The Problem with Patents

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Recent legal disputes – such as the ongoing battle between the CSIRO and computer superpowers Microsoft, Intel and Dell over WiFi technology – highlight a major problem with the use of patents by public research institutions. Such institutions are supposed to promote the diffusion of knowledge they create by publishing in academic journals and presenting research at conferences. At the same time, however, universities and CSIRO are under increasing pressure to generate revenue from their output through the creation of intellectual property (IP) rights. This opens up the possibility of entering the murky world of legal dispute resolution since IP owners must actively enforce their rights in order to curb the unauthorized use of their technology. The cost of such litigation may eventually run into tens of millions of dollars.

But the potential legal quagmire is only one aspect of a much bigger problem. To understand this, we need to (briefly) review the economics of innovation. Economists have know for a long time that the creation of knowledge is subject to market failure – if left to its own devices, the market will under-invest in knowledge creation since, once created, knowledge is easy for others to use (in economists parlance, it is "non-excludable"). There are number of possible solutions to the market failure problem: government research grants, prizes, and patents to name a few.

Patents solve the under-investment problem by offering firms a way to provide a legal property right which enables technology owners to prevent rivals from using the technology (or paying for the use through licensing arrangements). Unlike property rights over tangible property, however, patent owners must actively enforce their rights – the police aren't proactive in their search for theft of IP. Patents also entail considerable costs – primarily, they create a deadweight loss by charging a monopoly price for a good whose efficient price (i.e. its marginal cost) is zero (or close to it). In sum, patents represent a classic double-edged sword – while they provide an incentive to innovate, they also inhibit the flow of knowledge created by the innovation.

Historically, public research institutions in developed countries have not actively used patents. Rather, they relied on income from the Government (via research grants) as an antidote to the market failure problem. And university researchers typically believed that important inputs into their research were not covered by patent law. Thus, even if a particular research tool was patented, public research institutions could use the tool in their laboratory without fear of recrimination by the patent owner; that they were exempt from patent law.

This began to unravel following the introduction of the Bayh-Dole Act (1980) in the US which encouraged universities to patent – not so much because of the possibility of reaping income from royalties, but because of the technology transfer problem; the idea that many important inventions were left on university shelves because businesses interested in commercializing university technology weren't able to guarantee their investment wouldn't be expropriated by others without the existence of a patent. On top of this, a landmark decision in the US in 2002 (*Madey v Duke*) substantially narrowed the research exemption for public institutions. As a consequence, universities are starting to look more and more like commercial entities and less and less like universities: researchers are encouraged to keep research results secret, and pushed to make all knowledge proprietary. While this may have some positive, there is now real concern that the conjunction of all these factors is having (or will have in the near future) a major detrimental effect on the quality and direction of scientific progress.

At the heart of the problem are attempts to solve the technology transfer problem through the use of patents. While it seems like a good idea – it provides greater certainty for firms interested in commercializing university output – it put universities in an unfortunate nether-world where they are neither public nor private entities. On top of this, it seems to be a classic case of double dipping. After all, universities and other public research institutions already solve the market failure problem through the provision of public grants.

So, what is the best way forward? The first step is to acknowledge the conflict between public funding and patenting for public sector research. One policy approach might be to allow university researchers to use patented technology freely, as long as their use doesn't harm the incentive to invest. Such 'non-injurious spill-overs' are hard to define in practice, but at the moment there doesn't even seem to be agreement that in theory this is the optimal solution.