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# **Patents**

*Prompting or Restricting Innovation?*

**Marc Baudry and Béatrice Dumont**

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**Coordinated by Dimitri Uzunidis**

The patent system is criticized today by some practitioners and economists. In fact, there is a partial disconnection between patent demographics and productivity gains, but also the development of actors who do not innovate and who develop business models that their detractors equate with a capture of rents or a dangerous commodification of patents.

This book provides a less Manichaeian view of the position of patents in the system of contemporary innovation. It first recalls that these criticisms are not new, before arguing that if these criticisms have been revived, it is because of a partial shift from an integrated innovation system to a much more fragmented and open system. This shift has accompanied the promotion of a more competitive economy.

The authors show that this movement is coherent with a more intensive use of patents, but also one that is more focused on their signal function than on their function of direct monetary incentive to innovation.

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Patents



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## Introduction

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It is tempting to see the debate about the relevance of patents for supporting innovation as a contemporary, updated version of the tongue anecdote from Aesop, the famous ancient Greek fabulist who was also a slave. When his master asked him to go to market to buy the choicest dainties to honor some special guests, Aesop only bought tongues, which he served with different sauces. When his master questioned his choice, Aesop responded, “There is nothing better than the tongue, the connection to civil life, the key to science, the organ of truth, reason and prayer. Through it, we build cities and govern them, we teach, we persuade, we hold assemblies, and we carry out the most important of all work, which is to praise the gods”. Offended by this answer, Xanthos, Aesop’s master, asked him to choose the worst meal for the same guests to try the next night. Again, Aesop bought only tongues, and served them with different sauces. To his puzzled master, he responded: “There is nothing worse than the tongue, the mother of all disputes, the source of all conflict and wars, the organ of error and slander, blasphemy and impiety. Through it, we destroy cities, we convince people of evil things, and we utter blasphemy about the power of the gods”<sup>1</sup>.

Patents are at least as ambivalent as Aesop characterizes the tongue. This ambivalence has long been recognized. When concluding his report for the U.S. Senate about patents, Machlup [MAC 58, pp. 79–80] wrote: “No economist, on the basis of present knowledge, could possibly state with certainty that the patent system, as it now operates, confers a net benefit or a net loss upon society. The best he can do is state assumptions and make

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<sup>1</sup> See Mayvis [MAY 06], Chapter 8.



guesses about the extent to which reality corresponds to these assumptions. [...] If one does not know whether a system as a whole is good or bad, the safest policy conclusion is to “muddle through” either with it, if one has long lived with it or without it, if one has long lived without it. If we did not have a patent system, it would be irresponsible, on the basis of our present knowledge of its economic consequences, to recommend instituting one. But since we have had a patent system for a long time, it would be irresponsible, on the basis of our present knowledge, to recommend abolishing it”. After emerging in England, as a system of exceptions in the context of laws to counter monopoly rents, patents were conversely consecrated as a natural right of all men over what they produced following the French Revolution in 1789. Over the course of the 19th Century, calls to put an end to the patent system increased. In Great Britain, the news magazine *The Economist* openly took a position in favor of abandoning them in an article published in 1851<sup>2</sup>. In France, the Saint-Simonian economist Michel Chevalier wrote as early as 1862 that “the legislation of invention patents is harmful to industry today” (Chevalier [CHE 62]). Some countries, such as Switzerland, refused all protection by patents, a system judged in principle to be “pernicious and indefensible” in itself<sup>3</sup>. The Netherlands abandoned the legal protection of inventions between 1869 and 1912 (Schiff [SCH 71]). The movement in support of abolishing the patent system – its “reform” as it was called – nearly carried the day between 1850 and 1875, but those in favor of maintaining the system were victorious in the end owing to the “protectionist reaction” at the turn of the century (Machlup and Penrose [MAC 50]).

The inability, for more than a century and a half now, of industrialized or industrializing countries to develop a sustainable mechanism that encourages innovation that could substitute for patents and displace them may be seen as “default” proof that patents are the best system. Even though the academic literature has considered, and continues to actively consider, the question of the best support mechanism for innovation, it must be said that no alternative solution seems able to fully eclipse patents. So, we can justify maintaining the patent system in light of Oliver Williamson’s criterion of “remediableness” [WIL 96], which is to say that an existing practice for which there exists no feasible better alternative, which can be described and implemented with a reduced net gain, is presumed to be efficient. This does

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2 See <http://economist.com/news/business-and-finance/21660769-second-leader-1851-about-patents-amendment-patent-laws>.

3 Patent protection dates from 1888 in Switzerland, with an extension of the breadth of the protection in 1912.

not mean that the patent system does not have a certain number of flaws and quirks, only that the alternative solutions are not exempt from those either. Because of this, several economists defend the system as being the lesser evil, somewhat in the manner of Winston Churchill, who said that democracy was the least objectionable of the political systems. Therefore, according to a law and economics logic, strong patents are indicative of a system of intellectual property, just like property on tangible assets, that is indispensable for the good working of the economy (Kitch [KIT 77], Posner [POS 05]).

The demography of patents, however, compels us to be somewhat alarmist. In the last four decades, the increase in the number of patents requested and granted around the world seems out of control. Just as a population living in too great a concentration in a given space generates stress, illness, aggressiveness, and conflicts, the system seems to be becoming “ill.” Some people see evidence of this in the overlap of rights conferred by patents, generating “patent thickets,” which would lead to a prolific rise in litigation or blocking the dissemination of innovations by a stacking in license fees. Similarly, some authors indicate the weakness of empirical evidence regarding the link between the demography of patents and productivity growth, and only see an unhealthy outgrowth of the system, almost like a cancerous tumor, in the increase of this demography. The typical agent, according to this perspective, would be the “patent troll” who hides behind patents that are superficial in substance, only to capture rents at the expense of “real” innovators. For instance, Boldrin and Levine [BOL 08], who are at the forefront of the contemporary movement of patent contestation, criticize the idea that patents would lead to a higher rate of innovations. Based on the number of innovations presented at international trade fairs, they argue that in the 19th Century, countries that did not have a patent system were no less innovative than the countries that did have one. According to economists who support this slightly Manichean approach to patents (and they are no less numerous than their opponents), the staggering growth of patents is negative. For them, we must, at the very least, practice a technological “Malthusianism” by drastically narrowing the qualifying conditions for patents, or even abolish the patent system itself.

What can we contribute to such a polarized debate about the relevance of patents? First of all, we can trace the events and reasoning that led to this polarization. We can also re-situate it in a larger context. The last three decades of the 20th Century were marked by a number of economic changes. At the end of the 30 glorious years, the economic system characterized by a

kind of capitalism that was tightly regulated by the State, has been replaced by a new economic system where the prevalence of markets is affirmed. It consists of goods markets based on the development of international trade and the advent of globalization. It also involves financial markets with unprecedented mobility for capital. It is not at all surprising that the model for innovation also changed in such a context. Confronted by markets for goods and services where competition is stimulated by new actors struggling to gain entry, the model of innovation necessarily led to change in the 21st Century. More actors also means that smaller actors cannot exist without specializing, including in the production of innovative solutions intended for others. However, smaller actors are also more subject to financial constraints. In order to bypass these constraints, what is more logical than to turn to the financial actors for whom obstacles were removed regarding the possibility of involvement? More actors can also mean more interactions among them. What we see emerging in this systemic logic is a shift away from a vertically integrated model of innovation “à la Schumpeter” where large firms create inventions internally, fund R&D themselves, and attempt to produce and commercialize innovations by themselves, toward a fragmented and intermediated model where a large number of actors interact with each other. These interactions require guarding against imitation as best as possible, but also sharing inventions while still being able to protect them. Patents can respond to these requirements. They ensure what economists call the appropriability of returns from inventions, and thereby encourage innovation. Aside from this traditional perspective on their role, patents also make it possible to demonstrate inventive capacities and reduce information asymmetry in transactions concerning new technologies, in partnerships forged to design these technologies, or in the access to external funding for R&D to support these technologies. This does not mean that the new system guarantees more innovations. It is only said that, while the vertically integrated system of innovation could more easily do without patents, the new fragmented system of innovation is much more constructed with, and even around, patents. That is what this book will attempt to demonstrate.

To understand this logic, it is important to start by recalling the purpose of patents. This is the goal of Chapter 1, which begins by reiterating the incentivizing role of patents. As the right to forbid others from exploiting an invention, in cases of successful inventions, it provides a rent that compensates *ex post* the inventor for having taken *ex ante* a risk and dedicated the means to develop the invention. The patent is therefore basically a sequential compromise for according a return *ex post* by creating an incentive *ex ante*. However, this right of intellectual property must not

only be enacted by public authorities, it must also be defined. This delimitation is much more complex than for other property rights, especially land-related ones. It relies on the choice of multiple parameters and because of this, it can give rise to the best or the worst results, as the devil is often in the details. Aside from the incentivizing role of patents, which is traditionally emphasized, patents also have a transactional role. Chapter 1 discusses this as extensively as the incentivizing role. It shows how patents are intimately connected to the move by certain actors to specialize in the design of inventions, and then their transfer to other actors. The transactional role of patents is not limited to the transfer of innovative technical solutions. It also concerns access to external funding for R&D, as soon as it is subject to information asymmetry. In the sense of the economy of information, the patent becomes a credible signal of the capacity for innovation by young companies that are not yet well known. It facilitates the introduction of start-ups to venture capitalists. This shift is significant because it is no longer what the patent protects that is the most important, but the signal that it sends, whether or not the patented invention is developed.

The different facets of the delimitation of patents presented in Chapter 1 all offer room for a patent office to maneuver. Chapter 2 focuses on demonstrating how legal and institutional adjustments can have serious consequences on patent demography. This chapter begins with a factual analysis of the evolution of this demography and its connection with the evolution of productivity increases. It not only confirms a certain disconnect between the two evolutions but also indicates that the idea of an uncontrolled demography without the tangible benefits of patents is to be nuanced depending on the patent office under consideration. The problem is not only first and foremost an American issue, but also increasingly a Chinese issue, that is recent but whose scale will multiply several fold. Chapter 2 then focuses on a comparative study of American and European cases and their recent developments to highlight how different approaches and problems hide behind apparent procedural similarities. Today, it is well known that the European Patent Office does not easily grant its *imprimatur*. In this sense, it is representative of what we can characterize as “top of the line” in terms of requirements on the part of a patent office. In contrast, the US Patent and Trademark Office is known for its principle of “rational ignorance”, which consists of relying heavily on the legal system to regulate the question of patent delimitation and assertion.

From the principle of “rational ignorance” employed by the patent office, there logically follows a phenomenon of litigiousness around patents. The

full extent of this phenomenon is detailed in Chapter 3. Often perceived negatively, this litigiousness is addressed by presenting the so-called “hold-up” problem concerning, on the one hand, the development of patent assertion entities (including the infamous “patent trolls”) and, on the other hand, the case of patents that are essential for a standard. The position taken in Chapter 3 is to consider that patent trolls are to patents what arbitrageurs are to finance: they play the maligned role of exploiting the flaws in the system, but in doing so, they prevent these flaws from developing. They are therefore all the more useful when patents are delimited vaguely and have a considerable risk of overlapping, which also explains why they “prosper” primarily in the new world, not the old one. The case of patents that are essential for a standard illustrates how the road to hell is paved with good intentions. Standards are a common reference point on which potentially competing companies can rely to develop a technology while guaranteeing compatibility for users, regardless of the technology provider. However, when standards are constructed around patents, the market power of the patent holder can be increased or even amplified by supposedly anticompetitive conduct. So-called FRAND (Fair Reasonable And Non-Discriminatory) licenses are supposed to remedy this. Even if, in reality, they can prove complex to implement because they are too imprecise, they demonstrate the ability of the system to adapt to problems it encounters.

To paraphrase a famous quote in American jurisprudence, “everything under the sun that is made by man can be patented”<sup>4</sup>. Chapter 4 addresses the emergence of a new “place in the sun” for patents in the context of a system of innovation that is not vertically integrated but fragmented between multiple actors. To this end, it supports the idea that there are other tools to support innovation besides patents. More specifically, it addresses prizes in innovation competitions that are often presented as alternatives to patents while still constituting, like patents, a tool to compensate inventors. It demonstrates that these competition prizes do not represent more of an alternative to patents than financial support tools for R&D. Rather, Chapter 4 argues that these tools are complementary to patents. Chapter 4 then goes further, supporting the idea that patents are paradoxically useful in a system of innovation that is not only fragmented and intermediated, but also open. Indeed, the notion of open innovation is often presented as contradictory to

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<sup>4</sup> See Case *Diamond v. Chakrabarty* 447 US. 30 (1980) and the opinion of Chief Justice W. E. Burger declaring “Congress had intended patentable subject matter to include anything under the sun that is made by man”. For a discussion of the origin of this expression, see also Kauble [KAU 11].

the “proprietary” approach generally illustrated by patents. A significant part of the academic literature tends, on the other hand, to show that an open innovation approach often requires spreading information about inventions while protecting them, and that patents allow for this better than other protection strategies, such as the secret. A more systematic use of patents could thus support the development of open innovation.

Throughout these chapters, this book seeks to inform the reader about a “middle ground” regarding patents. It moves away from a “traditionalist” conception which, by insisting on the incentivizing role of patents, tends to neglect their informational role, especially as a signal. Without contesting the relative disconnect between the upward demography of patents and the significantly more moderate productivity gains, this book proposes an alternative interpretation to that of the “abolitionists”. It suggests that the position of patents within the system of innovation is renewing itself, with the shift toward a more fragmented, more intermediated innovation that is also more open and which guides the contemporary evolution of the most developed economies.



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