



Has the Patent System Expired?

By giving its owner monopoly power during a well-defined time period, patents provide an economic incentive to innovate. Or so the conventional wisdom goes. But the evidence from the past decade shows a different story, especially when it comes to software patents.

Patent thickets

Economist Carl Shapiro describes the problem as follows:

Our current patent system is causing a potentially dangerous situation ... in which a would-be entrepreneur or innovator may face a barrage of infringement actions that it must overcome to bring its product to the market.¹

Specifically, Shapiro refers to the so-called *patent thicket*, defined as

An overlapping set of patent rights requiring that those seeking to commercialize new technology obtain licences from multiple patentees.¹

The scope of each patent is not always clearly defined. As a result, it is potentially related to many other patents in the same or related fields. Thus, before exercising his right to a new software patent, the innovator must check that his claim does not overlap with the many — hundreds, thousands — or previous patents that have some bearing on the new discovery. In addition to the search costs this implies, the patent thicket also creates multiple instances of opportunistic behavior:

The patent thicket is especially thorny when combined with the risk of holdup, namely the danger that new products will inadvertently infringe on patents issued after these products were designed.¹

A clear sign that this is not a mere theoretical possibility is the increase in patent litigation. Exhibit 1 shows the number of US patent lawsuits since 1970. After two decades where that figure hovered around 1,000 per year, since 1990 the level of patent litigation has skyrocketed to values as high as 3,000.

A different perspective on the same problem is proposed by James Bessen and Michael Meurer of the Boston University School of Law. Their point is that patents have become so ill-defined that, instead of defining a right to do something (a property right), they merely amount to the right to prevent someone else from doing something else (whenever that something else overlaps with the vaguely defined scope of the first patent).²

Written by Professor Luís Cabral for the purpose of class discussion rather than to illustrate either effective or ineffective handling of an administrative situation. © 2009 Luís Cabral.

The incentive is gone

The risk and the costs of litigation have increased so much that the main purpose of patents — to provide innovators with an economic incentive — has diminished considerably if not disappeared altogether. Bessen and Meurer claim that, by the end of the 20th century,

The risk of patent litigation for public firms outside of the chemical and pharmaceutical industries exceeded the profits derived from patents. This means that patents likely provided a net *disincentive* for innovations for the firms who fund the lion's share of industrial R&D; that is, patents tax R&D (p. 144).²

Specifically, Bessen and Meurer estimate that, by 1999 and excluding chemical and pharmaceutical firms, profits from associated worldwide patents were lower than \$4 billion, whereas aggregate US litigation costs of an alleged infringer were greater than \$12 billion.² Moreover, the same two authors evaluate, by means of an event study, the benefits and costs resulting from patent litigation. Exhibit 2 summarizes their estimates of the change in stock value around the day of a lawsuit announcement in the *Wall Street Journal*. As can be seen, a lawsuit is estimated to imply a 3% drop in the defendant's value — but no significant change in the plaintiff's value.

Software patents

The recent crisis in the patent system is especially felt in software patents and in the industries that rely on software patents. (Note that software patents do not necessarily correspond to the software industry. In fact, most software patents are filed by companies outside the software industry, such as telecommunications firms.) Exhibit 3 documents that software patents are particularly prone to litigation, both in terms of the probability of a suit and in terms of the expected number of suits per patent.

As Shapiro puts it,

The need to navigate the patent thicket and holdup is especially pronounced in industries such as telecommunications and computing.¹

Two very high-profile cases will help illustrate the current problem with software patents in these industries: RIM (telecommunications) and Rambus (computing).

□ **NTP and Research in Motion.** Research In Motion Limited (RIM), a Canadian wireless device company headquartered in Ontario, Canada, is best known for its main product, the BlackBerry smartphone. The development of the BlackBerry led to a series of patents, mostly related to keyboard design. From 2001 to 2002, RIM sued various companies for patent infringement, including Glenayre Electronics, Good Technology and Handspring.

Then the tables turned on RIM.

In 2000, NTP, a Virginia-based patent holding company founded in 1992, sent notice of their wireless email patents to a number of companies offering that kind of service. Having received no response, NTP proceeded to sue one of those companies: RIM. The defense argued that a functional wireless email system was already in the public domain when the NTP inventions had been made, thus invalidating NTP's patents. NTP countered that the argument was inconsistent with the fact RIM was using a software version developed

after NTP's inventions were made. The Court decided that NTP's patents were valid; that RIM had infringed the patents; that the infringement had been "willful;" and that the infringement had cost NTP \$33 million in damages. James R. Spencer, presiding the Court, instructed RIM to pay \$53 million in damages (including punitive damages resulting from the wilfulness of patent infringement) and \$4.5 million to cover legal fees.

Judge Spencer also issued an injunction ordering RIM to cease and desist from infringing NTP's patents. Doing so would lead BlackBerry to shut down its service in the US (or so RIM claimed). RIM appealed. The US Department of Justice requested that RIM's service be continued, given the large number of Blackberry users among the US government staff. The Department of Defense, in turn, stated that the BlackBerry service played a crucial role in national security.

The Supreme Court refused to hear RIM's appeal, bringing the case back to the lower court. Meanwhile, RIM announced that it had developed software allowing BlackBerrys to work without using any of the NTP patents.

In March 2006, RIM and NTP settled: RIM agreed to pay a lump sum of \$612.5 million.

□ **Rambus.** Rambus is one of the world's premier technology licensing companies. It specializes in the invention and design of high-speed memory architectures. In 2008, more than 80% of its \$142.5 million total revenue originated in royalties charged to companies such as AMD, Elpida, Infineon, Intel, Matsushita, NECEL, Qimonda, Renesas, Sony, and Toshiba.³

In the early 1990s, Rambus was invited to become a member of the Joint Electron Device Engineering Council (JEDEC), a standards setting organization. JEDEC's policy requires the owners of patents that form part of a standard to offer "reasonable and non-discriminatory" (RAND) license terms. In 1995 Rambus withdrew from JEDEC. Internal documents from that period suggest that Rambus was tailoring new patent applications to cover features of the SDRAM standard discussed at JEDEC. Years later, Rambus revealed its patents and started demanding (high) royalties and filing lawsuits against JEDEC members who adopted the standard.

From 2002 to 2009, the Federal Trade Commission pursued legal action against Rambus, accusing the software company of deceiving JEDEC by not disclosing its intentions to patent technologies that would become part of the DDR SDRAM specification. Specifically, the FTC claimed that Rambus did not mention its patents and patent applications until after the standards were adopted and locked in — a practice known as "patent ambush," which the FTC argued violated the Sherman Act as well as the FTC Act. Rambus, by contrast, claimed that it never hid its patents while it was a member of JEDEC; and that JEDEC does not have a rule requiring members to disclose their intellectual property.⁴

The FTC case, which was backed by computer and memory makers such as Hewlett-Packard, Cisco, Sun, Hynix, and Samsung, went through years of trials and appeals. Broadly speaking, the Courts sided with Rambus, arguing that their patents were valid, no deception had taken place, and that the FTC had not produced enough evidence to show that Rambus' behavior enabled it to unlawfully monopolize the memory market. In February 2009, the US Supreme Court rejected the FTC's request to resurrect the case, thus laying the last stone on the case.⁴

Meanwhile, the European Commission also launched its own antitrust investigation of Rambus. Similarly to the FTC, the EC argued that Rambus engaged in intentional

deceptive conduct during the standard-setting process (“patent ambush”), a violation of Article 82 of the EC Treaty.⁵ In June 2009, Rambus and the European Commission reached a tentative settlement whereby the former agreed to a cap on royalties.⁶

How to fix it?

Many critics of the current system point to the poor quality of the patent examination and granting process, in particular the fact that many patents are granted that are not valid (either because they are obvious or because they are not sufficiently novel). For example, a patent was granted on how to make a peanut butter and jelly sandwich. In this sense, the solution would be to improve the examination process, which in turn would require increasing the resources available to the various patent offices.

Bessen and Meurer argue that improving the quality of the patent examination process is not sufficient. Consider the analogy of land rights. With a few exceptions, the current system of deeds makes it fairly clear who has the property rights to each particular parcel of land. For this reason, we rarely see situations when one party makes an investment under the assumption that it had the right to a particular property when in fact it didn't.

By contrast, the patent system is much too vague for patents to work as property. In order for patents to work more like property it is necessary to improve the notice function of patents. This will only be achieved, Bessen and Meurer argue, if patent claims become more clear, transparent and unambiguous:

Under the current system, patent applicants have an incentive to draft vague claim language and examiners have little incentive to object. Applicants value vague language that can be manipulated at trial or during licensing negotiations. Vague language can be read narrowly when necessary to avoid prior art, and broadly when possible to ensnare third-party technology ... Reform should push the patent system toward the real property system by making patent claims more similar to the boundaries of land (p. 239).²

But why should patents, in particular software patents, be thought of in the same mold as physical property? Clearly, the nature of software is different from the nature of physical property. Do we need a patent system to protect and encourage innovation in software and related fields? Several authors, including economists Michele Boldrin and David Levine, claim the answer is No:

“Intellectual property” — patents and copyrights — have become controversial. We witness teenagers being sued for “pirating” music — and we observe AIDS patients in Africa dying due to lack of ability to pay for drugs that are high priced to satisfy patent holders. Are patents and copyrights essential to thriving creation and innovation — do we need them so that we all may enjoy fine music and good health? Across time and space the resounding answer is: No. So-called intellectual property is in fact an “intellectual monopoly” that hinders rather than helps the competitive free market regime that has delivered wealth and innovation to our doorsteps.

Endnotes

1. Shapiro, Carl, "Navigating the Patent Thicket: Cross Licenses, Patent Pools, and Standard Setting," in Jaffe, Lerner and Stern (Eds), *Innovation Policy and the Economy*, Vol. 1 (2000?).
2. Bessen, James, and Michael Meurer, *Patent Failure: How Judges, Bureaucrats, and Lawyers Put Innovators at Risk*, Princeton: Princeton University Press (2008).
3. Rambus Form 10-K; cf <http://biz.yahoo.com/e/090226/rmbs10-k.html>.
4. Modine, Austin, "Supremes reject Rambus 'patent ambush' case," *The Register* (<http://www.theregister.co.uk>), February 23, 2009.
5. <http://europa.eu/rapid/pressReleasesAction.do?reference=MEMO/07/330&form>
6. "Rambus Reaches Tentative Settlement With European Commission," moneycentral.msn.com, June 11, 2009.

Exhibit 1

US patent lawsuits filed in District Courts. Source: See Endnote 2

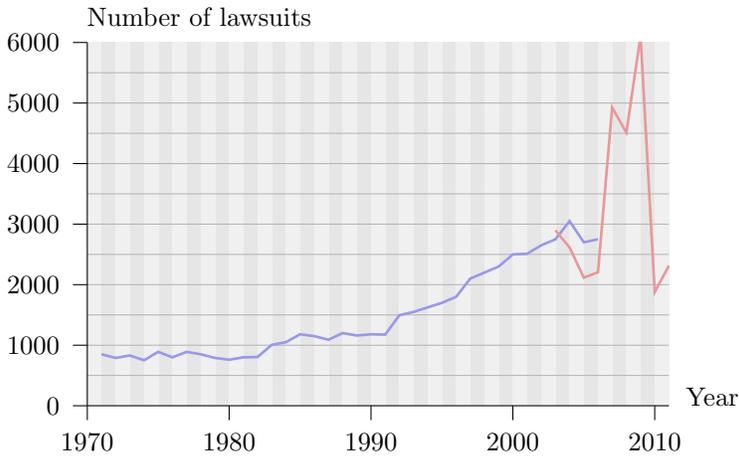


Exhibit 2

Litigation and firm value. Source: See Endnote 2.

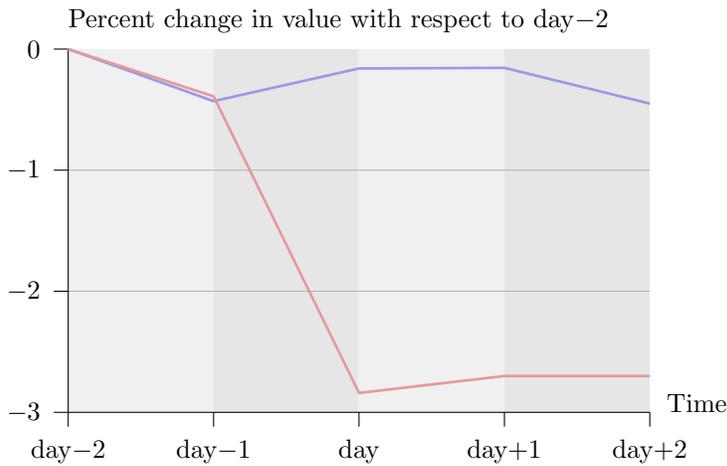


Exhibit 3

Difference in patents by technology group. Source: See Endnote 2

Technology group	Probability patent in suit	Expected # suits per 100 patents	Mean US patent value (1992 \$US)
All	2.0	4.0	78
Chemical	1.1	2.6	333
Software	4.6	10.5	55