Managing Scientific Patenting in the French Research Organizations during the Interwar Period

Gabriel Galvez-Behar

Managing Scientific Patenting in the French Research Organizations during the Interwar Period

Gabriel Galvez-Behar

(Université de Lille – IRHIS – Institut universitaire de France)

Oral Presentation

(Complete Draft Available on Demand)

gabriel.galvez-behar <at> univ-lille3.fr

In 2012, David Edgerton invited us to "follow the money" to describe new dimensions of scientific activities, arguing how seminal could be this approach. I would to suggest here to "follow the patents" to understand what was at stake with the institutionalization of French scientific research from the 1930s to the 1950s. My point is that far from being an unessential dimension of this institutionalization, scientific patenting – which had to be defined more precisely *infra* – was an important issue of this process.

By the way, this history of scientific patenting in the French Interwar period is also useful to explain the current domination of French scientific agencies in patenting. Chart 1 represents the number of patents granted to the 20 most important French corporate patentees in 2012. As we can notice, three research agencies are among them whereas the first universities are in the 33^{d} position.

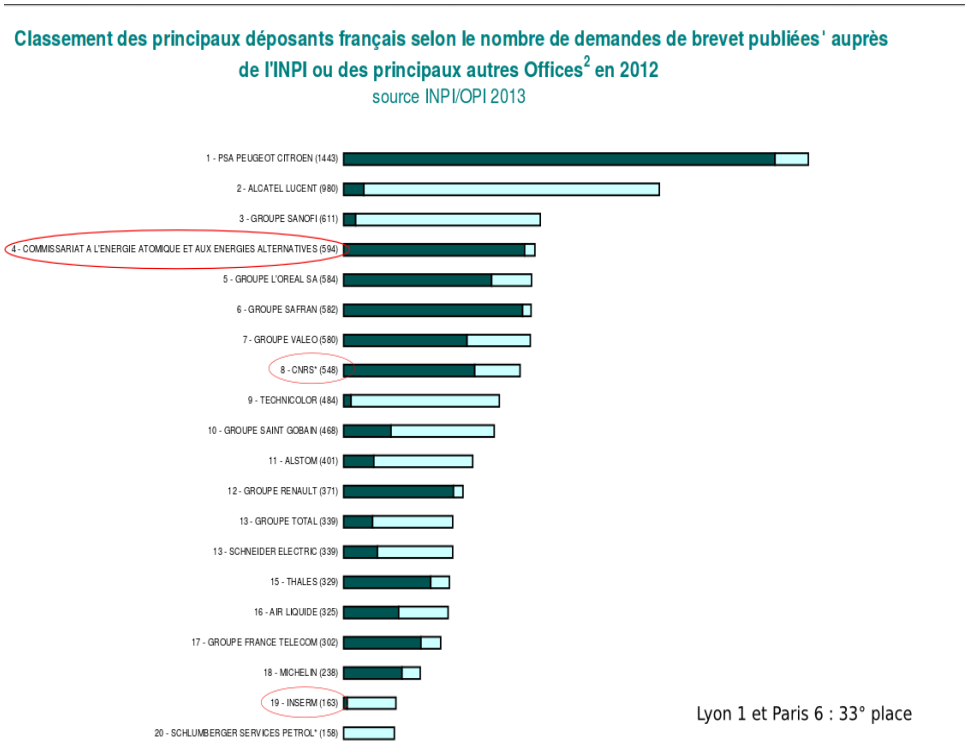


Chart 1: The 20 first French corporate patentees in 2012

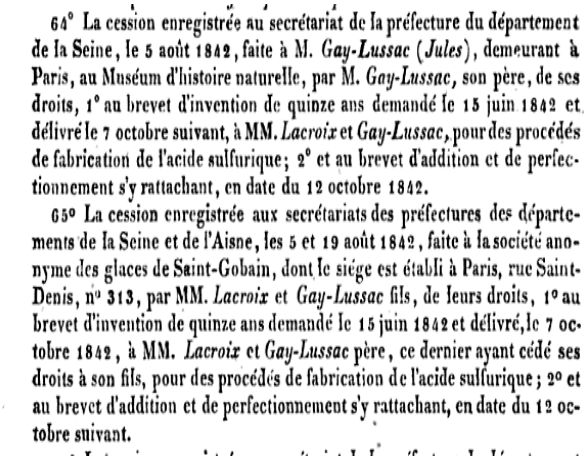
Actors are aware of this different attitude toward patenting. In 2006, an officer of the University Paris 11 – a main research university in France – said :

> "In terms of valorization, the main difficulty was to establish at the university a policy of protecting outcomes. Indeed, patent applications were previously managed by other organizations such as the CNRS, the CEA or the INSERM"[1]

So my purpose is to tell the narrative of the institutionalization of scientific patenting in the first French research agencies by trying to understand how this process explains both the economic dimension of science and the current hierarchy I have just mentioned.

19th-century French scientists and patenting

It is important to remain that scientists did not expect the 20th century – and the Bayh-Dole Act even less so – to use patents. In 1842, for instance, the French chemist Gay-Lussac sold his patents about the production of sulfuric acid to his son, who sold them just after to the French company Saint-Gobain. Gay-Lussac father is well know as a model of scientific entrepreneur, a very important academic and also one of the member of the Board of the *Société anonyme des glaces de Saint-Gobain.*



64° La cession enregistrée au secrétariat de la préfecture du département de la Seine, le 5 août 1842, faite à M. *Gay-Lussac* (*Jules*), demeurant à Paris, au Muséum d'histoire naturelle, par M. *Gay-Lussac,* son père, de ses droits, 1° au brevet d'invention de quinze ans demandé le 15 juin 1842 et délivré le 7 octobre suivant, à MM. *Lacroix* et *Gay-Lussac,* pour des procédés de fabrication de l'acide sulfurique; 2° et au brevet d'addition et de perfectionnement s'y rattachant, en date du 12 octobre 1842.

65° La cession enregistrée aux secrétariats des préfectures des départements de la Seine et de l'Aisne, les 5 et 19 août 1842, faite à la société anonyme des glaces de Saint-Gobain, dont le siége est établi à Paris, rue Saint-Denis, n° 313, par MM. *Lacroix* et *Gay-Lussac* fils, de leurs droits, 1° au brevet d'invention de quinze ans demandé le 15 juin 1842 et délivré, le 7 octobre 1842, à MM. *Lacroix* et *Gay-Lussac* père, ce dernier ayant cédé ses droits à son fils, pour des procédés de fabrication de l'acide sulfurique; 2° et au brevet d'addition et de perfectionnement s'y rattachant, en date du 12 octobre suivant.

Chart 2: Gay-Lussac selling his patents (1842)

Louis Pasteur gives us an other example. From 1857 to 1873, Pasteur applied for several French patents. In 1862, he explained that he took some patents in order to prevent others – especially industrialists – from patenting themselves scientists' discoveries :

> "As it often happens that scientific principles, which have been disclosed by their authors, become patented by others' hands, [...] I have applied, prior to my Communication in February, according to authorized people's opinion, for a patent that would take precedence over all patents which could result from my work ; and I add that I am ready today to drop this patent in the public domain."[2]

Pasteur wanted to struggle against what some scientists called the

1. Philippe Adnot, *La valorisation de la recherche dans les universités. Rapport d'information n° 341 fait au nom de la Commission des finances,* Sénat, 2006. Translation is mine.

2. Louis Pasteur, *Œuvres de Pasteur*, tome 3, *Études sur le vin et le vinaigre*, Paris, 1924, p. 6, note 3. Translation is mine.

"industrial hornets", who applied for troll patents. As early as the 19th century, scientists and others were perfectly aware of the possibility to patent their discoveries – even if the patent law prevented them from doing this, but it is an other question. So my question is not to know that some of them are doing that for a long time – and we could probably mention the case of 16th century architects-engineers-scientists – but to consider now the emergence of patenting in scientific institutions.

WWI, Scientific Research and Patenting

WWI was a key moment in the development of scientific institutions but also of international scientific collaborations which made the question of patenting essential. The scientific mobilization, which existed in all the belligerent countries, promoted international scientific exchanges and, far from being forgotten, the question of patents remained essential. It is the reason why this question is not only a French issue. In France, the UK and the USA, we can notice at the same time the emergence of institutions in charge of coordinating the scientific research and also evolutions in patent laws and in patenting (Chart 3). In France, the *Direction des inventions,* which was created in 1915, suggested to his collaborators to apply for patents. With the Department of Scientific and Industrial Research, the Imperial Trust was also created in 1916 and had to apply for patents resulting from the scientific research. The US National Research Council, created in 1916, was responsible for publishing a report on the improvement of the US Patent Office (1917).

	Institutionalization of Research	**Patent Law for Inventions related to Defense**
France	Direction des inventions (1915)	10 April 1916 Act
UK	DSIR (1915)	1883 Patent Law 14 October 1915 Act
USA	NRC (1916)	Trading with the Enemy Act (6 October 1917, esp. 10-i)

Chart 3 : The Scientific Mobilization and Scientific Patenting during WWI

The patents taken by the famous French physicist Paul Langevin illustrates the fact that patriotic applied research did not prevent these scientists-inventors from applying for patents. On 29 May 1916, Langevin and the engineer Constantin Chilowski applied for a French patent about the production of submarine signals and the location of submarine objects. On 17 September 1917, Langevin applied for his own patent about the same issue. What suggests clearly that such patenting was not symbolic are the applications made in Germany, in the UK and in the USA afterward. In a sense, although he denied, Langevin had a real strategy about patenting, which emerged from his involvement in WWI scientific mobilization (and also from his affiliations to the particular *milieu* of the *École de physique – chimie* but this is an other story).

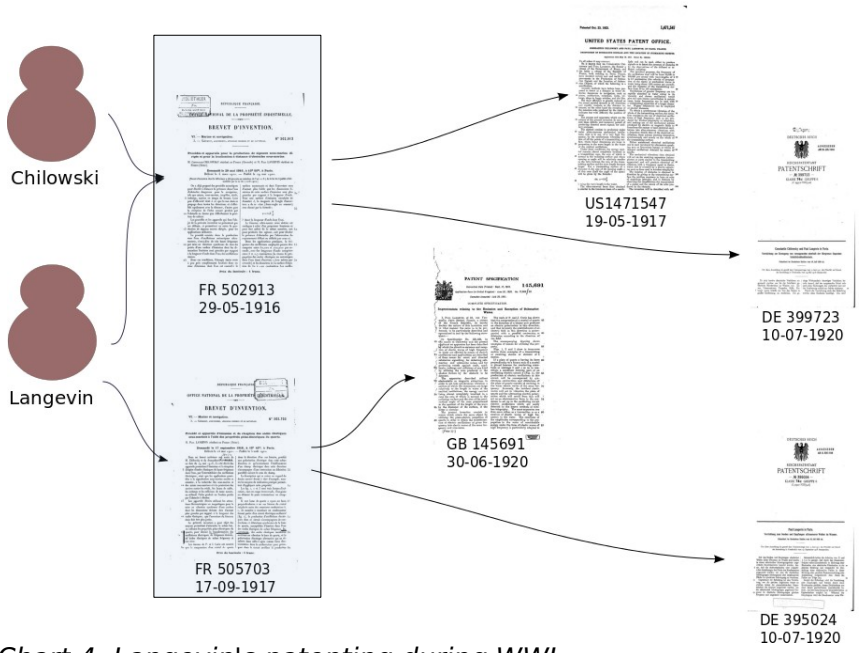


Chart 4: Langevin's patenting during WWI

Patenting within the New Organization of French Research

Was this kind of strategy only an individual one ? My point is that after WWI the new research institutions resulting from the war paid particularly attention to patenting because some of them helped some individual scientists to manage their patents. It was precisely the case of the *Office national des recherches scientifiques et des inventions* (ONRSII), created in 1922, which helped inventors to apply for patents and which paid for their fees. Between 1922 and 1934, the ONRSII was in charge of about 400 patents and, by doing this, it developed some skills in patent management. Some of these patentees helped by the ONRSII were also scientists. The most important of them was precisely Paul Langevin who was helped by the ONRSII in his very difficult attempt to apply for US patents, for instance.

Country	Patents granted through the Office from its creation to 1934	Patents still available in 1934
France	162	107
Belgium	122	15
Germany	57	14
UK	35	15
USA	25	18
Italy	17	3
Luxembourg	15	12
Switzerland	14	2
Austria	10	0
Spain	8	2
Czechoslovakia	6	1
Canada	4	4
Sweden	3	
Poland	1	
Netherlands	1	
Tunisia	1	1
Morocco	1	1
Japan	1	0
Egypt	1	1
Total	**484**	**196**

Chart 5: Patents granted to the ONRSII from 1922 to 1934

One other institution had to deal with patenting : the *Caisse nationale des recherches scientifiques* (CnRS), which had been created in 1935. This institution funded Joliot-Curie's research on nuclear energy. It is the reason why Joliot-Curie and his collaborators decided to let the *Caisse nationale* to apply in 1939 for patents about nuclear energy. The organization of the French research in the very late 1930s conduced to merge some institutions in a single one, the *Centre national de la recherche scientifique* (CNRS, October 1939), which inherited of the patents and contracts, which had been kept by the ONRSII and by the *Caisse nationale*. Thus, the CNRS had to be committed in patenting because of the process engaged by the ONRSII, on the one hand, and because of the very particular decision of Joliot-Curie, on the other hand.

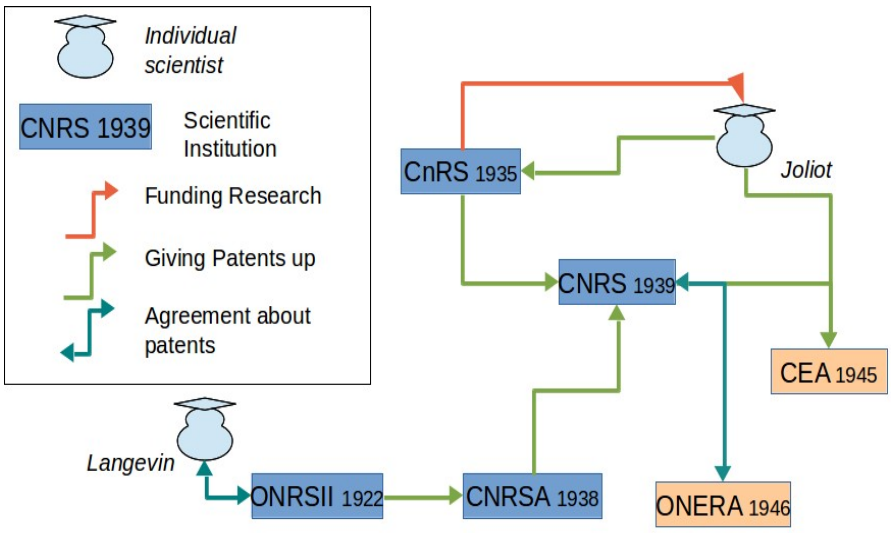


Chart 6: Patenting in the New Organization of French Research (1930-1945)

These two kinds of reasons made the CNRS at the heart of the scientific patenting during WWII and even after. Besides, the patenting issue remained essential in the emergence of new research agencies such as the *Commissariat à l'énergie atomique* (CEA) or the National Office for Research in Aeronautics. Concerning the CEA, a key moment in its first year was the sharp negociation to transfer CnRS' nuclear patents – which had became CNRS' ownership – to the new CEA by taking into account international constraints.

In 1951, the CNRS became the organization for patenting for all the institutions under the aegis of the French ministry of Education. As a result of this process, which took place in the Interwar period, the French research agencies acquired a dominant position in scientific patenting as suggested by chart 7.

Conclusion

It is clear that scientific patenting is a long term process and, in a way, we should distinguish different regimes to describe it. However, we have to underline the fact that, in the French case, this evolution of scientific patenting was based on a kind of path-dependency : the dominant situation of French research agencies depended not only on the organization of French research itself – which neglected universities in favour of these new agencies – but also of particular decisions such as Joliot's one in 1939.