Submission to the Advisory Council on Intellectual Property

Patentable Subject Matter Issues Paper

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19 September 2008

1. Economic objectives of limiting patentable subject matter

1.1. Can placing limits on inherently patentable subject matter be justified on economic grounds?

There will most certainly be times when placing limits on patentable subject matter is justifiable on purely economic grounds. If sufficient incentives or motivations for innovation in a particular field already exist, then the award of monopoly rights amount to a net cost, based on the consequent interference with the market behaviour of competing firms. A related argument, often canvassed in the field of software, is that patents are ill suited to facilitating innovation in some fields, because the protections that they provide are unnecessarily broad. This will be particularly so in fields like software development, where the highly distributed nature of competition, the incremental nature of innovations and the short market life of products means that the patent grant is likely to have negative rather than positive effects on incentives to innovate.[1] Bessen and Meurer have compared the cost of litigation with the profit derived from patents within various industries, leading to a conclusion "the average public firm outside the chemical and pharmaceutical industries would be better off if its patents did not exist."[2]

However, it should be noted that economic grounds by themselves are at times an insufficient basis on which to approach the desirability of allowing patents in a particular field, since they are often used in a way which disguises inherent policy assumptions, such as that "patents create innovation". Further, the fact that someone has applied for a patent is likely to be taken as a confirmation of the perceived market value of the claimed invention, leading to an presumption of patentability. The danger of assessing the cost on a purely economic basis in these circumstances is that often the costs of patenting are social costs rather than pure economic costs, and do not fit neatly into a pure economic analysis. The need to consider social issues within the patent regime is considered in relation to Question 5.

1 See James Bessen and Robert Hunt, "An Empirical Look at Software Patents" (2004) FRB of Philadelphia Working Paper No. 03-17.

2 James Bessen and Michael Meurer, *Patent Failure*, Princeton University Press, 2008, at 16.

1.2. Should the subject matter of each individual invention be assessed to determine whether a patent is necessary to encourage innovation, or should an assessment be done for entire fields of technology?

Generally, speaking, there will be times where the desirability of awarding patents can be assessed for a whole field, but there will inevitably be exceptions in the form of boundary issues. The case in point in this respect is software. Although it may be clear what the process of developing software is, the growing ubiquity of computing has seen software components become commonplace in all manner of devices.[3] Thus it may be possible for a particular innovation to be characterised as occurring in multiple fields simultaneously. The European experience seems to confirm that even the most explicit blanket bans on patents in particular fields are unlikely to to work because of the ease with which alternative characterisations and creative interpretation of the language of such bans allow such exceptions to be worked around.

This is further exacerbated by the fact that the development of new fields of technology often arises in the context of existing areas of study. In this situation, it may not be practical to assess the patentability of an emerging field of science until it becomes 'recognised'. So to some extent, it will almost always be necessary for courts to determine patentability on a case-by-case basis.

However, generalisations about particular types of inventions are instructive in two regards. Firstly, they allow a degree of certainty for innovators in that they can make some sort of assessment of the likelihood of patent protection being available before entering into the expensive and time consuming process of applying for a patent. Secondly, they reflect the nature of judicial development of the law – courts determining the patentability of a claimed invention will always look for guidance from past cases, and will be influenced by the previous patentability of similar, or even analogical inventions. Since Australia is not a heavily litigated jurisdiction, this can lead to long periods in which the current state of the law is out of step with the technology it is supposed to regulate. For example, although the patentability of software first came to the attention of the US Supreme Court in 1972 in *Gottschalk v Benson* 409 U.S. 63 (1972), it was 1991 before the patentability of software was judicially determined in Australia in *IBM v Commissioner of Patents* (1992) 22 IPR 417. In the meantime, it was left to the Australian Patent Office to provide guidance to patentees by updating its Manual of Practice and Procedures to reflect the development of the law in other jurisdictions.

It is submitted that the appropriate middle ground between case-by-case analysis and per-field determinations of technology lies in some form of administrative solution. In this respect, I agree with the submission of the Centre for Law and Genetics that the development of some form of authoritative guidelines, rather than a pure legislative solution, is the appropriate way of moving forward. Such an approach requires further consideration of the process by which these guidelines are updated, especially in order to consider issues of transparency and consultation with relevant stake-holders. It may also require some form of legislative support to ensure that the guidelines are given proper consideration in judicial determination of patentable subject matter issues. A suggestion as to how this process should work is sketched out below in Question 11.

3 For example, is an innovative method of curing rubber, such as that in *Diamond v Diehr* which uses software to determine the heat of the mold an innovation in the field of software development, or in materials engineering?

2. *Economic effect of inherent patentability test*

2.1. What would be the consequences on innovation of imposing or removing limits on patentable subject matter?

It should be pointed out at the outset that the entire history of patentable subject matter is one of limitation. The patent exception in the *Statute of Monopolies* 1623 (UK) serves to highlight that the patent monopoly was, and continues to be, an exception to a general prohibition on the award of monopolies by the sovereign. Even in the modern context, these norms continue in the form of a continued distaste for monopoly found in competition law theory. The effect of imposing or removing limits on patentable subject matter is difficult to state precisely, since the actual impact depends on factors which tend to vary depending on the context. In general terms however, some relevant factors are discussed below.

Imposing limits

In the absence of monopoly protection, it is often assumed that inventors will have no way of stopping competitors from imitating their innovations. However, the extent to which the free riding of competitors is a real issue is not known. The very nature of patent protection, which extends to functional equivalents, encourages the notion that in the absence of patent protection, an inventor is "thrown to the wolves", namely unscrupulous copiers.

Although it is impossible to measure how many competitors would copy an unprotected innovation in the absence of patent protection, some indication of the likely extent of the problem can perhaps be gleaned by looking at the extent to which copying can be found in patent infringement cases. Despite proof of copying not being a requirement of infringement, it seems fair to conclude that those who would copy an invention *with* patent protection form a subset of those who would copy without patent protection. It might then be expected then that a significant proportion of infringement actions would involve copying rather than independent invention. However, a 2008 study by Cotropia and Lemley[4] found allegations of copying (or facts that suggested that copying may be in issue) in 11% of cases,[5] and copying was actually found in only 1% of cases reviewed. This factor varied by industry, with the high water mark being the pharmaceutical industry, where allegations of copying were found in 65% of cases (no doubt due to the existence of generic producers). Computer-related inventions and software on the other hand, despite forming the largest subset of the cases considered, involved an extremely low rate of allegations of copying in only 2.6% and 3% of cases respectively.[6] So it seems that the free rider problem may be less of an issue than it is usually given credit for, at least outside the pharmaceutical industry, where the importance of patent protection is generally uncontested. These figures certainly indicate, if nothing less, that presumptions about the scale of the free rider problem cannot be generalised.

The size of the free riding problem will also depend upon the extent to which alternative protection regimes are available. Alternative protection is typically assumed to mean trade secret protection, although it may often be the case that copyright could also be available. This is certainly true in the software context, where those against software patenting usually claim that copyright is a better fit with software. The availability of copyright as an alternative protection paradigm may explain the low rate of copying in patent infringement suits noted above.

4 Christopher Cotropia and Mark Lemley, "Copying in Patent Cases (draft)" <http://www.law.berkeley.edu/institutes/bclt/students/2008_ip-seminar/Lemley_Copying-in-Patent-Law1.pdf> (17 September 2008).

5 Cotropia and Lemley, at 24.

6 Cotropia and Lemley, at 27.

The extent to which a redirection from patent to trade secret or copyright protection should be considered an economic loss depends on the extent which patent applications can be taken to amount to a useful disclosure of the invention. In the software context, patent literature is rarely of use to programmers. This is probably due both the abstract nature of the inventions involved, and the aim of the draftsman to author the claim in language as broad as possible. So in this field at least, it must be questioned whether the absence of patent protection should be considered a loss at all.

Further the impact of reverse engineering must be considered. It may be that the lead time associated with reverse engineering is more attuned to the market cycle for products than the static 20 year time frame associated with patents. If it is, then the likelihood of disruption of next-generation inventions is not possible in the same way that submarine patents can disrupt an industry by providing protection for other products not within the contemplation of the original inventor, suggesting an overall economic gain may be achieved by such a redirection. Also, reverse engineering of a product may in fact lead to new information about the innovation being discovered which can lead to valuable improvements. Finally, the economic value of patent protection depends on the extent to which independent invention should be viewed as a valuable exercise in its own right – in some fields like software it may be no less than critical.

In summary, it is submitted the dangers of imposing limits on patentable subject matter are usually overstated, and are in any case ameliorated in many instances by the availability of alternative protection regimes.

Removing limits

As noted above, there have always been a number of important limitations on patent law. The desirability of removing limits on patentability must be considered in light of the existing limits on patent law. The US experience demonstrates that allowing patents to move into less and less traditional areas is undesirable. For example, the recent application for patents on film plots[7] shows how patents could be drafted in such a way as to begin to cover the sorts of innovations which have traditionally been the realm of copyright. In a sense this is a flow on effect of stretching patent doctrine to accommodate software patents which are both communicative and functional in nature. Allowing much stronger rights on previously purely copyrightable works disrupts the copyright bargain which has been purposely crafted for such 'fine arts' areas by recognising the importance of freedom in encouraging creativity.

There is also somewhat of a structural bias at play in the consideration of patentable subject matter which ought to make removing limits more of a concern than imposing them.[8] In challenging the correctness of a determination that a particular subject matter is unpatentable, the party making the challenge has a direct interest in the outcome of the decision, has a vested interest in seeking to have the subject matter extended to fit their invention, and is thus likely to have their point of view well represented. On the other hand, the interests of those who stand to lose from the expansion of subject matter are likely to be numerous, are less likely to know of the challenge and their losses are less direct. As a result, they are likely to be under-represented. In light of this imbalance, it is submitted that it would be wise to exercise particular caution before extending subject matter on a

7 See Ben D. Manevitz "What's the Story with Storyline Patents - An Argument Against the Allowance of Proposed Storyline Patents and for the Rejection of Currently Pending Storyline Patent Applications" (2006) 24 *Cardozo Arts & Entertainment Law Journal* 717.

8 Although subsequent comments focus on challenges to unpatentable subject matter, many of the issues are just as relevant in revocation or opposition proceedings where typically only a small subset of parties with an interest in seeing a particular subject matter be declared unpatentable are likely to be represented.

case-by-case basis. The need for caution in extending exclusive rights to new classes of goods has long been understood in the property law context,[9] and should be reflected in patent law by a presumption of unpatentability. To ensure that the interests of the wider community are adequately represented, it would also be wise to have a panel, made up of technical experts, who can advise on the likely impact of the expansion of patent rights into a new realm. It would also be desirable to allow for public consultation in certain circumstances. This could either be done by the body advertising for public submissions, or through some mechanism such a local version of the Peer to Patent project which is currently being trialled by the USPTO.[10]

2.2. Are you aware of any empirical data on such consequences?

Bessen and Hunt completed an analysis of software patenting based on keywords searching of the USPTO databases.[11] They found that the effect of removing limits on software patenting was that patents "substitute for R&D at the firm level" and was difficult to reconcile with the incentive theory of patents. The Cotropia and Lemley article discussed above in relation to the free rider issue is based on an empirical analysis of 200 patent litigation suits in the US, as well as over 1000 judgements in the Westlaw database.

3. Ethical reasons for limiting patentable subject matter

3.1. Can placing limits on inherently patentable subject matter be justified on ethical grounds?

Ethical limitations on patentable subject matter are entirely justifiable on the basis that unethical research should not be incentivised by patents. Further the patent bargain is often claimed to fulfil the public interest in delivering technologies. As such it would be disingenuous for the law in this area to claim a 'moral neutrality' when the changes in technology which it encourages "affect people's ability to produce, consume and exchange goods just as surely as a change in laws or regulations. As such, they are amenable to the same types of ethical evaluation as a proposal to change or redefine the laws and policies that govern human interaction in a modern society."[12] Thus the flexibility to acknowledge that certain types of patents are unethical is an important dimension of the patentable subject matter inquiry.

3.2. Is it appropriate for legislation to predetermine ethical limitations on patentable subject matter, or is it more appropriate for courts to determine such limitations on a case-by-case basis?

Both legislative and judicial determination of ethical issues are important, but both are limited in important respects. Legislative action has a large transaction cost, and so is unlikely to be able to be invoked on a regular basis to keep up with social change. Furthermore, legislators are subject to populism, election cycles, party politics and other interests which may sometimes produce solutions which are not necessarily in the long term interests of society. Also, attempting to compile an exhaustive, future-proof list of unethical research would be impossible. As a result I support the

9 See E. Richard Gold, "The Reach of Patent Law and Institutional Competence" (2003-2004) 1 *University of Ottowa Law and Technology Journal* 263, at 270-271.

10 See <http://peertopatent.org> (18 September 2008).

11 James Bessen and Robert Hunt, "An Empirical Look at Software Patents" (2004) *FRB of Philadelphia Working Paper* No. 03-17 <http://ssrn.com/abstract=461701> (16 September 2008).

12 Paul B. Thompson, "Justice, Human Rights and Ethics Issues in Science and Technology Policy" (2002) *UNESCO Encyclopaedia of Life Sciences*, at 4. On this point see also E. Richard Gold, "The Reach of Patent Law and Institutional Competence" (2003-2004) 1 *University of Ottowa Law and Technology Journal* 263, at 271-274.

proposal of the Centre for Law and Genetics that a "contrary to morality" limitation be inserted into the current legislative framework. The countours of such a limitation could then be fleshed out by the establishment of relevant guidelines for examiners, and judicial development.

It should further be noted that courts are also limited in their ability to develop the law by the cases which come before them. In the Australian jurisdiction, the low volume of litigation has meant that we have developed the law largely by updating to match other jurisdictions on an infrequent basis. For example, in the software context, the case law has considered the patentability of software on only 3 occasions since 1990. None of those cases has made it as far as the High Court. As a result, something more than mere case law is probably required. An administrative solution such as an expert panel, and detailed guidelines to assist patent examiners would allow for regular updating, public consultation and expert guidance on relevant ethical issues in the patent context. A possible implementation is discussed in answer to Question 11.

3.3. Is patent law an appropriate avenue for dealing with ethical issues? If not, what is an appropriate avenue?

As noted above, it is essential that patent law engage with ethical issues. Although other legal regimes may also have some regulatory impact on new technologies, the ethical impact of patent law's incentive effect cannot be ignored.

4. Ethical effect of inherent patentability test

4.1. What would be the ethical consequences of imposing or removing limits on patentable subject matter? Are you aware of any examples of such consequences?

As noted above, imposing ethical limitations on patentable subject matter may well discourage research in particular areas. However, the potential for uncertainty and potential discouragement of research in borderline areas (such as stem cell research) would be properly addressed through a morality provision and appropriately managed guidelines.

5. Other reasons for limiting patentable subject matter

5.1. Other than economics, ethics and national security, can placing limits on inherently patentable subject matter be justified on any other grounds?

There are a wide range of issues relevant to the award of exclusive rights, which are neither purely economic, nor are they issues of morality. For example, the award of exclusive rights necessarily impinges upon the rights of others. There is a growing awareness of the tension between intellectual property rights and human rights such as rights to adequate health care, to education, to share in the benefits of scientific progress, and to participation in cultural life. Although human rights are viewed by some as external to the concerns of the patent regime, and somehow irrelevant to the development of patentable subject matter, it is submitted that many of these rights are fundamental to a proper understanding of certain of the traditional limitations on patentable subject matter. My own research into the unpatentability of mathematics suggests that it is best explained by reference to the human rights of freedom of thought and freedom of speech, in that these freedoms are a necessary precondition of mathematical innovation. The importance of freedom of speech also informs the copyright regime, and explains the unpatentability of fine arts. Similarly freedom of thought is of obvious relevance to the unpatentability of ideas. As such, the patentable subject matter issue should address these social issues in a direct fashion if it is to achieve best practice.

6. Content and structure of current Australian law

6.1. Does the content of current Australian law meet the objectives of the system?

The software and business method case law is, on the whole, unsatisfactory. Although the physical effect requirement may be similar to the direction which US law is expected to take when the CAFC had down their *en banc* decision in *In re Bilski*,[13] and may be similar to the technical effect requirement in EU jurisprudence, the way it was expressed in *Grant* amounts to little more than an awkward patchwork of prior cases. Grant's alternative claim for the computerisation of his method is difficult to distinguish on with prior cases like *Catuity* and *IBM* which involved innovations no more tangible than Grant's invention, but for which the hardware with which the methods was associated was held by the court in *Grant* to satisfy a physicality requirement.

The dual nature in particular of software, which is recognised as both a literary work (and hence a fine art for the purposes the traditional distinction) and simultaneously a patentable process (useful art) is blurring important borderlines between copyright and patent. It is submitted that the extension of patents to software could perhaps be the entry wedge for patents over other creations which have typically been the exclusive domain of copyright law. As noted above, the filing of a series of storyline patents illustrates that this is already taking place in the US.

The widening of the conception of a patentable process brought about in order to facilitate the patenting of software is a result of a lack of understanding about the relationship between software and hardware, and the ease with which the *NRDC* test lends its self to "if value then right"[14] reasoning. The phrase 'artificially created state of affairs' would clearly extend to copyrightable creations. "Value in the field of economic endeavour" is similarly "vague and malleable"[15] and could be extended to cover valuable copyrightable works whilst remaining within a literal interpretation of the phrase. Thus recent case law exhibits too much of a tendency to treat *NRDC* as the "one true test" rather than acknowledging the role which other traditional distinctions have to play in drawing the borderline between what is patentable and what is not. This body of law is set out in the Issues Paper, but rather than being a "patchwork of rules and principles which had developed for specific subject matters"[16] it should be seen as a set of analytical tools which may help to answer the question of whether a claimed invention is "a proper subject of letters patent according to the principles which have been developed for the application of s.6 of the Statute of Monopolies".[17] In coming to this determination, these traditional categories of unpatentability have value in as much as they encapsulate a set of particular policy considerations. They may not be helpful in all circumstances, but their continued usefulness should not be underestimated.

For example, depending on one's view of mathematics, its unpatentability may not depend entirely on whether it has any practical utility. After all, almost every mathematical innovation, no matter how abstract, has had some useful application in physics or engineering. But the patenting of a practical implementation of a particular mathematical algorithm may still be problematic due to the way in which mathematical relationships have a tendency to reappear in contexts not considered by the original innovator. Similarly, the importance of beauty in driving mathematicians to explore the field means that it has much in common with fine arts, and could also be seen as non-economic. Further, many mathematicians subscribe to the Platonist view of mathematics, according to which

13 See Dennis Crouch, "Bilski: Full CAFC to Reexamine the Scope of Subject Matter Patentability" *Patently-O Patent Law Blog*, <http://www.patentlyo.com/patent/2008/02/bilski-full-caf.html> (19 September 2008).

14 Rochelle Cooper Dreyfuss, "Expressive Genericity: Trademarks as Language in the Pepsi Generation" (1990) 65 *Notre Dame Law Review* 397 at 405.

15 *NRDC v Commissioner of Patents* (1959) 102 CLR 252 at 263-264.

16 Issues Paper at 6.4.1.

17 *NRDC v Commissioner of Patents* (1959) 102 CLR 252 at 269.

all mathematical truths are pre-existing and hence are analogous to discoveries (or are at least not man-made).[18] So whilst there is indeed some benefit to be had by categorising pre-existing law into new categories, there is also a danger that the intricacies of older categorisations may be lost. Thus I believe that in many ways the existing body of case law which has been built up over nearly 400 years is probably sufficient to inform any new direction which technology may take. However, the present direction which the subject matter issue seems to have taken in recent times is problematic, and is considered in answer to the next question.

6.2. Are decision makers focusing on the appropriate principles?

There is currently too much focus by decision makers on a literal interpretation of the so-called *NRDC* formula. The court in *NRDC* were specific in noting that the proper approach was not to focus on any particular verbal formulation, but rather to look at "breadth of the concept which the law has developed by its consideration of the text and purpose of the Statute of Monopolies."[19] Despite this, the case has been reduced to an unsurprisingly awkward formula, which is in reality merely a restatement of the previous 'vendible product' test. The very flexibility which is claimed as central to the success of the formula is potentially a weak point, in that the component terms of the formula can be interpreted in such a way that they could potentially extend to any claimed invention, as noted above.

The decision in *Szabo* and the first instance decision in *Grant* gave a brief glimmer of hope that a return to first principles, as espoused in *NRDC* might be about to take place. However, this possibility was extinguished by the Full Court's decision in *Grant*. The Full Court may have been on the right track in seeking to limit patentable subject matter by reference to physicality, however the courts analysis is problematic in a number of respects. Firstly, it is not clear why there should be so much focus on the effect of a claimed process, rather than looking for some limitation of the claims themselves by reference to physical phenomena. This point is returned to in more detail below. Secondly, it is not clear why the claimed method, when restricted to the operation of a computer in order to carry it out would not meet the physically observable effect requirement. If the printing of a receipt in a transaction in *Catuity* is sufficient to satisfy a physicality requirement, then why should it be any different for a printed record of a computerised transaction? It is submitted that the solution to this problem lies in a new approach to characterisation of the method, wherein the technical contribution of any claimed invention should be assessed for a limitation based on control of natural forces (a physicality requirement). This approach is discussed in further detail below.

6.3. Is the legislative structure of current law appropriate for the content?

The problem in the software and business method context is not wholly a problem with the legislative structure, as such, although a change is recommended.[20] The primary problem, as noted above, is in the way that almost anything can be characterised as a patentable invention. Thus a change of legislative language is recommended as a way of focussing decision makers on the correct approach, rather than continuing down the rocky path which recent decisions have taken.

18 Platonism is but one of many schools of thought as to what exactly mathematics is, and although it is popular with 'working' mathematicians, it is by no means the dominant theory.

19 Ibid.

20 The exact nature of the propsed change is discussed in answer to Question 11.

7. Issues with current Australian law

7.1. Combination of flexible and proscriptive tests

It is submitted that a combination of flexible and proscriptive tests is appropriate and should be continued.

7.2. Value of existing body of case law

It is submitted that existing case law is in many respects informative, and a complete break from the past would be undesirable. However, a lack of frequency of judicial consideration of patentable subject matter issues, and the current drift towards a physical effect requirement is problematic, as noted above. Thus it is submitted that an administrative mechanism, namely the establishment of authoritative guidelines, and the assistance of technical experts should be investigated. How such a system might work is considered below.

7.3. General inconvenience, mischievous to the state and hurt of trade

I agree with the Centre for Law and Genetics that the general inconvenience, mischievous to the state and hurt of trade elements serve little purpose and should be removed.

7.4. Archaic language

I agree with the Centre for Law and Genetics that the manner of manufacture test should be reformulated as the "field of technology" test. Whilst I have noted the value of previous case law which has developed over the years above, I submit that the current problems with a strict *NRDC* test approach, and the unwillingness of courts to consider the social implications of patentability could be addressed by a change of legislative terminology.

7.5. Threshold of inventiveness

I agree with the Centre for Law and Genetics that the threshold invention test from *Philips v Mirabella* should be removed.

7.6. Threshold of utility

I agree with the Centre for Law and Genetics that an industrial applicability test should be introduced as a separate criterion in s 18.

7.7. Scope of rights awarded

I agree with the Centre for Law and Genetics that patents should be limited to use-bound claims, and that this should be the subject of a separate inquiry.

7.8. Requirement for grant

Subject matter considerations should definitely be assessed on examination. The inertia effect of a granted patent means that it is often easier to settle than to challenge a bad patent. Thus assessing this requirement at examination would minimise this negative effect.

8. International integration

8.1. Is it more important to achieve best practice or to harmonise with a major jurisdiction?

Achieving consistency between jurisdictions might seem a worthwhile goal, however, there are significant differences between Australia and other major jurisdictions which make it unlikely that a harmonised patent regime could claim to serve the *Australian* public interest. For example, the Australian software industry is a very small player on the world stage compared to the US, and thus the types of incentives which are required should be expected to be different. Similarly, the European Patent Convention means that patent law in the United Kingdom has long been on a different trajectory to Australia. Whilst both jurisdictions will inevitably continue to influence Australian law, it is better to be able to learn from the successes and difficulties in both jurisdictions to craft a regime which best suits the needs of local innovators.

Further, the issue of harmonisation is already adequately addressed (or perhaps, as some might say, overdone) by the requirements of minimum levels of protection set out in the TRIPS agreement and the US-Australian Free Trade Agreement. The status of patents as an important tool of national economic policy makes it necessary to pursue a best practice approach which may at times borrow elements from a number of different jurisdictions.

8.2. Are any jurisdictions preferable over others?

As noted above, no major jurisdiction provides a suitable model on which to base an Australian patent regime.

9. International compliance of current Australian law

9.1. Is current Australian law compliant with our international obligations?

I would agree with the Centre for Law and Genetics that, with the possible exception of the general inconvenience test, Australian law is compliant with TRIPS.

10. Preferred patentable subject matter

10.1. According to what you believe are the appropriate objectives and constraints of the patent system, what sorts of subject matters do you think should be inherently patentable and what should not?

As noted above, patentable subject matters should be limited to those in a field of technology., where the term technology is defined as "solving problems by utilising natural forces".[21] The natural forces involved are gravity, electromagnetic force, strong nuclear force and weak nuclear force.[22] The most far-reaching statement of this requirement can be found in the statement of the the German

21 Foundation for a Free Information Infrastructure, "Regulation about the invention concept of the European patent system and its interpretation with special regard to programs for computers", <http://swpat.ffii.org/stidi/javni/index.en.html> (12 October 2006). For the original statement of the test, see BGHZiv 1977 Bd 67 p22ff; BGHZ 67, 22; Beschluss des X. Zivilsenats des BGH in der Rechtsbeschwerdesache X ZB 23/74.

22 Silvis, S & Kowitt, M, "The Four Forces of Nature," *Ask An Astrophysicist*, <http://imagine.gsfc.nasa.gov/docs/ask_astro/answers/980127c.html> (11 October 2006).

Federal Patent Court that "the concept of technology (Technik) constitutes the only usable criterion for delimiting inventions against other kinds of intellectual achievements, and therefore technicity [sic] is a precondition for patentability".[23] German jurisprudence has been developing along these lines since the Red Dove case in 1969.[24]

The reason a such a physicality requirement is essential to patentability is that physical constraints represent a significant technical risk. Myriad physical complexities[25] mean that inventors, after conceptualising a new product, still have to engage in a protracted process of experimentation at risk of total failure, in order overcome unanticipated obstacles to come up with a final product. The stronger protection offered by patents (as compared to copyrights) are best suited to this sort of all-or-nothing risk. Intangible creations such as software, where not constrained by physicalities, are not subject to this experimentation process, since they are "largely determined, in advance, by the specification, the flow chart, the rules of the programming language, the programming conventions, and the dictates of logic and mathematics."[26]

In addition it is submitted that a technical contribution approach to determining the relevant field of technology should be adopted. The recent *Aerotel/Macrossan case*[27] in the UK set out a four step approach which could be used in determining whether a claimed invention falls within a field of technology.

1. Properly construe the claim
2. Identify the actual contribution
3. Ask whether it falls solely within any explicitly excluded subject matters
4. Check whether the actual or alleged contribution is actually technical in nature.[28]

This technology-focused approach is of particular value in the software context, as seems to provide a rational basis on which to differentiate between 'pure' software patents which would undermine free access to knowledge on the one hand (like *Benson*),[29] whilst still allowing computer-controlled technical inventions (like *Diehr*)[30] to be patentable. Thus the natural forces test is much clearer in this context, and addresses concerns on both sides of the software patent debate. The reason that pure software should not be patented on this approach, is that "[s]oftware innovations are already completed as self-contained problem solutions within an abstract machine before technical realm is set foot upon during their execution on a processor."[31] In other words, a software "invention" exists

23 BPatG Fehlersuche 2000-07-28: Patentansprüche auf "Computerprogrammprodukt" etc unzulässig, BPatG /17W(pat)69/98, <http://swpat.ffii.org/analysis/trips/index.en.html> (11 October 2006).

24 BGH GRUR 1696, 672 - "Rote Taube".

25 Dratler gives the following examples: "Machines and pharmaceuticals must overcome a substantial number of real-world obstacles in order to work properly. While a machine's design may appear operable in concept, in order to work in the real world it must successfully address such practical problems as: metal fatigue, strain, bending, stress fractures, vibration, corrosion, pollution, spalling, differential thermal expansion and contraction, unintended electrolysis, dust, dirt, friction, ablation, evaporation, deterioration of lubricants, electric arcing, unwanted generation of static or other electricity, and aging. Similarly, pharmaceutical and related inventions often must overcome one or more of the following obstacles: impurities, contamination, dust, unanticipated chemical reactions, metabolic changes, mutation, genetic variation, polymorphisms (natural variation in DNA sequences), allergies, chemical sensitivities, temperature sensitivity, reactions with adjuvants, "fillers" and encapsulating compounds, and deterioration and loss of potency with aging." Jay Dratler Jr, "Does Lord Darcy Yet Live? The Case Against Software and Business Method Patents" (2003) 43 *Santa Clara Law Review* 823, at 854.

26 Ibid, at 855.

27 *Aerotel v Telco Holdings & Others; In the matter of Macrossan* [2006] EWCA Civ 1371.

28 Ibid at [40].

29 *Gottschalk, Acting Commissioner of Patents v Benson et al* 409 US 63 (1972).

30 *Diamond, Commissioner of Patents and Trademarks v Diehr et al*, 450 U.S. 175 (1981).

31 Foundation for a Free Information Infrastructure, "Regulation about the invention concept of the European patent system and its interpretation with special regard to programs for computers",

independently as code before it is ever run on a computer. In this state, the "invention" involves no control over natural forces and hence contains no technical contribution. Such an explanation also makes clear the reason why US and Australian case law characterising software "inventions" as methods resulting a "new machine"[32] is inconsistent with the nature of software – it unjustifiably incorporates hardware elements outside of the claimed invention in order to satisfy the requirements of patentability. When, however, software is merely a component of a claimed invention, the software itself is necessarily tied to the physical components of the invention, and the use of these physical elements to satisfy the natural forces test is justifiable.

10.2. Would your preferred content be compliant with Australia's international obligations?

Such a position would be consistent with the language of TRIPS, compatible with EU jurisprudence, and be consistent with the direction which US law is expected to take when the *Bilski* decision is handed down in near future.

11. Legislative structure

11.1. What sort of legislative structure would be appropriate to achieve your preferred content identified in Question 10?

I would support the legislative structure proposed by the Centre for Law and Genetics, with the caveat that a field of technology should be interpreted as noted in response to Question 10.1 above. In other words, a modified s.18(1) would read:

(1) Subject to subsection (2), a patentable invention must satisfy the following criteria for the purposes of a standard patent, so far as claimed in any claim:

(a) it is an invention in a field of technology;

(b) when compared with the prior art base as it existed before the priority date of that claim:

(i) it is novel; and

(ii) it involves an inventive step; and

(c) it has industrial applicability; and

(d) it 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 nominated person's predecessor in title to the invention.

It is further submitted that the meaning of "technology" should be clarified in Schedule 1 along the following lines:

> "invention" for the purpose of s18(1)(a) means the actual contribution of the invention to the art
>
> "natural forces" means gravity, electromagnetic force, strong nuclear force and weak nuclear force

<http://swpat.ffii.org/stidi/javni/index.en.html> (12 October 2006).

32 *Burroughs Corporation (Perkin's) Application* (1974) RPC 147 (UK). Cited with approval in *International Business Machines Corporation v Commissioner of Patents* (1991) 33 FCR 218 at 225. See also *In re Alappat* 33 F.3d 1526 (1994) at 1545.

"technology" means the solution of problems by utilising natural forces

Examiners should, at their discretion, be able to refer borderline subject matter decisions to some form of Technical Advisory Committee, made up of appointed experts from various fields, either on an ad-hoc or ongoing basis. The Committee could then consider the full range of economic, social and ethical considerations relevant to the subject matter issue to be resolved, engaging in public consultation as a part of the process. The decisions of this body should be subject to ordinary judicial review.

Another key component of these reforms is related to the creation and maintenance of formal guidelines to assist patent examiners determine subject matter issues. The creation of subject-specific guidelines, as well as the APO Manual of Practice and Procedure should be subject to a formal review process whenever new guidelines are to be issued, or existing guidelines are proposed to be changed. The process should include referral to the Technical Advisory Committee outlined above, which necessarily includes some form of public consultation as well. It may also be desirable to have such guidelines tabled in Parliament before their final adoption. With such a procedure in place to ensure transparency, consultation and accountability, it would then make sense for these guidelines to be given greater weight when subject matter issues arise for judicial consideration.

11.2. Are any foreign structures preferred?

No one particular jurisdiction is to be preferred. The solution suggested above borrows from both the language of the TRIPS regime, and EU jurisprudence.

11.3. In principle, when should statutory provisions excluding specific subject matters be used?

Statutory provisions excluding specific subject matter should only be used sparingly, and in situations where it is clear that a strong guidance is required.

11.4. Should such provisions be expanded, such as by including the exceptions from patentability allowed under TRIPS?

On this point I agree with the Centre for Law and Genetics, that there is no need to extend the list of exceptions.