Was the French Patent System democratic ? France, XIX th century

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Introduction

The influence of political and social institutions on economic development is a major question developed by institutional economics. Naturally, the relationship between patent system and economic performance has been explored by economists and historians. In her book published in 2005, B. Zorina Khan tended to show that this link was not uniform. By comparing Great-Britain, France and United States, she suggested that American economic performance was based on a « democratization of invention », which was allowed by its own patent system. Contrary to the American one, the « philosophy and enforcement of intellectual property in Britain and in France, the structure of patent and copyright systems, and the resulting patterns of invention, were all consistent with the oligarchic nature of European society. »[1] Further she added : « The European systems reflected their origin in royal privilege and effectually limited access to a select class, which ultimately resulted consequences for their long run competitiveness. »[2]

Considering the French case under Toqueville's authority, B. Zorina Khan insisted on the continuity between the «privilege mentality» of the *Ancien régime* and the patent system built by the Revolution. For her, the revolutionary rupture has only a rhetoric meaning. French mercantilist policies remained during the XIXth century. Mistrust toward foreign inventions, strong involvement « in the discretionary promotion of invention » and preference for secret remained the essential features of French patterns of invention and conduced to promote rent-seeking activities, which were unfavourable to competitiveness.

The opposite view that we will defend in this paper is not based on patriotic reasons, even if we think that France contributed modestly to the history of democracy. Zorina Khan's point of view may be considered as partially irrelevant because it prevents from understanding correctly the freezing development of French patent system[3]. It is necessary to analyse more precisely the nature of the revolutionary break, without assuming too quickly a continuity between the *Ancien Régime* and the Revolution. Further we have not only to understand if the French patent system was democratic but also to wonder if its (in)efficiency was the result of political and social factors.

The revolutionary break

Admittedly, many of the problems relating to the right of the inventor appeared on long before the French Revolution. The royal declaration on privileges for inventors in 1762 was a moment of drawing a new conception of privileges, which depended on the strong debates about the economic regulation. As

1 B. Zorina Khan, *The Democratization of Invention : Patents and Copyright in American Development, 1790-1920*, Cambridge, Cambridge University Press, 2005, p. 6.

2 *Ibidem*, p. 29.

3 This paper is based on my book : Gabriel Galvez-Behar, *La République des inventeurs : propriété et organisation de l'invention en France (1791-1922)*, Rennes, Presses universitaires de Rennes, 2008.

demonstrated by Liliane Pérez' work, the invention was the subject, early in the XVIII[th] century, to an administrative mobilization, which was amplified by the spread of *encyclopédisme*[4]. Thanks to this process, the inventor acquired a new dimension: John Locke's principles and those of natural law legitimized the claims of intellectual property, already widely perceived by Denis Diderot[5]. Since the Enlightenment, the rights of creators on their works were a rallying point for many artists, concerning liberal or useful arts. At the very end of the *Ancien Régime* this trend became stronger. In the 1780s, even as the exclusive privilege was the subject of considerable criticism, many agreed that transitional monopolies could be granted to inventors. Inspired by the British model of patents, the French royal administration facilitated the issuance of privileges in inventions, while easing procedures of prior expertise. In return, it required of privileges holders the deposit of their inventions in order to promote the development of the industrial knowledge. Recognition of the natural right of inventor, issuing temporary privileges to reward and to allow the access to the market and the disclosure of inventions, these were the three features of a model, which appeared even before the Revolution.

The Revolution of inventors (1791)

The Revolution accelerated this process. The first feature of the revolutionary genesis of the patent was the strong lobbying of inventors' associations in the development of the new patent law. At the end of the *Ancien Régime* some associations devoted to the promotion of art and science had came to light. The Revolution promoted the development of new societies defending inventors' rights. One of them, the *Société des inventions et des découvertes* played an important role. Its first president, Claude-Urbain de Retz, baron de Servières, could be seen as a member of the *République des lettres* but had, in the same time, an experience of business[6]. At the eve of the Revolution, he was in touch with famous savants such as Séguier, Chaptal and Lavoisier, whereas he was managing a factory of nitrates near Nimes. On bad terms with his family, he was in Paris in 1789 and became, two years later probably, president of the *Société des inventions*. At the lead of a delegation of « artistes-inventeurs », he presented in September 1790 a petition to the *Comité d'agriculture et du commerce*, which demanded the establishment in France of a patent law like in England. The *Comité* nominated a rapporteur, who was probably inspired by Servières himself, the chevalier Stanislas de Boufflers[7].

Born in 1738, raised in the atmosphere of the enlightened court of Lunéville, the

4 L. Hilaire-Pérez, *L'invention technique au siècle des Lumières*, Paris, Albin Michel, 2000.

5 See D. Diderot, « Lettre historique et politique sur le commerce de la librairie », *in* id., *Œuvres complètes*, Paris, Garnier frères, 1876, p. 30. On this issue, see L. Hilaire-Pérez, « Diderot's views on artists' and inventors' rights : invention, imitation and reputation », *British Journal for the History of Science*, vol. 35, n° 2, juin 2002, p. 129-150.

6 On Servières, see Christiane Demeulanaere-Douyère, "Inventeurs en Révolution : la Société des inventions et découvertes (1790-1791)", L*a technique et la science au miroir du bien public dans l'Europe des Lumières, XIIème Congrès International des Lumières. Sciences, Techniques et Cultures au XVIIIe siècle*, Montpellier, 8-15 juillet 2007, forthcoming. See also our working paper, "Genèse des droits de l'inventeur et promotion de l'invention sous la Révolution française", on line : http://halshs.archives-ouvertes.fr/docs/00/06/68/35/PDF/INVREVGGB.pdf

7 On Boufflers, see Nicole Vaget Grangeat, *Le chevalier de Boufflers et son temps. Étude d'un échec*, Paris, Librairie A.-G. Nizet, 1976.

chevalier de Boufflers became a member of the *Académie française* in 1788 after being governor of Senegal. Representative of the nobility from the bailiwick of Nancy to the États-Généraux then to the Constituent Assembly, Stanislas de Boufflers joined the *Comité d'agriculture et de commerce* and he presented the *Rapport sur la propriété des auteurs de nouvelles découvertes et inventions en tout genre d'industrie* on December 30, 1790. Boufflers was clearly inspired by Diderot's arguments, pointing out that « if there is a genuine property to a man, it is his thought. » [8] For him, the inventions were considered as inventor's products, which property has to be secured.

Boufflers proposed a bill, whose main features were based on these principles, and he suggested a clear contract between inventors and society. As long as the inventor kept his invention secret in his own mind, he remained its absolute master. However, in order to take effectively advantages from it, he should disclose it and then he could be dispossessed. If the society could protect his rights, this protection had a strong price because of the particular nature of this immaterial object. In order to compensate the society for this cost, the inventor must not only renounce the secret by providing an exact knowledge of his invention, which was a sine qua non condition for effective protection, but it also must give up its rights after an interval of time.

Although temporary, this protection was considered as the result of a natural right and the contract imagined by the chevalier de Boufflers did away with hassle previously imposed on inventors. In this framework, patent examination by the administration had no legitimacy. Whether conducted by scholars or by members of corporations, such an examination was, in Boufflers' eyes, necessarily arbitrary because it established « a court judging for things that do not yet exist. »[9] For him the administration was unable to take a decision on the usefulness of new things, which could only be labelled by the public opinion. In January 1791, Boufflers' bill became the first patent law in France.

The later was immediately contested by those, who considered that patents were useless privileges. Again the action of the *Société des inventions* was essential. For these inventors, the patent law tended precisely to make an end with privileges system because inventor's rights were recognized as a natural and " inalienable human" one. Thanks to a strong lobbying, a second patent law, confirming the first one, was adopted in May 1791. In order to draw a strict distinction from the old privileges, it called the patents "brevets d'invention" and drew the new patent administration, which would be managed by Retz de Servières.

A slow and difficult diffusion

The adoption of the French patent laws in 1791 did not cause any upheaval in the delivering of patents. On the contrary, in a first instance, granted patents were as numerous as applications for privileges at the end of *Ancien Régime*. In the 1780s 16 applications were filed on average each year to the *Comité du commerce*. Between 1791 and 1801, 15 patents were delivered each year. The number of patents continued to stagnate until the reign of Charles Xth (1824-1830), when it begun to rise rapidly. Thus, for nearly thirty years, the patents were slowly being

8 D. Diderot, « Lettre historique et politique sur le commerce de la librairie », *in* id., *Œuvres complètes*, Paris, Garnier frères, 1876, p. 30.

9 *Archives parlementaires*, 1ère série, t. XXI, p. 734 (30 décembre 1790).

adopted, which was concentrated in certain industries and in certain areas. In fact, between 1791 and 1803, mechanical, textile and chemical industries concentrated almost half of the patents (respectively 21%, 19% and 7.5 %). In addition, the weight of Paris and its region appeared overwhelming. In the first years of enforcement, nearly three quarters of patents were taken in the department of the Seine ; in the 1830s as Parisian patents represented less than half of the patents granted[10].

The uses of patents in Northern France confirm this idea of a slow and hesitant diffusion. The number of patents registered in the first decades of existence of patent law was extremely limited in this area, which was becoming however an important industrial centre in France[11]. According to Jean-Pierre Hirsch, « not only the share of patents granted in this Mecca of the industrialization of the nineteenth century [did not reach] even 3% corresponding to the relative importance of its people, » but the number of patents relating to the northerner textile industry, industrie-phare in this French department, was ridiculously low. In fact, Northerner industrialists had a mixed feeling toward the new patent system.

This mistrust appeared as soon as the patent system was established, which became immediately subject of fierce criticism. The first reason was probably its costs which was prohibitive. The patent tax was indeed very expensive : for a 15 years patent, it raised 1500 francs whereas worker's wage was 1,5 francs a day at the beginning of XIXth century. Added to other administrative costs, this tax made the French patents inaccessible to many inventors. Besides, the heaviness of litigation was another stumbling block. A member of the *Conseil général des manufactures* said in 1819 that « the prosecution, that the patent holders are obliged to undertake, frighten many artists, especially in the departments, and prevents them from taking patents.»[12] Four years later in 1823 Francœur, professor at the Faculty of Sciences in Paris, denounced not only that litigations were very expensive but also the leniency of the courts, asking them to be as severe as in England towards counterfeiters[13].

Adaptations

Because of such shortcomings, the patent laws were subject to some adjustments. Anact of September 20, 1792 prevented from patenting financial methods. But more radical projects also appeared trying to undermine the compromise imposed in 1791. Entrusted by the *Conseil des Cinq-Cents* to prepare a report on patent law, Jean-François Eudes asked on 14 Pluviôse an VI (3 February 1796) that patents were issued only after a "mature consideration"[14]. This apparent challenge to the principle of non-examination of patents caused, in turn, so strong reactions, that Eudes had to abandon his project. In 1811 the *Conseil général des fabriques*

10 On these figures, see J. Girardin et Ballin, « Essai sur les brevets d'invention », *in* Association normande, *Annuaire des cinq départements de l'ancienne* Normandie, Caen, Impr. Le Roy, 1841, p. 527-540.

11 J.-P. Hirsch, « À propos des brevets d'invention dans les entreprises du Nord au XIX^{e} siècle », *Revue du Nord*, vol. 67, n° 265, avril-juin 1985, p. 447 -459.

12 Archives nationales (désormais AN), F^{12} 196 bis, séance du 23 décembre 1819

13 *Dictionnaire technologique ou nouveau dictionnaire universel des arts et métiers,* Paris, Thomine et Fortic, 1823, p. 461-473.

14 J.-F. Eude, *Rapport au Conseil des Cinq-Cents*, cité *in* A. Huard, *Répertoire de législation et de jurisprudence en matière de brevets d'invention*, Paris, Cosse et Marchal, 1863, p. 13.

et des manufactures intended to reform the patent laws but its work remained unsuccessful. In 1814, the issue was raised again, without further success. In 1821, the same commission addressed the issue again and again things were dragging on until the Minister of Trade revived the project in 1826[15]. Patents becoming more and more important, the Minister of Trade, the Comte de Saint-Cricq convened in October 1828 a commission to prepare a new patent law.

Chaired by Girod (de l'Ain), this commission included famous industrialists (such Ternaux), lawyers (as Charles-Augustin Renouard) or scientists (Baron Thénard)[16]. Because of the complexity of the problem, the commission undertook a wide consultation, whose results reflected the different uses of the patent[17]. Rare were those who, like the *Société des arts et des sciences* of Lille, called for the abolition of patents in favor of a system of rewards. Instead, most considered the patent as the best way to give special rights to inventors. On many other points, however, opinions were much more divergent. The examination, claimed by chambers of commerce of Boulogne, Montpellier and Tours, was rejected by those of Lyons, Marseilles and Paris.

Contrary to its philosophical foundations, the revolutionary patent laws provided a protection only to inventors who were able to pay the cost. This feature could suggest that the French patent system was not democratic but other arguments have to be taken in consideration. The fact that rich Northerner industrialists could be reluctant to take patents because of its inefficiency intimates that the slow diffusion of patents was based on factors different from social ones. On the other hand, the refusal of preliminary examination proves that the revolutionary patent law was not based on the same philosophy than the system of privileges, which had begun to evolve at the end of *Ancien régime*. Moreover, the best proof of the revolutionary rupture is certainly the fact that the French patent system was not abolished despite the critics.

The 1844 patent law, or the contradictions of a liberal institution

Fifteen years were necessary to make a new legislation on patents. Before this, political turmoil took precedence over economic discussions. Under the *Monarchie de Juillet* the reform was considered once more : in 1832, the Minister of Trade established again the commission created in 1828 and added the famous chemist Gay-Lussac and two other members. A year later, the commission adopted a report which was presented to the *Conseil général de l'agriculture, du commerce et des manufactures* only in 1837. A bill was proposed to the Chambre des pairs at the beginning of 1843. More than a year of debates was necessary to adopt the new law, which was promulgated on July 5, 1844. This new French patent law would govern patents' legislation until 1968.

The 1844 patent law: a new deal ?

Contrary to the 1791 laws, the Act of July 5, 1844 did not include any preamble to define its philosophical principles. To the contrary, the government had wanted to avoid any discussion about the metaphysical nature of inventor's right. Despite this commitment, the representative Philippe Dupin, rapporteur to the *Chambre*

15 AN, F12 196 bis: Meetings of November 18, 1824, 20 October 1825 and April 6, 1826.

16 A. Huard, *Répertoire...., op.cit.*, p. 16.

17 *Recueil industriel, manufacturier, agricole et commercial,* n° 39, février 1830, p. 119-153, n° 39, mars 1830, p. 209-236 et n° 40, avril 1830, p. 28-50.

des députés, came back to the philosophical foundations of the debate in order to make the new law steadfast. In his eyes, the idealist aspect of invention prevented from identifying its property to a material one. For him « once delivered, once thrown into the vast fund of human knowledge, an idea is not more likely to be the exclusive and jealous enjoyment, which is called property.»[18] As soon as the idea was proclaimed, it was impossible to forbid everyone to imitate it. To make sure that his property ownership would stay an « exclusive and jealous » one the inventor had only one solution: to be condemned to silence and inaction. On the other hand, by communicating his invention, he had in fact to abandon any claim to a perpetual and exclusive property.

To compensate this abandonment, the society had to reward the inventor for the usefulness of his invention by giving him the opportunity of an exclusive holding for a given period of time. To encourage the inventor to file his invention in the fund of knowledge, he had to be granted a temporary monopoly through « a real transaction, a contract, an exchange. »[19] Actually, in Dupin's eyes, property was substituted by the idea of an exchange and a contract. This weakening of the principle of invention's ownership was justified by the benefit of a contractual basis, already outlined by Boufflers but not in the same terms. This conception was not unanimously accepted and many people continued to defend an other one based on the natural right. However, if the law no longer considered the right of the inventor as a property one, it did not mean that the new right was granted by the government. In fact, the 1844 patent law continued to be based on the refusal to see the government delivering a privilege : the spirit of revolutionary laws and its natural right foundations seemed at last to be preserved.

Article 2 of the Act defined patentable « inventions or discoveries » by distinguishing three cases: the invention of new industrial products, the invention of new ways, the new application of known methods to produce a result or an industrial product. Thus the law did not consider the importance of the invention, which had only to meet two conditions: to be new and to have an industrial character. A method of cultivation or a method of reading were not considered as industrial, and they could not, therefore, be patented. The law also provided criteria excluding purely theoretical discoveries. Products, means and new applications were patentable according to the law and, contrary to popular belief, the 1844 patent law allowed the granting of patents to protect products as well as processes. Courts ensured, in some cases only, the primacy of one over the other.

One of the most important changes introduced by the new legislation concerned the cost of patents. Contrary to the previous one, the 1844 patent law allowed patentees to pay the tax during all the duration of their patent. In practice, patent costed 100 francs each year whereas workers' wage represented about 1,5 francs a day at mid XIXth century. Although modest workers could not have yet an real access to patent, this effective fall of price allowed artisans or small entrepreneurs to use the patent system. Even if prosopographical studies on patentees are scarce, it appears that these new conditions explain the fast development of patents in the 1850s.

18 A. Huard, *Répertoire ..., op. cit.*, p. 235. It is impossible to present here all the details of the 1844 patent law.

19 *Ibid.*, p. 236.

An ambiguous development of patents

The 1844 patent act led to a considerable increase in the number of granted patents : between the late 1840s and early 1860s, the number of patents was multiplied by three. This exponential development was focused on certain activities : in 1854, 13% of patents protected « chemical products » - but that denomination covered both food, cosmetics and dyestuffs- and 12% were belonged to « fine arts and musical instruments ». The steam engines and those applied to textile materials account for only 18% of the total[20]. Although they had to be clarified by a more precise statistical analysis, these figures qualify the idea of an intensification of inventive activity in the first half of the 1850s and give more emphasis on the effect of reducing patent's costs. Thus the 1844 patent law undoubtedly facilitated diffusion of patent : according to the Chamber of Commerce of Lille, the annual tax could be supported by no-wealthy inventors[21]. In addition, the quite remarkable stabilization in the number of patents issued between 1858 and 1869 is easily explained by the controversy concerning industrial property (cf *infra*). Faced with the risk of patent law's collapse, many hesitated to invest in the patent.

Other factors lead to relativize this sudden increase in patents. Patents had, in fact, a short life expectancy. Nearly half of patents failed in the two first years and less than 10% only exceed the tenth year[22]. This high « infant mortality » of patents was coupled with the stagnation of assignments. Since 1791, patents could be sold but assigned patents had to be declared and published in the *Bulletin des lois*. Between 1844 and 1846, 186 assignments were, on average, published annually ; between 1849 and 1851, probably because of the political upheavals of the time, the figure dropped to 37. Between 1854 and 1856, 144 disposals were recorded each year, 202 between 1859 and 1861. In sum, although these figures have to be treated with caution, they indicate that the number of durable patents and covered transactions did not increase in the same proportions as patents in general.

From a philosophical point of view, it appears clearly that the French patent system was based on natural right and this conception appeared democratic since every inventor had the right to have his invention protected by the law. Obviously, the cost of patent limited in practice this ideal but the patent legislation was based on new foundations. By falling the concrete price of patent, the 1844 patent law ensured a democratization of patent, which conduced to a strong increase of the number of delivered patents. However, despite this new development, the French patent system did not work better.

The rule and its uses

The study of the number and life expectancy of patents corroborates the contemporaries' impression of a proliferation of ephemeral patents and of litigations. Was this last perception justified ? In the first years of application of the 1844 patent law, the number of cases brought before civil or criminal courts

20 Figures established from the *Catalogue des brevets d'invention pris du 1er janvier au 31 décembre 1854*, Paris, Bouchard-Huzard, 1855.

21 Archives départementales du Nord (now ADN), 76 J 1792, August 1855.

22 On the figures concerning the years 1860, 1865 et 1870, see G. Galvez-Behar, *La République des inventeurs*, *op. cit.*. On the figures concerning the year 1844/1845, see « Circulaire adressé par M. le directeur général de l'Agriculture et du Commerce à MM. les présidents des Chambres de commerce » *in*, L. Nouguier, *Des brevets d'invention ..., op. cit.*, p. 536.

was increasing quite quickly[23]. Anyway, these figures show a sharp increase in litigation between 1846 and 1858, which is obviously to compare with that of patents themselves. However, whether civil or correctional court, if we compare the number of cases decided in the first instance to the number of patents that might be in force, the rate tended to drop from 1845 to 1866 and stabilised after.

In 1850, the Minister of Commerce recognized the inconsistency of court decisions since "such a patent, valid in a jurisdiction court, is void in the neighbor one ; such an act is qualified as counterfeiting in Paris and elsewhere this same act escapes any repression."[24]. Four years later, the General Director of Agriculture and Commerce said in turn that "under the new law, it has not seen a decline in the number of trials in which the patents give rise constantly, they have rather increased[25]. In 1856, faced with these problems and limited powers of judges in the technical matter, Charles Laboulaye claimed, unsuccessfully, the introduction of "industrial consular courts" elected in the manner of commercial courts and charged with judging the trials relating to patents[26].

Contrary to the public opinion, these statistics underline the scarcity of litigations, which resulted from the high mortality outlined above but, probably, from the cost of procedures. Besides, these costs and the uncertainties of procedures promoted negotiated deals, which allowed a case-by-case definition of property rights, tended to shrink litigation. This relative scarcity, however, should not suggest that litigations had a marginal meaning since they were a moment test where property rights were more clearly defined. At last litigation was an horizon of expectations that suggested certain uses, in particular one way to write the patent. It was also a moment when the rules became more accurate. Also the relative stabilization of cases from 1860s can be attributed to the controversy already mentioned, but one must also take into consideration the progress of the court decisions, which improved legal information and made superfluous some trials.

Diffusing technical knowledge ?

The 1844 patent law faces very quickly, however, practical considerations. The application for a patent presupposes that the applicant can know prior patents so as not to see his own cancelled. Access to granted patents, by viewing or by publishing them, is even more essential that, in the French patent system, the application is under the sole responsibility of the inventor. Besides, the knowledge based on patented inventions is necessary to ensure the validity of required patents. Patents are intended to be a fund of technical information improving new knowledge and, consequently, inventive activity. From a historical point of view,

23 We must take great care with statistics from the *Compte général de l'administration de la justice civile et commerciale* failing to learn more about their construction; those in the criminal justice system are more secure due to the relatively strict correctional courts in matters of counterfacting. On these statistical sources, see P. Jobert, « Leçon des chiffres : le compte général de l'administration de la justice civile et commerciale au XIX^{e} siècle », *in* M. Merger et D. Barjot (dir.), *Les entreprises et leurs réseaux : hommes, capitaux, techniques et pouvoirs*. *Mélanges en l'honneur de François Caron*, Paris, Presses de l'Université Paris-Sorbonne, p. 67-83.

24 ADN, 76 J b17d66.

25 « Circulaire adressé par M. le directeur général de l'Agriculture et du Commerce à MM. les présidents des Chambres de commerce » citée *in* Louis Nouguier, *Des brevets d'invention et de la contrefaçon*, Paris, Cosse, 1856, p. 531.

26 *Bulletin de la Société d'encouragement pour l'industrie nationale*, 2eme série, tome 3, mai 1856, p. 264.

all of these issues take on a special importance since Joel Mokyr has made « industrial Enlightenment» the main cause of the first Industrial Revolution[27]. To what extent and under what conditions did patents contribute in France to this movement ? This facet of the French patent system needs now to be explored.

Actually, the revolutionary French patent laws had provided the publication of patents which were felt into the public domain. But only the decree of 17 vendémiaire VII (October 8, 1798) committed really this task to the *Conservatoire des arts et métiers*[28]. Therefore, the expired patents were studied by pupils of the school of drawing and descriptive geometry established at the *Conservatoire*[29]. Clearly, this use of patents was at the core of a technological language, which emerged from the late XVIIIth century[30]. The place of patents in the main technical litterature from the early XIXth century may convince of that central role. However, access to patents in force was more complex. To allow the searches for antecedence, the 1791 patent laws made every citizen able to « consult the specifications of the various patents currently in office » (article 11). This possibility, however, was subject to a number of criticisms: in 1811, the commission established by the *Conseil général des arts et manufactures* claimed that patent descriptions were disclosed only on an Minister's order, who could refuse consultation depending on the circumstances[31]. In fact, this request reflected a certain distrust of inventors who did not accept to see their inventions known by the public, although they wanted to claim ownership on them. In total, if the publication of expired patents was clearly encouraged, concrete access to patents in force did not seem too convenient, even if some owners did not hesitate to publish their inventions in technical reviews.

Even if it allowed an access and a publishing of patents, the 1844 patent act did not really improve the situation. In fact, the government refused to effectively assume this task, which was essential for the proper functioning of liberal compromise. Having an efficient access to delivered patents was a necessary condition in order to make the patent system work, since it was founded on an non-examination of applications. But the publishing of patents did not fulfil the expectancies. In 1859, Charles Laboulaye denounced the shortcomings of the publication of patents:

> "At long intervals, two or three years after the time the patent could be issued, when the novelty that had been searched no longer exists, is published a large volume in-4 °, with a high price, containing a multitude of patents more or less truncated, without any order and all sorts of topics. Anyone interested in one or two questions, which might have some interest to see five or six patents, is careful not to lose valuable time leafing through these volumes, avoid buying them, and this costly publication is, in reality, done almost in vain"[32].

27 Joel Mokyr, *The Gifts of Athena. Historical Origins of the Knowledge Economy*, Princeton, Princeton University Press, 2002.

28 P. Molard, *Description des machines et des procédés*, Paris, Impr. Huzard, 1811, p. 111

29 *Ibidem*, p. 4.On this school, see A. Mercier, « Les débuts de la "petite école". Un apprentissage graphique au Conservatoire sous l'Empire « , *Cahiers de l'histoire du CNAM*, n° 4, juillet 1994, p. 27-56.

30 On the genesis of technology, see J. Mertens, « Technology as the science of the industrial arts : Louis-Sébastien Lenormand (1757-1837) and the popularization of technology », *History and technology*, vol. 18 , n° 3, 2002, p. 203-231

31 AN, F^{12} 194, séance du 27 mai 1811.

32 *Bulletin de la Société d'encouragement pour l'industrie nationale*, 2eme série, tome 6, janvier

Six years later, before the Senate, the Minister of Trade recognized "that the publication of patents could not be done with the desired speed, because of the lack of resources available to administration, [which] caused the delays[33]. Nonetheless, criticisms and proposals to the Government remained unsuccessful.

These shortcomings sounded like an admission of failure for the government, which was unable to implement a form of regulation however necessary to make the patent system efficient, even if it was based on a liberal ideology. In fact, the government remained in this area subject to a spontaneous market logic and forgot the fact that transactions, even free, require both rules and media, even more involving immaterial objects. Indeed, the ideal feature of the invention took place long as an excuse for the Administration not to implement the hardware devices which were necessary in order to structure the flow of technical information. Private initiative, like patent agents' action, was necessary to diffuse the technical knowledge contained in the patents. But these actors had a paradoxical attitude : they refused a strong governmental presence in the system but they needed its involvement at least to secure the system. On the other hand, by fear of an increasing bureaucracy, governmental was very reluctant to reinforce its intervention. The controversies on the patent system explained probably a part of its hesitation.

From controversies to reforms

Far from shutting down critics, the 1844 patent law fuelled a controversy which appeared in the second half of 1840s and was increasing with the emergence in Europe of new patent laws[34]. In 1852, Britain expanded its patent legislation, by reducing the burden of taxes, reinforcing the patent publicity and establishing a sort of examination[35]. In 1854, the new Belgian law, which defined a patent period for twenty years and established inexpensive and progressive annuities, caused in France a strong debate and called to the fore one of its ardent actors, Ambroise Marcelin Jobard, director of the industrial Museum of Brussels. Partisan of a perpetual property for the inventor, Jobard was since the mid 1840s in the core of a powerful polemic against Joseph Garnier, the guardian of French liberal political economics temple. Jobard's success, which was demonstrated by the adoption of the new Belgian law, encouraged more French lawyers to pronounce in favour of patent's perpetuity.

Controversies

Published in the *Journal des débats* on August 19, 1854, an article revived a major controversy which was illustrated by the disagreements among French liberal economists about the patent system. Thus the main ancestor of liberal economists, Jean-Baptiste Say, supported the patents because of their positive influence in the development of English industry. For Say, patents were a legitimate reward for the

1859, p.

33 *Annales du Sénat et du Corps législatif*, vol. 5, *Du 10 au 27 mai* 1865, Paris, Administration du Moniteur universel, 1865, p. 238, [séance du 27 mai 1865].

34 On these controversies at the European scale, see : Fritz Machlup and Edith Penrose, «The Patent Controversy in the Nineteenth Century»**,** *The Journal of Economic History*, Vol. 10, No. 1 (May, 1950), pp. 1-29

35 H. Dutton, *The Patent System and Inventive Activity During the Industrial Revolution 1750-1852*, Manchester, Manchester University Press, 1984.

inventor[36]. As Say's spiritual heir and as the founder of the French Association for free-trade, Joseph Garnier took a similar position, without really settling the arguments that had emerged since Say's death[37]. Another figure of the liberal economics, Gustave de Molinari, adopted nevertheless a clearer position by advocating inventor's right which would be guaranteed in its natural limits[38]. By contrast, the young Frederic Passy expressed clearly against patents[39]. In short, on the issue of industrial property, the French liberal school was far from being unanimous and the divisions caused by this issue were not confined to a clash between free trade and protectionism.

In fact, beyond these individual differences, there were such antinomies which manifested different conceptions of invention. Indeed, from similar values, like a work-based conception of property or the freedom of trade and labor, free trade economists reached different conclusions. Considering the invention as the fruit of an individual work conduced to recognize an inventor's property right. Refusing such a recognition violates the freedom to work and meant a sort of return to corporations. In this case, patents had to be abolished. For others invention was foremost collective (that was the idea put forward by Passy), each invention being more dependent on the social development than on individual efforts. But was not such a logic a way to socialism? In short, these economists were faced with the impossibility to establish firmly intellectual property rights and did not succeed to give definitive solution to the issues raised by the patent.

All these critics made necessary a reform of the patent law. In 1857, a project was discussed by the *Conseil d'État* but it was impossible to find an unanimous consent. Therefore, after the universal exhibition in 1862, the famous economist Michel Chevalier launched an offensive against the patent system : for him inventive was first of all collective and appropriation of invention had no sense. Consequently the reform project was forgot, but, even if it was threatened, the French patent system did not disappear.

Once again the inventors' associations played an important role in the defence of the French patent law. Moreover, this one was defended because of political reasons as the Yves Guyot's book, *L'Inventeur*, illustrates[40]. For Yves Guyot, the inventor was the symbol of democracy, as he said in the conclusion of his book :

> « Here is the truth ! The inventor is the real king ! He does the honours ! He asks his qualifications to oneself ; he does not need armed forces to establish himself in the world ; he reigns thanks to genius, the biggest right, and with this genius, he changes the world, not only materially but also socially. »[41]

Five years later, in the introduction of his famous treatise on industrial property, the lawyer Eugène Pouillet added :

36 J.-B. Say, *Traité d'économie politique, ou Simple exposition de la manière dont se forment, se distribuent et se consomment les richesses*, Paris, Deterville, 1803, p. 265.

37 J. Garnier, *Traité d'économie politique, sociale ou industrielle*, Paris, 7e éd., Garnier frères, 1873, p. 701-705.

38 G. de Molinari, « De la propriété des inventions », *Journal des économistes*, 15 septembre 1855, p. 410-430.

39 F. Passy, « Question des brevets. Des objections que soulève la théorie du monautopole », *Journal des économistes*, 15 novembre 1854, p. 258-275.

40 Y Guyot, *L'Inventeur*, Paris, Librairie Armand Le Chevalier, 1867. As a lawyer, Yves Guyot was a republican opponent to the Empire.

41 Y. Guyot, *op. cit.*, p. 465.

> "Delete patents, replace the same even by a system of rewards whatsoever, do you not see that the large manufacturer, being able once to enjoy the invention, will took it as quickly as possible, and playing his ordinary game, will crush his competitors ? [...] Where will be indeed the interest of these great lords to do better? They will be alone, and consumption willy-nilly be forced to take their products, since there will be no other. We will come back as a state of affairs even worse than the masters and guilds, and we will just have moved from an evil excess to another. Let those who call themselves democrats, who call themselves friends of the people, and at the same time calling for the abolition of patents, open their eyes. "[42]

Far from being a vestige of the "privilege mentality", the French patent law was seen as a democratic promise.

A new context

Moreover, the Great Depression drew the outlines of a new context. Past time for contemplation after the Franco-Prussian war, France saw the number of patents growing rapidly, while the abolitionist movement that had claimed at the European level in the 1860s was slowing. Meanwhile, the last decade of the XIXth century saw the emergence of a new conception of the role of the government.

During the 1870s, the number of granted patents increased quickly and the position of the supporters of patents became stronger, as illustrates the success of the Parisian Congress on industrial property in 1878. This congress was organized in a particular context, facing a double challenge : to end with the abolitionist controversy and to promote the French patent system, which was questioned by the Vienna Congress in 1873 and by the adoption of the new German patent law in 1877. Thanks to the influence of the French delegation, the French tradition of the inventor's right based on the natural law, thereby denying any preliminary examination, was reaffirmed. In a sense, it was the consecration of the ideal figure of the individual inventor whose invention should be considered as irreducible to the collective nature of the progress. Ultimately, the 1878 Congress expressed the willingness to promote the organization of industrial property at the international level.

Concluded on March 20, 1883, the International Union for the Protection of Industrial Property, known as "Union de Paris", symbolizes the emergence of a global regulation. One of its fundamental contributions was primarily to compel each state party to consider the subjects or citizens of the Contracting States, as nationals. Moreover, the Convention allowed a right of priority of six months making the inventor able to exploit and to disseminate his invention in his country of origin without mortgaging its rights in other signatory countries. Among other provisions, the Convention provided for the creation in each signatory country of a special industrial property service in order to inform the public of the patents, trademarks and designs[43].

The French government had set in 1882 an Industrial Property Department in the Ministry of Trade and Industry. The creation of the Paris Union encouraged him to go further and the new service began publishing the *Bulletin officiel de la*

42 E. Pouillet, *Traité théorique et pratique des brevets d'invention et de la contrefaçon, Paris, Cosse, Marchal et Billard, 1872*, p. XX-XXI.

43 Yves Plasseraud et François Savignon, *Paris 1883. Genèse du droit unioniste des brevets*, Paris, Litec, 1983, 459 p.

propriété industrielle et commerciale in 1884. Now, patents were reported by a weekly publication. Despite this, the vast majority of patent agents continued to criticize the Administration for not facilitating really consultation and publication of patents. The smallness of the consultation rooms, the partial and impractical patent publication represented serious obstacles for prior searches and for patenting. The government guaranteed the respect for the 1844 patent law which forced him to communicate free patents, still does not fulfill its mission.

The last twenty years of the XIXth century were also assert a new thought of the government symbolized by the Waldeck-Rousseau's law in 1884, which recognized trade unions, or the 1898 law on chambers of commerce and industry. The dialogue between government and civil organizations, which had been challenged after the Revolution, is increasingly assumed as such[44]. This redefinition of the governmental borders went along with a new conception of property, which ceased to be gradually reduced to a subjective right[45] and with the emergence of the concept of "public service"[46]. The arrival of the independent socialist Alexandre Millerand as Ministry of Industry and Trade in 1899 established the conditions for a new type of dialogue between the world of proprietary and public authorities.

The acceleration of the dynamics of innovation and the number of patents granted across the world made complicated the task of private actors who had hitherto remedied the shortcomings of the Administration. With the development of technical information, patent agents were struggling for providing prior art searches, however, essential in the context of a system of non-screening. Gathered in a union in 1884, they claimed significant improvements in patent publication and greater state involvement. The industrialists supported these claims in favour of a new forms of regulation. This took place at the dawn of the new century.

A new form of regulation

The creation of the *Office national de la propriété industrielle* (ONPI) in 1901 was an important compromise between governmental actors, the actors of the industrial property like the patent agents and the lawyers and the representatives of industry[47]. The powers of the ONPI, in theory, were twofold. With the 1844 patent law, its main task was to perform its administrative function in registration, issuing and tracking patents (as well as trademarks and designs). Furthermore, a technical committee advising the Minister of Trade and Industry on all matters concerning the industrial property while overseeing the work of the Office. Being represented in this committee, the private actors of industrial property became able to be integrated into the action of this new public service.

Thus the work of this committee prepared the adoption of a reform (April 7, 1902) which obliged the government to ensure complete publication of the patents. However, these advances were limited again by budgetary constraints that prevented the ONPI from acquiring the premises and personnel necessary even

44 Pierre Rosanvallon, *Le modèle politique français, la société civile contre le jacobinisme de 1789 à nos jours*, Paris, Le Seuil, 2004, 445 p.

45 Jean-Pierre Hirsch, « L'impossible propriété collective », Steven L. Kaplan et Philippe Minard (dir.), *La France, malade du corporatisme ? XVIII^{e}-XX^{e} siècles*, Paris, Belin, 2004, p. 171-194.

46 « Le service public, l'économie, la République », *Revue d'histoire moderne et contemporaine*, special issue, n° 52-3, 2005.

47 Called first the Office for patents and trademarks to its creation, the organization changed its

though its activity increased rapidly[48]. While the government collected in 1905 3 848 965 francs in taxes on patents, the ONPI received only meagre incomes. Thus the ONPI tended to obtain a better budget and the financial independence.

This mobilization got results.. Thus, in order to allow patent agents and inventors to perform prior art searches essential to their efforts, the ONPI became a centre of technical and legal documentation (opened on Sundays!), including all the French patents, the bulk of foreign patents and a library of over 15,000 books. In addition, George Breton, director of the Office intends to organize several times with the help of the Union of Engineers property attorneys legal advice sessions for inventors in need.

Moreover, the committee, instead of having a too narrow conception of its action, was driven, too, to act outside the framework established by law, practicing a silent examination. Indeed, in the early XXth century, the government tended to oppose the granting of patents for inventions "contrary to morality." Through the technical committee and the *Comité consultatif des arts and manufactures*, the Administration was reviewing certain patents even though the law continued to reserve that prerogative to the courts if necessary alerted by the General Attorney[49]. By continuing illicit practice emerged from the early XIXth century, the institution, despite the reform, continued to demonstrate the structural difficulty that IP due to the state.

Conclusion

It is impossible to consider the French patent system in the XIXth century as a prolongation of the privilege systems of the *Ancien régime.* Tocqueville's framework, which suggests strong continuity before and after the Revolution, is not necessary relevant in this case. The *brevets d'invention* are a powerful revolutionary invention. They symbolised the right of inventors as natural rights, the refusal of an administrative censorship and the confidence in market mechanisms in order to distinguish useful inventions from other. Indeed, the high cost of patent prevented small workers for protecting their inventions but it does not allow to consider the democratic discourse as pure ideology. Not only this democratic faith in the patent system allowed to resist against the abolitionist attacks in the 1860s but also it structured the evolution of the patent system itself, which became more costless.

The idea of an inefficient French patent system has however to be qualified. First, the patent system did not prevent the French economy to become one of the most important in the world and to play a strong role in the development of technologies during the Second Industrial Revolution. Besides, the shortcomings were the result of the governmental hesitations. The French patent system was certainly based on liberal assumption : natural right, individualistic conception of invention, and a government staying at the background. But to be really efficient, the patent system necessitated on the contrary a governmental commitment in order to disclose the technical information. The German patent laws of 1877 and 1891 were based on a different conception ; they included an examination and a

name to ONPI in 1902

48 *Rapport de la Commission technique sur le fonctionnement de l'Office national de la propriété industrielle (avril 1908-janvier 1909)*, Paris, Vuibert et Nony, sd, p.35.

49 Gabriel Galvez-Behar, « Les faux-semblants du droit de l'inventeur », *Document pour l'histoire des techniques*, n° 17, 1er semestre 2009, p. 98-105.

strong patent administration without being based on a democratic conception of invention. In the French and German cases, the democratisation of invention was not linked to its efficiency.