administering Organisation
Project Summary
The University of New South Wales
The use of concrete in Australian building structures exceeds 13 million tonnes per year and its impact on the environment is considerable. With 5% of total CO2 emissions coming from cement production, one of the main components of concrete, it is imperative that Australian standards produce efficient design solutions. Preliminary modelling shows that a minimum 5% efficiency gain is possible through a re-evaluation of reliability indices with contemporary construction practices and materials, giving an immediate 180,000 tonne per annum reduction in carbon emissions. Added to this are savings through reduced transport and reduced water, sand and aggregate consumption, the potential saving on the environment, and economy, are considerable.

LP100100599 A/Prof Christopher J Trotter, Prof Colette J Browning, Prof Daniel W O'Connor, Prof Paul M Collier,
A/Prof Rosemary J Sheehan
Ageing in prison: A strategic framework for the management of ageing offenders in the
Australian criminal justice system
2010 $60,000.00
2011 $72,000.00
Primary FoR 1602 CRIMINOLOGY
Partner Organisations
Department of Justice, Victoria, Victorian Association for the Care and Resettlement of Offenders (VACRO)
Administering Organisation
Project Summary
Monash University
The knowledge and strategies offered by this research will contribute to significant improvements in planning of programs and facilities for Australian prisons and prisoner support services. In turn, ageing prisoners will benefit from improved mental and physical health, reduction in homelessness, and reduced recidivism. Improved knowledge of the needs of ageing prisoners will allow reduced costs, through better planning, less inefficiencies and a decreased burden on community health and welfare systems. The project will also assist government departments to ensure national and international human rights obligations are met.

LP100100791 Prof Anton J van den Hengel, Dr Anthony R Dick
Image search for simulator content creation
2010 $100,000.00
2011 $100,000.00
2012 $100,000.00
Primary FoR 0801 ARTIFICIAL INTELLIGENCE AND IMAGE PROCESSING
APAI_IT 1
Partner Organisations
Sydac Pty Ltd
Administering Organisation
Project Summary
The University of Adelaide
The World Wide Web contains tens of billions of images, with personal and industrial collections stretching to may times that number. The potential economic value of these image-based resources is enormous, but largely untapped as we have no practical way of recovering the images we need. This project will develop image search technologies which will allow Australian industry to exploit these important resources. Some of the wide variety of possible applications might include the searching of surveillance video for objects of interest, vision-based guidance of unmanned vehicles, smart-phone and smart-home systems which understand their environments, and stock tracking systems which can detect spoilage.