

## An inventive step for the patent system?

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Regulatory interventions can significantly restrict competition, damaging both business and consumers. Why then do governments use patents to attract additional resources into innovation? Why do they not leave it to the market to determine the best use of resources? The character of innovation that makes it different to other goods and services is that genuine innovation may produce spillover benefits from the embodied new knowledge. These spillovers can create benefits to other inventors and firms which may exceed the losses incurred by granting patents.

A fundamental principle of good policy is that it should achieve its goals. In the case of patents this is to induce innovation than would not otherwise occur. The major focus in designing effective and efficient patent policy must therefore be on ensuring that patents are granted only for *induced innovations* and for induced innovations where there are *sufficient spillover benefits to offset costs*.<sup>1</sup> It is therefore essential that patents are granted only for things that are a *significant advance* over what was then known. A low inventiveness requirement can impede other innovating firms, particularly where innovation is cumulative.<sup>2</sup>

### Spillover benefits

The *only* reason to induce additional innovation investment is that the associated spillovers are thought to provide greater benefits to society than the losses flowing from the monopoly privilege. Externalities are notoriously difficult to measure, but where an invention provides new knowledge it has at least the possibility of providing benefits to other innovators and thus to society. Targeting new knowledge is thus an *efficient* means of focusing patent policy to achieve its goals. The inventive step operates as the fulcrum for balance in patent systems.

Some analysts take the view that the *publication* of the knowledge in the invention is the *quid pro quo* for the public for the grant of the patent privilege. This ignores the fundamental economics of patent policy. It is the higher quantum of innovation, *with its concomitant spillover benefits*, that is the objective of and rationale for patent policy. If innovation did not have spillover benefits there would be no reason to intervene in this market. The social contract perspective also requires that there be some social value delivered from the patented invention.<sup>3</sup> Publishing the specifications is simply a *condition* attached to the grant. It is theoretically<sup>4</sup> a means by which the new knowledge enters the public domain, but it is **the**

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<sup>1</sup> A fuller discussion of the economics underlying patent policy is provided in Chapter 2 of my forthcoming book H. V. J. Moir, *Patent Policy and Innovation: Do Legal Rules Deliver Effective Economic Outcomes?* (2013).

<sup>2</sup> S. Scotchmer, "Standing on the shoulders of giants: cumulative research and the patent law" (1991) 5(1) *Journal of Economic Perspectives* 29-41; J. Green and S. Scotchmer, "On the Division of Profit in Sequential Innovation" (1995) 26 *Rand Journal of Economics* 20-33; and B. H. Hall, "Business Method Patents, Innovation, and Policy" Berkeley, University of California. Department of Economics Working Paper E03-331 (2003).

<sup>3</sup> P. Drahos, *The Global Governance of Knowledge: Patent Offices and Their Clients*, (2010) at 31.

<sup>4</sup> In fact the available empirical evidence shows that most leading inventors rarely use the data in patent specifications (T. D. Mandeville, D. M. Lamberton, and E. J. Bishop, "The Use of Patent Information: Economics of Disclosure" (1981), ANZAAS 51st Congress, Section 24, Economics, Brisbane). Not only is the legalese in which they are written time-consuming to translate, but one has to wade through many trivial variations to find the few gems. Further, patent owners actively try to hide important aspects of their inventions (K. Labich, "The innovators" (1988) 6 *Fortune*, 6 June, 27-32). There are faster and more rewarding means of staying at the forefront of genuine technological developments (see the survey evidence on the sources of innovative ideas from the many recent National Innovation Surveys).

**new knowledge itself** which is the *quid pro quo* for the public. The quantum of new knowledge demanded as the threshold for grant of a patent is therefore critical to ensuring that patent systems benefit a nation.

Are the current procedures used to determine whether a patent application meets the inventiveness criterion for grant well designed to operate as this key balancing mechanism between the costs and benefits of patent systems?

### **What is the actual height of the inventive step?**

We know from the existing literature that many very trivial patents are granted. In addition to serious analyses of data on legal outcomes,<sup>5</sup> there has been amused public comment about such patents as swinging a swing sideways and IBM's patent for queuing for the toilet on an aeroplane.<sup>6</sup> These examples can no longer be dismissed as aberrations. Speaking from a business perspective, Blonder advises that "much of what the [United States] Patent Office sees as invention is merely science applied to a new field by equation or analogy. At AT&T, we took old microwave patents and filed identical claims on optical inventions, which are also radio waves, only 10,000 times smaller. We were able to do this even though it was obvious to anyone who ever picked up a physics textbook that once you have the ability to make things smaller, the physics just translates over".<sup>7</sup>

With respect to the European Patent Office (EPO) Pilch documents that it "is very difficult to prove that even the most trivial new idea does not contain an inventive step. The 2001 EPO Examination Guidelines even admonish examiners to be very critical of such proofs..."<sup>8</sup> In their analysis of EPO software grants, Bakels and Hugenholtz reach a similar conclusion: "[t]he Examination Guidelines of the European Patent Office leave no doubt that the test of non-obviousness will present an obstacle to patentability only in exceptional cases."<sup>9</sup>

In a 2006 the UK Court of Appeal approved a four-step test on patentable subject matter proposed by the UK Patent Office. In considering this test the court refreshingly commented that it asked the examiner to construe the application to answer the central question "What has the inventor really added to human knowledge?"<sup>10</sup> This comment is notable as one of the few occasions on which a judge in a patent decision referred to the new knowledge that should be at the heart of the patent system.<sup>11</sup>

### **What is the current test?**

The first step in patent examination is to construe the patent application. This process centres on identifying the inventive contribution, though not in terms of what new knowledge is contributed. Rather it focuses on identifying the core 'inventive' concept then considering whether there is (allowed) documentary evidence to refuse grant on the basis that there is no

<sup>5</sup> For the USA see, for example, G. S. Lunney, Jr., "Patent law, the Federal Circuit, and the Supreme Court: a quiet revolution" (2004) 11 *Supreme Court Economic Review* 1-79 and C. D. Quillen Jr., "Innovation and the U.S. patent system" (2006) 1 *Virginia Law and Business Review* 210-225.

<sup>6</sup> See N. Gruen, "Patently Absurd" (2004) *The Courier-Mail* (Brisbane) 15 November in respect of US Patent No 6,368,227 for swinging a swing sideways. IBM's US Patent No. 6,329,919 is for "an apparatus, system, and method for providing reservations for restroom use. In one embodiment, a passenger on an airplane may submit a reservation request to the system for restroom use."

<sup>7</sup> G. Blonder, "Cutting through the patent thicket" (2005) *Business Week* 19 December.

<sup>8</sup> H. Pilch, "Why are software patents so trivial?" (2003), OECD Intellectual Property Rights (IPR), Innovation and Economic Performance Conference, Paris (citing the examiners' manual at [http://www.european-patent-office.org/legal/gui\\_lines/e/c\\_iv\\_9.htm](http://www.european-patent-office.org/legal/gui_lines/e/c_iv_9.htm)) at 291.

<sup>9</sup> R. B. Bakels and P. B. Hugenholtz, "The Patentability of Computer Programs: Discussion of European-Level Legislation in the Field of Patents for Software" study commissioned by the European Parliament (2002) at 31.

<sup>10</sup> *Aerotel Ltd v Telco Holdings Ltd (and others) and Macrossan's Application* [2006] EWCA Civ 1371 at 43.

<sup>11</sup> It was not, however, used in assessing the patentability of either the Aerotel or Macrossan applications as the decisions focused solely on the issue of patentable subject matter.

(trivial) difference from existing documented knowledge.<sup>12</sup> At no time in the examination process is the applicant required to state clearly just what is added to human knowledge.

In their search for a means of objectifying what is essentially a subjective question – sufficient inventiveness to merit a patent privilege – the courts have developed a series of rules which have reversed the core question. But "is it obvious?" gives a radically different answer to "is it inventive?" The asymmetry between these questions means "is it obvious?" has a much lower threshold for patent grant. Further, the ordinary meaning of the word obvious is not used in patent law.<sup>13</sup> This departure from the normal legal practice of using words in their ordinary meanings also reduces the inventive step – "obvious" in patent law has an exceptionally narrow meaning.

So patent offices and courts presume that if it is not obvious (in the very narrow patent law meaning) it must be inventive. This is like asking trying to determine if X is beautiful by determining if X is not ugly. If X is not ugly, then it must be beautiful. A clear fallacy.

My empirical study of the inventiveness of a set of granted business method patents finds clear evidence of the impact of this reverse reasoning.<sup>14</sup> For example the EPO, in considering whether to grant a patent for a software system scheduling delivery to an electronically locked box, found no documents 'teaching' both identifying a time interval for delivery and delivering only at that time.<sup>15</sup> Had the reverse question been asked – what new knowledge is contributed in writing a computer program about scheduling deliveries, clearly the answer would have been "none." The EPO granted the patent.

Another case is an 'invention' for secure transactions over the internet. The claims are for a software system for checking identity using encrypted fingerprints. Nothing in the claims concern the technicalities of encryption, it is simply treated as a data item, matched against a database. So the core of the invention is data input and checking. Clearly this contributed nothing to knowledge about either secure transactions or programming. At the USPTO the application was rejected nine times before a restriction to a sub-set of the invention achieved grant.<sup>16</sup> During the correspondence the argument revolved around *where the encrypted fingerprints were stored* and whether this was 'taught' in existing documents. Such a trivial variation on the *location* of known systems is not what legislators had in mind when patent statutes were drafted.

The closely similar parent of this 'invention' was granted a patent by the EPO, though first it was rejected as not technically inventive. Magically, when the words "wherein the stored fingerprint is in an encrypted format" were moved from claim 2 to claim 1, a patent was granted. This rearrangement of the claims does not change the nature of the 'invention' – that a data item is checked against a look-up table. Unfortunately EPO examiners are not required to provide reasons for granting a patent privilege, so it is hard to work out their reasoning.

The other 70 cases in the dataset all provide examples of how the approach taken in the current legal definition of inventiveness acts to allow the grant of thousands of 'inventions' that are mere trivial variations of known processes and artefacts. The fact that it is the patent office which has to disprove 'inventiveness' rather than the applicant having to prove it;<sup>17</sup> the

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<sup>12</sup> In the patent world allowable existing knowledge is referred to as 'prior art'.

<sup>13</sup> For example in *Welcome Real-Time*, Justice Heerey discounted Catuity's expert witnesses' testimony as he considered they did not understand the meaning of obvious in patent law (*Welcome Real-Time SA v. Catuity Inc*, [2001] FCA 445 (17 May 2001) at 154).

<sup>14</sup> Moir, n.1 above.

<sup>15</sup> EP 2000977142, report of 11 July 2005, p. 3. Nothing in the application is about the technicalities of opening the electronic lock.

<sup>16</sup> Unusually the examiner did not provide any reasons in the Notice of Allowance (US application 10/207529).

<sup>17</sup> Though each time an examiner rejects an application, the applicant then has to argue the case for inventiveness. Sometimes such argument includes demanding that the examiner provide more precise detail

ability to endlessly amend applications, the focus on semantics not substance, the minimal difference that masquerades as 'inventiveness' all add up to a system which does not meet the core policy objective. The patent system approach to defining inventiveness in no way limits grant to those inventions which provide genuine contributions to knowledge. While none of the 72 cases involve any contributions to knowledge, two contain possibly new ideas, expressed at such a broad level of generality that no new knowledge is conveyed.<sup>18</sup>

### **Taking steps to re-balance the patent system**

Could the patent system be reformed by replacing the current plethora of rules around the inventive step with a test for a reasonable contribution to knowledge? While defining "reasonable" requires some thought, the system as it presently operates does not require *any* new knowledge. Patents are granted simply for minor re-arrangements of old knowledge. This provides no spillover benefits. Combining an "is there new knowledge" test with genuine workshop modification/variation and analogous use doctrines might provide at least some chance that granted patents provide spillover benefits.

What would happen if the test to was reformed in this way? First, the number of patent grants (and applications) would fall dramatically – by thousands in smaller countries such as Australia and by tens of thousands in Europe and the USA. Over time this would reduce the patent thickets faced by innovating firms.<sup>19</sup> If the proposed change in standard eliminated even half the current grants this would clean out nearly 150,000 dubious patent grants a year across these four offices. If the change in standards cut out 75 per cent of grants then the volume of granted monopolies would drop from nearly 300,000 to around 75,000. This is still a remarkable number of monopolies granted each year. Indeed if one stops to think about inventiveness, such very large volumes of patents directly imply an extremely low inventive step, even given the vast achievements of modern technology.

Falls of these magnitudes would substantially reduce noise in the system, making patent search far cheaper and more efficient. As others have noted, fewer higher quality patents would have more positive effect on innovation and fewer negative impacts on competition.<sup>20</sup>

The major beneficiaries would be innovating firms, particularly in those industries where "truckloads of patents" need to be exchanged for firms to use each other's complementary and overlapping technologies, effectively allowing these firms to proceed as if the patent system did not exist. The proposed change in the test for inventiveness would have no effect on genuine inventions – these would have no trouble passing the test and gaining patents. There should therefore be no impact on the overall level of innovation.

The costs of acquiring patents would fall substantially, because unnecessary patents would no longer be sought. And herein lies the difficulty in achieving this change – with so many fewer patent applications, there would be a need for far fewer patent attorneys. The greatest objections to this proposal would therefore come from the well-organised patent attorney profession. The pharmaceutical industry would probably also object as it uses myriad low-quality applications to extend the life of patents for genuine inventions.<sup>21</sup>

Despite the challenges posed by these sectional interests, nations would be well advised to review and lift the inventive step in their patent systems before international trade negotiations prevent them doing so. Sectional interests have already succeeded in having

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proving lack of inventiveness.

<sup>18</sup> Because, like any other qualitative assessment, the proof is in the evidence, the detail of each case is provided in Moir, *op. cit.*, so the reader can draw their own judgements.

<sup>19</sup> Though reducing the size of thickets would take time, due to the 20-25 year term of patents.

<sup>20</sup> C. D. Freedman, "Software and computer-related business-method inventions: must Europe adopt American patent culture?" (2000) 8(3) *International Journal of Law and Information Technology* 285.

<sup>21</sup> European Commission, *Final Report: Competition Inquiry into the Pharmaceutical Sector* (2009).

TRIPS-plus limitations on inventiveness written into a number of "free trade" treaties. The draft of the proposed Trans-Pacific Partnership Agreement provides that:

"patents shall be available for any new forms, uses, or methods of using a known product; and a new form, use, or method of using a known product may satisfy the criteria for patentability, even if such invention does not result in the enhancement of the known efficacy of that product." (Article 8.1)<sup>22</sup>

This is clearly directed at preventing nations from experimenting with new approaches to define a balanced height to the inventive step. The wording suggests a particular target is India, with its requirement that patents can be granted for pharmaceutical products *only where these provide an increase in efficacy*.<sup>23</sup> The Indian approach seems entirely reasonable – why should society grant a monopoly for a product that does not provide an improved outcome, especially in the very important area of health care. As Drahos has commented:

"... drugs that have ... a combination of left and right hand molecular structures are being re-patented by pharmaceutical companies as either left or right-handed drugs. The real question that society wants an answer to is not whether this is inventive as a matter of patent law jurisprudence, a jurisprudence that has been paid for by decades of pharmaceutical company litigation, but rather whether it is innovative as judged by the community of experimental pharmacologists, a community which tends to look for genuine leaps in therapeutic benefits rather than clever marketing strategies."<sup>24</sup>

National freedom to determine the height of the inventive step is critical to ensuring that such monopoly systems act to benefit the nation as a whole rather than selected companies. It is clear that the body of case law defining the inventive step has driven the standard far too low. Given the importance of innovation and innovative companies to national economic well-being it is essential that nations take action as soon as possible to re-introduce a genuine inventiveness requirement into their patent systems.

In 2003 the US Federal Trade Commission concluded that there was a "plethora of presumptions and procedures [which] tip the scales in favor of the ultimate issuance of a patent, once an application has been filed."<sup>25</sup> In the intervening decade there has been no evidence of any action to address this critical issue in any major jurisdiction. When the vast economies of India and China start producing tens or hundreds of thousands of patent applications a year we may regret our failure to take action to restore balance to the patent system.

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<sup>22</sup> While this treaty is being negotiated in secret, a leaked version is available at <http://keionline.org/sites/default/files/tpp-10feb2011-us-text-ipr-chapter.pdf> (accessed 11 November 2012).

<sup>23</sup> B. N. Sampat, K. C. Shadlen and T. M. Amin, "Challenges to India's pharmaceutical patent laws" (2012) 337 (27 July 2012) *Science* 414-415.

<sup>24</sup> P. Drahos, "Patent reform for innovation and risk management: a separation of powers approach" (2007) 1 *Knowledge Ecology Studies (KEStudies)* at 6.

<sup>25</sup> Federal Trade Commission (US), *To Promote Innovation: The Proper Balance of Competition and Patent Law and Policy* (2003) at 8.