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**PATENTS, COMPETITION LAW
and OPEN INNOVATION**

A Study of “Global Patent Warming”

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Statutory Declaration

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14 874 words

Abstract

This paper deals with the “global patent warming” phenomenon and the increasing concerns it is raising, from the perspectives of the patent system, competition law and the new open innovation paradigm. “Global patent warming” is indeed a major challenge today: patent applications are increasing, the number of patents granted is increasing, pendency volumes are increasing. The phenomenon has grown to an extent such as to drive the patent system close to the burnout and to heavily question its efficiency and legitimacy. Because global patent warming, by the issues it raises, is largely symptomatic of the patent system perpetual crisis, understanding this phenomenon is the key to understand what is today at stake with the patent system and to think about what the ways forward are.

Hence it is indispensable to define further this phenomenon, from both a quantitative and qualitative perspective. Different factors of explanations are provided and the vicious relationship between competition, open innovation and patent inflation is discussed as a fuelling factor of patent inflation. The consequences of this “patent bubble” for the patent system and for the competitive and innovative processes are identified, in order to assess whether or not it amounts to a systemic failure. Finally, in light of the diagnosis conducted, three possible ways to curb this inflation and fix the system are considered: remedies within the patent system itself, remedies within the competition law system, focusing on the possibilities to apply Article 102, and finally the abuse of right track. Finally, some perspectives are provided as to the future of the patent system.

Keywords

Global patent warming

Patent inflation

Patent crisis

Patent system

Patent law

Competition law

Abuse of dominant position

Open innovation

Abuse of right

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List of Abbreviations

BULR	Boston University Law Review
CFI	Court of First Instance
EC	European Commission
ECLR	European Competition Law Review
ECJ	European Court of Justice
EPC	European Patent Convention
EPO	European Patent Office
EU	European Union
IAM	Intellectual Asset Management
IP	Intellectual Property
IPR(s)	Intellectual Property Right(s)
JPO	Japan Patent Office
LQR	Law Quarterly Review
OUP	Oxford University Press
PCT	Patent Cooperation Treaty
PPH	Patent Prosecution Highways
PUP	Princeton University Press
RIDE	Revue Internationale de Droit Economique
SMEs	Small and Medium Enterprises.
TTA	Technology Transfer Agreements
TTBER	Commission Regulation (EC) no 773/2004 on the application of article 81(3) of the Treaty to categories of technology transfer agreements OJ L 123, 27.4.2004.
USPTO	United States Patent and Trademark Office.
WIPO	World Intellectual Property Organisation

INTRODUCTION

“Change is the only certainty in an uncertain world”¹

A major phenomenon facing us nowadays is “global patent warming”², which appears to be the mere and logical response to a set of underlying changes worldwide: globalization, new technologies but also patent players, the way we think, the way companies research, the way companies compete are changing. This wave of changes results in a situation where patent applications are increasing, where pendency volumes are increasing, further driven by a patent propensity³ continuously rising.

The outcome is simple:

“It’s becoming too much, the system is gradually becoming much warmer. It may not be warm anywhere (yet). It may not be warm in all industrial sectors (yet). [...] But it’s real and it will cause increasing problems”⁴.

Indeed, as patents are becoming “omnipresent”⁵, they are also becoming more and more contested, mainly because the IP world is no longer a hermetic one. On the contrary, patents are today at the core of an overly Manichean debate where everyone wants to have its say but where shades of grey are dramatically missing between the black and white extreme positions. This awakening is tell-tale of the patent system alleged crisis: this latter may not be fulfilling its role anymore. It may no longer be appropriate to its constantly evolving environment.

Yet the key role of patents has been repeatedly highlighted, notably in the framework of the Lisbon Strategy: patents are a key driving force for promoting innovation, growth and competitiveness. Patents are fostering innovation and thereby enhancing the competitiveness of firms. Hence competition also fuels innovation and therefore the demand for patents. Global patent warming seems to be both a result of and a threat to this virtuous circle of causality, all the more so as patents are increasingly being used as a

¹ *Scenarios for the future*, EPO, 2007, p.110.

² This expression was coined by Ciarán MCGINLEY, Head of the EPO Controlling Office.

³ Patent propensity is here defined by the number of patents per innovation.

⁴ MCGINLEY, "Taking the Heat out of the Global Patent System", [2008] *IAM* 10-15, p.12.

⁵ CORNISH, *Intellectual Property. Omnipresent, Distracting, Irrelevant?*, 2004.

strategic asset and in a “distracting” manner, in the sense that they do seem to achieve little of their initial purpose⁶. That is the reason why patents are drawing the attention of competition authorities, as the pharmaceutical sector inquiry so attests.

As a result, the very effectiveness and justification of the patent system are questioned: do we still need patents or have they become nugatory? The development of new models such as open innovation, that is defined by Chesbrough as “a paradigm that assumes that firms can and should use external ideas as well as internal ideas, and internal and external paths to markets [...] to advance their technology”, or open science tends to suggest that we do not necessarily need patents anymore. However, this suggestion deserves extreme caution: it should be considered with regard to the patent system rationale and setting aside all the emotions surrounding such a burning issue, since emotions-driven reforms are hardly desirable and rarely optimal.

Because global patent warming, by the issues it raises, is largely symptomatic of the patent system crisis, understanding this phenomenon is a key to understand what is today at stake with the patent system and to think about what the ways forward are.

For this purpose, Section 1 will try to give a comprehensive picture of the global patent warming phenomenon, by focusing on the facts and trying to explain them, highlighting the paradoxical causal links between global patent warming and new ways of innovating and competing. Section 2 will go on to identify the consequences of global patent warming, both for the patent system and for the innovative and competitive processes. Finally, Section 3 will assess the potential of three different branches of remedies to curb global patent warming, before concluding with some perspectives.

⁶ *Ibidem*, p.1.

1 UNDERSTANDING “GLOBAL PATENT WARMING”

Intellectual property is omnipresent and has been “spreading like rash”⁷. More particularly, the ‘global patent warming’ phenomenon, also referred to as a ‘patent crisis’ or ‘patent inflation’, seems today as severe as to question the whole effectiveness and legitimacy of the patent system. Hence it is indispensable to define further this phenomenon, from both a quantitative and qualitative perspective: patent inflation can be described as a two-sided phenomenon (1.1) whose explanatory factors are numerous (1.2) as well as paradoxically self-reinforcing, leading the patent system into a vicious circle (1.3).

1.1 A TWO-SIDED PHENOMENON

Global patent warming entails two phenomena: an explosion of the number of patents and an explosion of the size of these patents.

1.1.1 Explosion of the Number of Patents

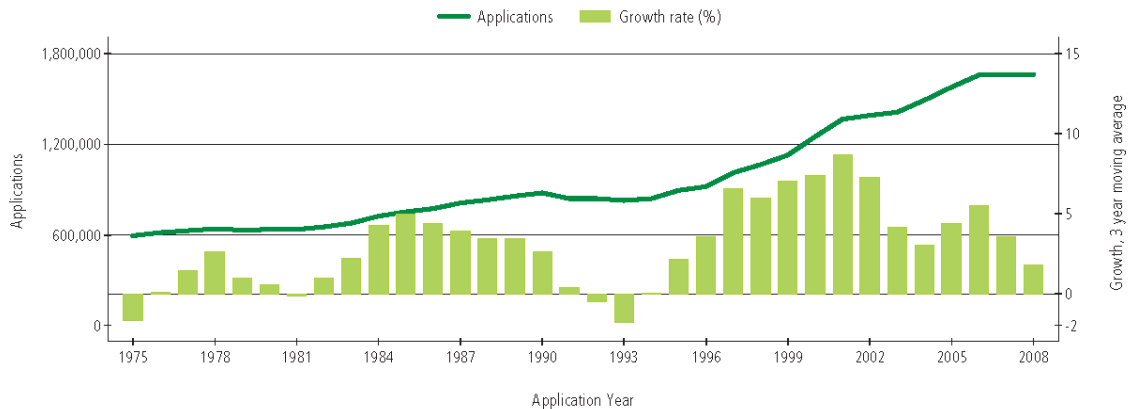
The global patent warming phenomenon describes a double trend: on the one hand, we observe a very sharp rise in the number of patent applications and on the other hand, this increase comes along with an increase of the number of patents granted. Both these phenomena can be illustrated by eloquent figures.

As it can be observed on Figure 1, two surge periods of patent filings are distinguished: the first increase occurred between 1983 and 1990 while the second, which showed a faster growth⁸, started in 1995 and was interrupted in 2008 by the global financial crisis, to grow again from 2010. Overall, between 1975 and 2008, the number of patent applications has almost gone threefold.

⁷ CORNISH, *supra* note 5, p.1.

⁸ *World Intellectual Property Indicators*, WIPO, 2011, p.20.

Figure 1 - Growth in Patent Filings Worldwide

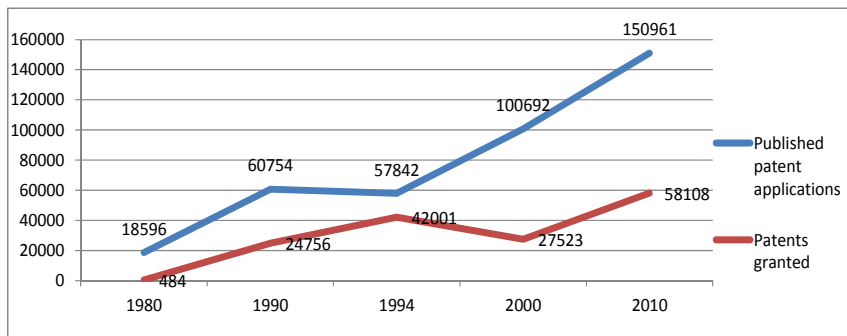


Note: The graph includes only published patent application data. Data reported here should not be compared with data provided in section A of this report. Source: WIPO Statistics Database, October 2011

Source: WIPO, supra note 8, p.20.

Worldwide, the volume of patent filings increased by 85.6% between 1995 and 2008⁹.

Figure 2 - Trends in Patent Applications and Grants at EPO



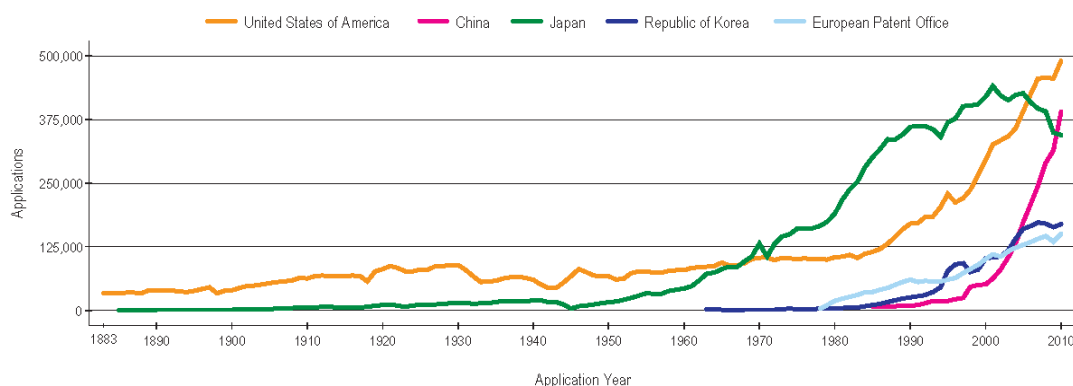
Source: WIPO, World Patent Information, 2011.

⁹ Ibidem, p.26.

At the European level, the total number of applications to the EPO increased from around 60 000 per year in 1990-94 to about 110 000 in 2000-02, that is a growth rate of more than 80%¹⁰. It was superior to 200 000 in 2006, meaning a 150% increase since 1995, corresponding to a yearly growth rate of more than 9%, compared with less than 2,5% for GDP¹¹.

This phenomenon is not confined to Europe and is observed in all patent offices around the world. “Looking at the US, one has to go back to the 1870’s to find such a high growth in patent numbers”¹².

Figure 3 - Trend in Published Patents Applications at the top five offices.



Source: WIPO Statistics Database, October 2011

Source: WIPO, supra note 8, p.39.

1.1.2 Explosion in the Size of Applications

Also symptomatic of this global patent warming is the general and seemingly uncontrollable increase in the size of patent applications, in terms of number of claims and of number of pages of the filed documents over the past two decades.

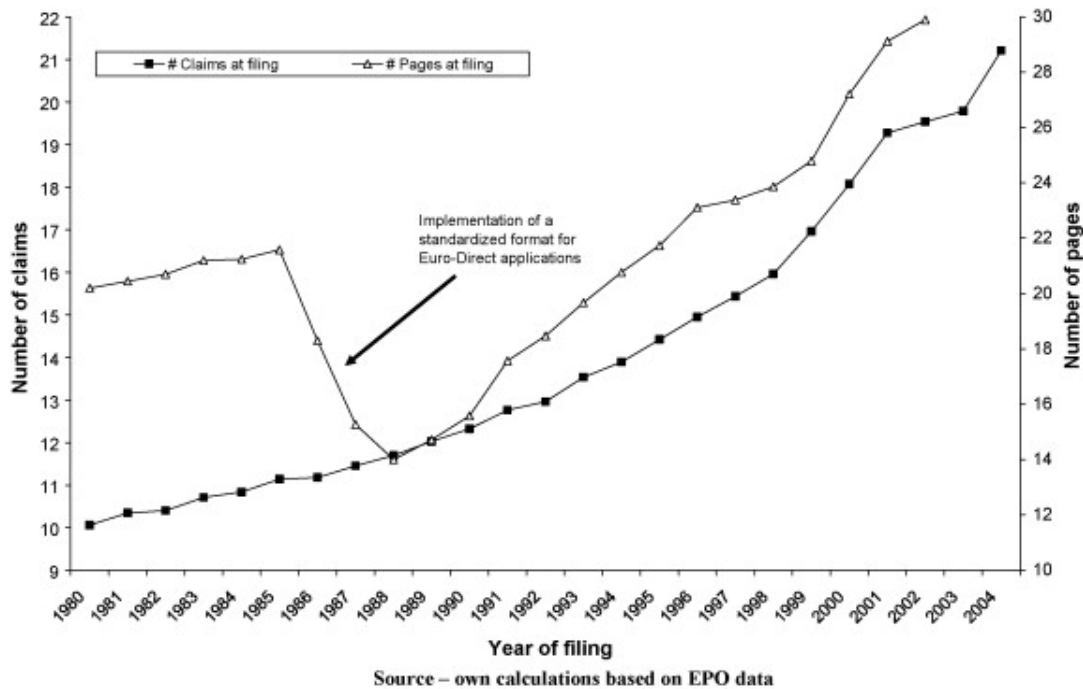
¹⁰ GUELLEC, VAN POTTELSBERGHE, The Economics of the European Patent System, IP Policy for Innovation and Competition, 2007, p.8.

¹¹ *Ibidem.*

¹² *Ibidem.*

The average numbers of claims per application almost went twofold between 1980 and 2002, from 10 to 18 claims, while the average number of pages per application more than doubled between 1988 and 2002, from 14 to 30 pages¹³. Both these trends, which are also experienced worldwide, can be observed on the figure below:

Figure 4 - Average number of claims and pages in incoming applications at EPO



Source: VAN ZEEBROECK, VAN POTTELSBERGHE, GUELLEC, *infra* note 15.

However, even if the average indicators remain reasonable and acceptable, both EPO and WIPO have received much more voluminous applications, so extreme that the term ‘mega-applications’ was coined¹⁴. The EPO is today frequently receiving applications totalling more than thousands of pages, and in recent years, “several applications have even reached 100 000 pages or up to 20 000 claims”¹⁵ Two extreme examples can be given: the application EP20000301439, to the EPO, consists of 283 priorities, 80 259 sequences, for an estimated total number of 50 000 pages. If we further include all

¹³ *Ibidem*.

¹⁴ ARCHONTOPOULOS, GUELLEC, STEVNSBOG, VAN POTTELSBERGHE, VAN ZEEBROECK, “When small is beautiful: Measuring the evolution and consequences of the voluminosity of patent applications at the EPO”, (2007) 19(2) *Information Economics and Policy* 103-132.

¹⁵ VAN ZEEBROECK, VAN POTTELSBERGHE, GUELLEC, “Claiming more: the Increased Voluminosity of Patent Applications and its Determinants”, (2009) 38(6) *Research Policy* 1006–1020.

priority patents, the case totalled around 600 000 pages¹⁶. A record application of up to 140 000 pages has been filed at the WIPO in 2000¹⁷.

Coupled with the sharp increase in the number of patent filings aforementioned, “the total number of claims and pages to be examined by patent offices is nowadays growing exponentially”¹⁸.

1.2 EXPLAINING “GLOBAL PATENT WARMING”

In the last decade, the literature has started to document this phenomenon, identifying and weighing the explanatory power of each potential reason. Consequently, it is now possible to have a rather clear picture of where this phenomenon stems from.

1.2.1 Traditional Factors Explaining Patenting Patterns

Before the recent fever which seized the patent world, some features of the patent applicants must be highlighted insofar as they account for much of the variations we observe in patenting patterns, both in terms of number of applications and patents granted and number of pages and claims.

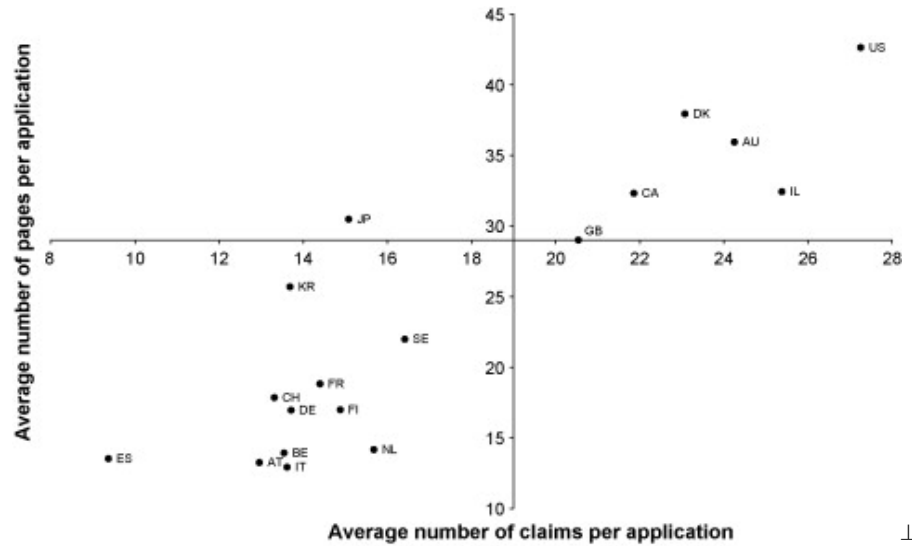
Firstly, depending on the origin of the applicant, the volume of the patent is very variable. Indeed, while the US have a tendency to file very long patents, with on average close to 28 pages and 45 claims, most of the EU countries have smaller averages, as can be observed on Figure 5.

¹⁶ ARCHONTOPOULOS (and others), *supra* note 14.

¹⁷ VAN ZEEBROECK, VAN POTTELSBERGHE, GUELLEC, *supra* note 15.

¹⁸ *Ibidem*.

Figure 5 - Average number of claims and pages per application



Source: VAN ZEEBROECK, VAN POTTELSBERGHE, GUELLEC, *supra* note 15.

Secondly, the sector from which the patent is issued also plays a great role in the volume of the application. For instance, because new technologies tend to use a different vocabulary, far less standardised than in more established fields, patenting in these sectors require longer and more detailed description than for applications in traditional sectors¹⁹. It is particularly the case of biotechnology and of software and more generally in sectors where technology is the basis of the competition process, since it will encourage applicants to establish their rights in the most precise way possible. Data indeed show that computer technologies contribute for the largest share, i.e. 10.5% of the change in volume of filings between 1995 and 2008, while the contribution of complex technologies to this increase is also enhanced, due to a faster growth rate than discrete technologies²⁰.

Finally, the characteristics of each company’s R&D activity also exert a clear influence on the number of patents that can be expected from this company. Then, compared to an average firm, the expected number of patents of a process innovator is reduced by 6 whereas this number increases by 11 for a product innovator²¹. Moreover, “increasing the

¹⁹ VAN ZEEBROECK, VAN POTTELSBERGHE, GUELLEC, *supra* note 15.

²⁰ WIPO, *supra* note 8, pp.27-28

²¹ PEETERS, VAN POTTELSBERGHE, “Innovation strategy and the patenting behaviour of firms”, (2006) 16(1) *Journal of Evolutionary Economics* 109-135, p.125.

share of basic and applied research in the total R&D budget [...] positively influences the number of patent”²² applications.

These factors are traditionally discussed in the literature but are far from sufficient to explain the tremendous patent inflation and the increase in patent propensity, which can better be explained by two series of factors, internal and external.

1.2.2 Causes Internal to the Patent System

Most of the “patent crisis” has been explained by reference to three features of the patent system. Two of them relate to the very heart, to the scope of the patent system, that are, on the one hand, the extension of the patentable subject matter, and on the other hand, the loosening of the examination of conditions for patentability.

Firstly, the long-lasting increasing trend of patent applications can be partly explained by the **broadening of patentable subject matter**²³, especially in the US, where the “Federal Circuit has pushed the law in an excessively patent direction”²⁴. Indeed, business methods and software can be patented in the US, whereas their patentability is excluded in Europe by Articles 52(2)(c) and (3) EPC, which, however, progressively accepted to patent software-related inventions: patent applications for computer-based inventions have the highest growth rate among all patent categories presented to the EPO²⁵. Similarly, the patentability of genetic material was progressively established by Courts both in the US and under the EPC²⁶.

Secondly, the surge in patents can also be attributed to a loosening of the **examination of patentability conditions**. Jaffe and Lerner described this pathology with the following words:

²² *Ibidem*, p. 126.

²³ MASUR, “Patent Inflation”, (2010) *Olin Law & Economics Working Paper 529*, p.4.

²⁴ *Ibidem*.

²⁵ EPO website about software patents.

²⁶ GUELLEC, VAN POTTELSBERGHE, *supra* note 10, p.122.

“We converted the weapon that a patent represents from something like a handgun or a pocket knife into a bazooka, and then started handing out the bazookas to pretty much anyone who asked [...] for one, despite the legal tests of novelty and non-obviousness”²⁷.

This “widely perceived decline in the rigor with which the standards of novelty and non-obviousness are applied in reviewing patent applications”²⁸ is therefore considered as a very significant explanatory factor of the patent inflation and as a dangerous development in patent examination. This relative easiness to obtain a patent, in turn, encourages still more people to apply for dubious patents, further feeding the patent inflation.

An agency-dilemma is also an explaining factor since the funding system of both the USPTO and EPO, which draw their revenues from the services they provide, that is the granting of patents, encourage them to grant patents. Hence the USPTO, and by extension the EPO, are increasingly perceiving themselves as organisations “whose mission is to serve patent applicants”²⁹.

The third feature of the patent system explaining, to a great extent, the patent inflation, is the very use of this system by companies, as an integral part of their strategies. Strategic considerations drive a significant share of patent applications nowadays³⁰, hence this behaviour being described as “**strategic patenting**”. It influences both the quantity of patents in a given firm’s portfolio and the quality of this portfolio. It covers a broad range of strategies, defensive or offensive. Such strategies range from the erection of patent fences, in order for companies to preserve a safe harbour and their freedom to operate, to defensive publications, which consist in filing patents whose purpose is to disclose information, thereby generating prior art³¹ and preventing competitors from filing patents or to secure a negotiating power in cross-licensing negotiations.

The following schedule presents a comprehensive list of the corporate objectives lying behind this strategic patenting:

²⁷ JAFFE, LERNER, *Innovation and its discontents: how our broken patent system is endangering innovation and progress, and what to do about it*, 2004, p.35.

²⁸ *Ibidem*, p. 11.

²⁹ *Ibidem*.

³⁰ DE RASSENFOSSE, GUELLEC, « Quality versus Quantity: Strategic interactions and the patent inflation », p.2.

³¹ *Ibidem*, p.4.

Schedule 6 - Corporate objectives in strategic patenting

1	To 'freeze' a technology (to prevent access to a particular technology by other actors)
2	To guarantee its own freedom to operate and avoid potential litigation (safety net)
3	To be perceived as an important innovator on the market (communication strategy)
4	To enhance negotiating power for future access to the market and for potential mergers
5	To avoid being 'invented around' (a thicket of patents is filed around a key invention)
6	To invent around the patents filed by other companies (to enter a protected area)
7	To create a smoke screen (filing many applications in order to 'hide' one important one)
8	To generate additional revenues through the monetisation/licensing of patents

Source: VAN POTTELSBERGUE, Lost property: The European patent system and why it doesn't work, Bruegel Blueprint series Vol. IX, 2009, p.23.

Strategic patenting explains the 'patent paradox' that is why "companies keep patenting despite their own apparent scepticism on the effectiveness of the patent systems"³². However, strategic patenting easily turns into patent flooding when the only purpose of the applications is to build patent thickets and thereby create uncertainty. The use of such strategies is directly linked with the fierceness of the competitive environment, as shown by empirical investigation:

"the more a company feels that its competitors use their patents to hamper its own access to technology, the more it will patent with the same purpose [thereby creating] fertile ground for a patent arms race in which companies file patent applications in reaction to their competitors' own patenting behaviour"³³.

The increasing reliance on the portfolio approach as a management strategy is undoubtedly the main factor underlying the increase in the observed propensity to patent.

³² *Ibidem.* p.4

³³ *Ibidem.* p.12.

Finally, **monetary motivations** are also a strong incentive to patent, since licensing has become a business on its own, but also because patents are a quality signal for venture capitalists and may serve as collateral to obtain funding with a bank³⁴.

A lot of these patent filing strategies have been identified in the Pharmaceutical Sector Inquiry and gathered in what the Commission calls “the tool-box to delay or block the entry of competing generic products on the market”³⁵. The Commission thus refers to the creation of patent clusters, that is a “multi-layered defence by patents for such aspects as different dosage forms, the production process...”³⁶, thereby surrounding the INN by a multitude of patents and patents applications³⁷. Divisional patent applications are another strategy commonly used in the pharmaceutical sector, whose vast majority is initiated by the patent applicants themselves, resulting in a number of individual divisionals varying between 1 and 30³⁸, further fuelling patent inflation.

The functioning and use by companies of the patent system provide meaningful explanations of the global patent warming phenomenon and illustrate the “growing importance of intellectual capital”³⁹. However, the patent system is also subject to external factors and pressures, which greatly reinforce the trend towards always more patents.

1.2.3 Causes External to the Patent System

One of the external pressuring factors is undoubtedly the arrival of many **new players** on the patent field. On the one hand, the emergence of new innovative economies, such as China, India or Brazil, has largely contributed to this surge in patent applications, as evidenced by the fact that the Chinese Patent Office is today among the five top offices worldwide and has received more applications in 2010 than the JPO.

³⁴ GUELLEC, VAN POTTELSBERGHE, *supra* note 10, p.10.

³⁵ *Pharmaceutical Sectoral Inquiry Final Report*, COMMISSION, 8.07.2009, para. 466.

³⁶ *Ibidem*, para. 476.

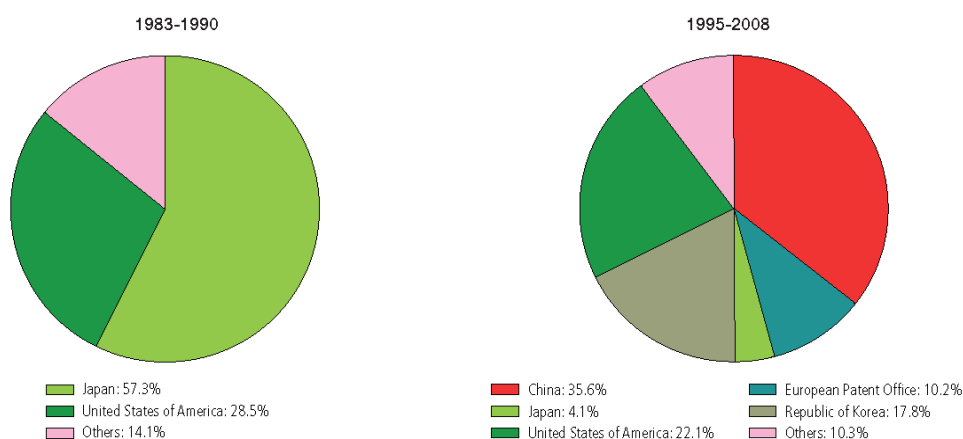
³⁷ *Ibidem*, para. 488.

³⁸ *Ibidem*, para. 510-511.

³⁹ VAN POTTELSBERGUE, *Lost property: The European patent system and why it doesn't work*, Bruegel: Brussels, 2009, p.6.

Figure 7 clearly illustrates this trend, since for the period 1995-2008, the Chinese Patent Office was the biggest contributor to the surge in patent applications, explaining more than one third of this variation, a trend that is not expected to fade away. Similarly, patent applications in India have almost increased tenfold between 1990 and 2009⁴⁰.

Figure 7 - Contribution of some patent offices to the change in total volume of filings



Note: Filings grew by 29% during the period 1983-2008 and by 85.6% between 1995 and 2008.
Source: WIPO Statistics Database, October 2011

Source: WIPO, *supra* note 8, p.40.

Due to new fields of research, actors such as SMEs have also become more active in patenting. Similarly, over the last two decades, universities have become significant applicants: “academic patenting in Europe has constantly increased, at a faster pace than patent applications by the business sector”⁴¹, which is mostly explained by the adoption of regulations comparable to the Bayh-Dole Act in many European countries. Then, from barely 0.5% of applications in the early 1980’s, academic patenting now represents more than 4%, with about 5000 applications filed annually at the EPO⁴².

The emergence of these new actors is largely symptomatic of a broader development. Indeed, given than patents are still granted on a national basis, this surge for protection can be largely explained as “**a by-product of globalization**”⁴³. Indeed, statistics show

⁴⁰ WIPO, *supra* note 8, p.39.

⁴¹ GUELLEC, VAN POTTELSBERGHE, *supra* note 10, p.213.

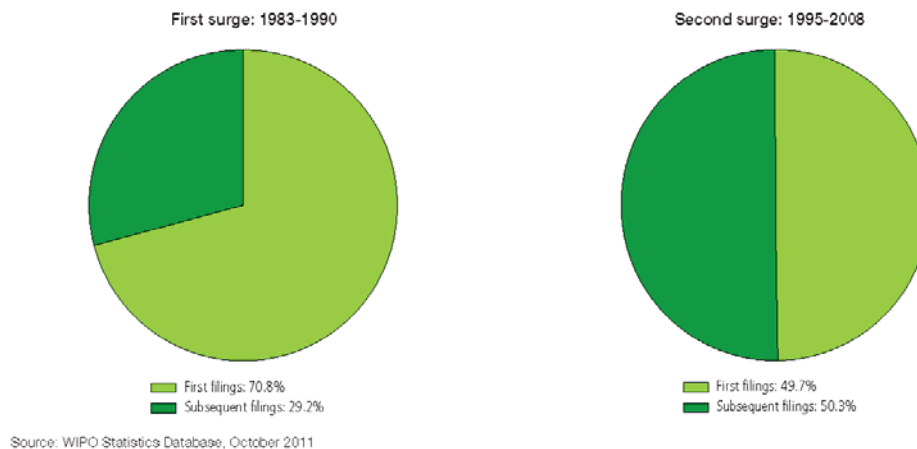
⁴² VAN POTTELSBERGUE, *supra* note 39 , p.22.

⁴³ CORNISH, *supra* note 5, p.5.

that the number of inventions patented remains stable⁴⁴. What is really changing is that companies are now searching for protection in more states, since globalisation undoubtedly intensifies worldwide competition, which in turn generates more demand for patents⁴⁵.

Figure 8 illustrates the effects of globalisation on patenting trends. It shows clearly that for the second surge, subsequent filings contributed for 50.3% to the total growth of filings and it so happens that subsequent filings mostly represent filings abroad via the PCT mechanism.

Figure 8 - Contribution of first and subsequent filings to total growth



Source: WIPO, *supra* note 8, p.23.

The same logic applies at the **European level**. Indeed, contrary to other IPRs, which have been at least partially streamlined, there is not yet a harmonized Community patent system. If the European Patent Convention offers a facilitated way to apply for multiple patents, these latter are still subject to a potential national examination and are eventually only granted after approval by national offices. Yet the great development of trade among Member States has led companies to seek protection in ever more states. However data show that purely national rights are as important as EPO-granted rights, since in 2007, national patent offices granted an aggregated number of patents superior to 58 000, while the EPO granted about 55 000 patents⁴⁶. The fragmentation of the EU patent system

⁴⁴ *Ibidem*.

⁴⁵ GUELLEC, VAN POTTELSBERGHE, *supra* note 10, p.9.

⁴⁶ VAN POTTELSBERGUE, *supra* note 39, p.18.

therefore contributes greatly to artificial patent inflation and is all the more a “major anomaly and inimical to Europe’s innovation and growth” given the objective of creating a single market⁴⁷. Besides, the fee burden resulting from the European system is also affecting the patenting patterns of applicants: they will tend to deliberately fill patents with a large number of likely unnecessary claims and opaque descriptions so as to delay the grant date, which triggers most of the costs associated with patents⁴⁸.

Thirdly, **the innovations and management strategies** have been found to influence patenting patterns and hence the size of patent portfolios⁴⁹. Thus, econometric studies demonstrate that “an outward-oriented innovation strategy”, relying on the new open innovation paradigm, is generally associated with a greater patenting propensity, than an “inward-oriented innovation strategy”, due to a ‘need effect’, whereby research collaborations require a clear delineation of pre-existing mutual but also resulting IPRs⁵⁰. The contribution of open innovation model to the patent inflation is all the more relevant as under competitive pressures, companies tend to shift to this paradigm.

However, the contribution of open innovation to patent inflation seems paradoxical; the question arises whether the growing importance of open innovation is an entirely external factor to the patent system. The next section is therefore addressing the uncertain triangular relationship between global patent warming, open innovation and competition.

1.3 RELATIONSHIPS BETWEEN GLOBAL PATENT WARMING, OPEN INNOVATION AND THE COMPETITIVE PROCESS

The links between these three ‘objects’ are probably not as straightforward as they may seem and leave room for paradoxical, backwards and mutually fuelling cause and effect relationships, whose outcome shall be identified to better understand and remedy the patent inflation.

⁴⁷ *Ibidem*, p.5.

⁴⁸ *Ibidem*, p. 11.

⁴⁹ DE RASSENFOSSÉ, GUELLEC, *supra* note 30, p.4.

⁵⁰ PEETERS, VAN POTTELSBERGHE, *supra* note 21, p.110.

1.3.1 Patent inflation and Open Innovation

The relationships between patent inflation and open innovation are definitely ambiguous and it can be argued that patent inflation is both one cause and one result of open innovation.

On the one hand, open innovation stems from a greater specialisation of firms, since companies are no longer able to fully innovate in-house. As one can read on Philips' website, "the days of innovating in isolation are over. No one company can be expected to know all the answers"⁵¹. Hence companies are increasingly turning themselves towards open innovation, which gives them the ability to innovate without having to build the complete solution by themselves⁵². Because open innovation relies on the assumption that valuable ideas can come from inside or outside the company and similarly go to the market from inside or outside the company⁵³, it represented for many companies a way to get round the patent inflation and the limits that it imposed on firms' freedom to operate and innovate, to speed up their R&D process and to broaden the scope of both their knowledge and opportunities.

However, one should be aware that open innovation does not mean that firms are adopting an "open door policy"⁵⁴: on the contrary, innovation in general but here especially open innovation do need IP and open innovation does so at every stage of the process. Firstly, because "scientists like to know where they put their feet and will want to exchange information within a well-defined framework"⁵⁵. Secondly, the commercial and successful exploitation of the results from any open innovation collaboration supposes a solid IP framework, meaning that these results have been protected, mostly by a patent, but also that these have been shared in some way among the partners. Because in this open innovation models, each company's knowledge flows in and flows out, firms will therefore feel a need for stronger protection of their rights before rushing into the open

⁵¹ HALL, "Open Innovation and Intellectual Property Rights: The Two-edged Sword", (2010) 1 *Japan Spotlight*, p.18

⁵² WEST, "Does Appropriability Enable or Retard Open Innovation?", in CHESBROUGH, VANHAVERBEKE, WEST (eds.), *Open Innovation: Researching a New Paradigm*, 2006, p.1.

⁵³ CHESBROUGH, "Open Innovation: A new Paradigm for Understanding Industrial Innovation", in: *Ibidem*.

⁵⁴ SERRIER, "Intellectual Property: An Enabler for Open Innovation", in CORNU, GEVERS (eds.), *The Future Prospects for Intellectual Property in the EU*, 2011, p.214.

⁵⁵ *Ibidem*.

innovation whirl. That is exactly why firms which have embraced, at least partly, the open innovation model still belong to the world's largest patent holders, such as Philips NV, IBM or Microsoft, none of which has reduced its patenting activities despite this major shift of innovation paradigm⁵⁶.

Finally, there seems to be mutually reinforcing relationships between open innovation and patent inflation, each growing in importance commensurate with the other.

1.3.2 Open Innovation and Competition

The links between open innovation and the competitive process are not more obvious. Indeed, open innovation, *prima facie*, is “nothing less than a business paradigm”⁵⁷: companies are opening up their innovation systems⁵⁸ to stay ahead of the competition, to preserve a competitive advantage in the battle, even if it does involve “mutual sharing by firms of otherwise proprietary knowledge and mixing competition and cooperation to create greater value for all”⁵⁹.

Competition therefore fosters open innovation, which in turn can harm competition in the sense that it drives competitors together: open innovation involves combining the strengths of partners to increase the chance of success in the market place, via joint ventures, collaborative research and licensing or joint development⁶⁰. However, the agreements concluded for the purposes of open innovation will generally be considered to be caught under the TTBER as “pro-competitive [since] they can reduce duplication of R&D, strengthen the incentive for the initial R&D, spur incremental innovation, facilitate diffusion and generate product market competition”⁶¹.

Therefore, the intensity of the competition process promotes open innovation, which despite its potential harm to the competition structure, is most of the time justified by its dynamic efficiencies.

⁵⁶ HALL, *supra* note 51.

⁵⁷ ENGLAND & MCLEAN, “Don’t forget about the IP”, (2011) 211 *Managing Intellectual Property* 64.

⁵⁸ *Ibidem*.

⁵⁹ RAO, KLEIN, CHANDRA, “Innovation without Property Rights and Property Rights without Innovation: Recent Developments in the ICT Sector”, (2011) 19(1&2) *Advances in Competitiveness Research*, p.84.

⁶⁰ CRONIN, SHORE, “Managing IP in open innovation partnerships”, [2009] *IAM*, p.3.

⁶¹ Commission Regulation (EC) No 772/2004 of 27.04.2004 on the application of article 81(3) of the treaty to categories of TTA, [2004] O.J. L123/11.

1.3.3 Competition and Patent inflation

The relationship between competition and patent inflation is also paradoxical. Patents are indeed a tool, an advantage in the competitive process: that is why firms tend to patent more when they face more intense competition⁶². At a broader scale, exporting firms tend to patent more, since they are confronted to broader competition, as it can be observed in the case of mobile telephones⁶³: “patents are at the core of the industrial model of mobile telephony”⁶⁴. The more intense the competition, the more aggressive firms will behave in their patenting strategies.

In turn, the increase in the number of patents tend to reduce ex post competition on a market, firstly because it is the very purpose of a patent to prevent competitors from imitating the innovation patented and secondly by making entry more difficult, since patent inflation is highly likely to give rise to and fuel patents race through both aggressive and defensive patenting and enforcement strategies, whose legality with regard to competition law will often be questioned, as shown in the Pharmaceutical Sector Inquiry and as will be further explored in subsequent sections.

In conclusion, the patent inflation appears to be a catch-22 situation, a vicious and inescapable circle, in which competition, open innovation and the increase of patents mutually fuel each other.

⁶² GUELLEC, VAN POTTELSBERGHE, *supra* note 10, p.68.

⁶³ *Ibidem*.

⁶⁴ *Ibidem*, p.69.

2 IMPLICATIONS OF “GLOBAL PATENT WARMING”

Aware of the crucial importance of the “patent flood” in the discussions about designing the future of the European patent system, the EPO and other major patent offices have been discussing it publicly, emphasizing their efforts to master the workload⁶⁵, but largely ignoring the broader consequences of this phenomenon. This section will try to give a comprehensive picture of all these implications, for the patent system (2.1) and for the competition and innovation processes (2.2) in order to evaluate to what extent this “great patent bubble”⁶⁶ amounts to a system failure (2.3).

2.1 DIRECT IMPLICATIONS FOR THE PATENT SYSTEM

2.1.1 The Explosion of Patent Offices’ Workload

The first direct implication of the patent inflation is the increasing workload from which patent offices are suffering: over the past 25 years, the workload of the EPO, in terms of number of claims to examine, has almost been multiplied by 20⁶⁷.

Schedule 9 - Evolution of EPO workload since 1980

	1980	1990	2000	2005
Total patent filings	21 000	65 000	130 000	192 000
Average claims per patent	10	12	17	20
Average pages per patent		16	27	30
Total claims (000s)	210 000	780 000	2 210 000	3 840 000
Total pages (000s)		1 040 000	3 510 000	5 760 000

Source: GUELLEC, VAN POTTELSBERGHE, *supra* note 10 , p.210.

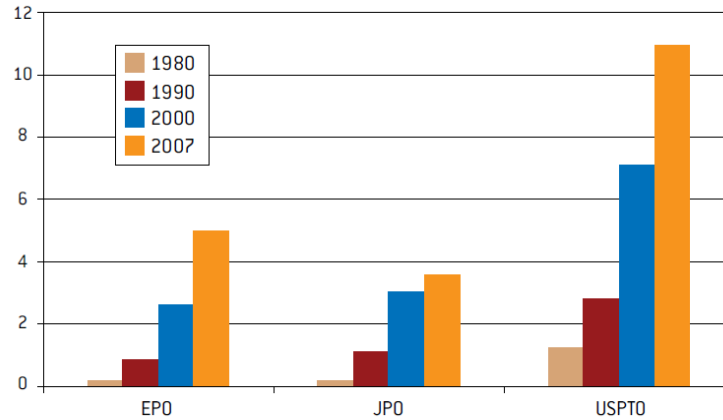
⁶⁵ ARCHONTOPOULOS (and others), *supra* note 14.

⁶⁶ KAHIN, « The Age of Disablement », *The Huffington Post*, 12.08.2011.

⁶⁷ GUELLEC, VAN POTTELSBERGHE, *supra* note 10, p.211.

Other patent offices have seen their incoming workload exploding as well, considerably more than the EPO actually, which faces a backlog amounting to about 35% of that of the USPTO.

Figure 10 - Incoming workload: total number of claims filed (millions)



Source: EPO, USPTO and JPO.

Source: VAN POTTELSBERGHE, *supra* note 39, p.25.

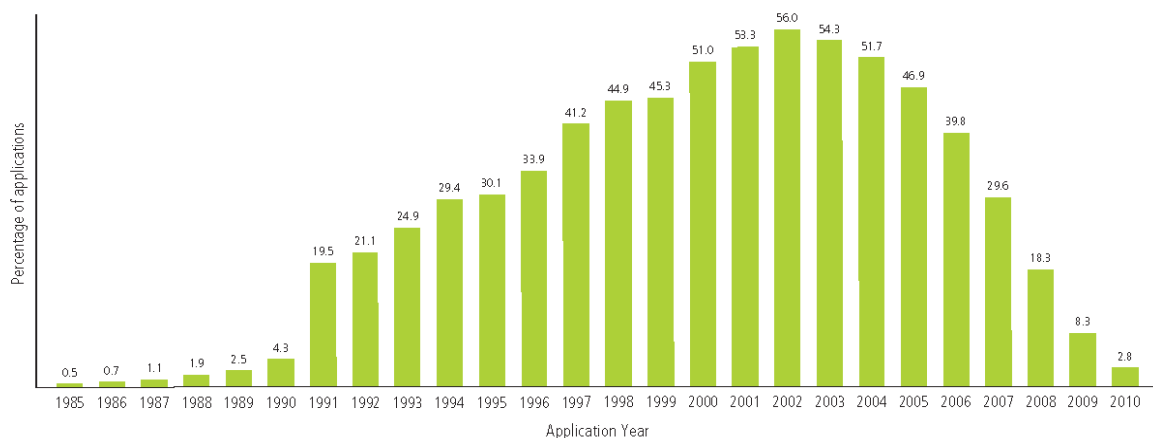
The massive and always increasing quantity and volume of applications has led to cumbersome delays in patents granting process. Thus, while 36 months separated the application date from the date of grant or no-grant decision in the early eighties, the length of the granting process now is close to 57 months⁶⁸. The relation between the average granting time and the number of claims and pages is almost linear, ranging from 45 months for applications up to 5 claims or pages to 65 months for applications with more than 60 claims or pages⁶⁹.

This backlog can be illustrated rather eloquently by the falling proportion of patent in force out of patent applications:

⁶⁸ ARCHONTOPOULOS (and others), *supra* note 14.

⁶⁹ *Ibidem*.

Figure 11 - Patents in force in 2010 as a percentage of applications



Note: Patents in force in 2010 as a percentage of total applications is calculated as follows: number of patent applications filed in year t and in force in 2010 divided by the total number of patent applications filed in year t. The graph is based on data from 63 offices.
Source: WIPO Statistics Database, October 2011

These increasingly large and numerous applications monopolise resources from patent offices⁷⁰, which have not increased accordingly, and hence contribute further to the increase in granting delays and blockages throughout the system. Consequently, patent offices can difficultly cope with a “current world backlog [of] over 10 million unexamined patent applications”⁷¹. Moreover, it leads to a harmful discrepancy between the pace of technological change and the time necessary to secure a patent.

2.1.2 High Legal Uncertainty

This backlog creates opportunities for companies (and non-practising entities) to exploit the uncertainty arising from this massive volume of pending applications. Indeed, very lengthy applications become part of the prior art and increase the difficulty of the search phase as well as of the determination of the exact scope of protection once granted⁷², thereby encouraging both uncertainty and litigation. This increased volume makes it virtually impossible to determine the actual state of the art⁷³ as the information is so diluted⁷⁴, vaguely worded and often overly abstract⁷⁵. That is the very purpose of the

⁷⁰ *Ibidem*.

⁷¹ J. DUDAS from the USPTO quoted in EPO, *supra* note 1, p.20.

⁷² ARCHONTOPOULOS (and others), *supra* note 14.

⁷³ GUELLEC, VAN POTTELSBERGHE, *supra* note 10, p.211.

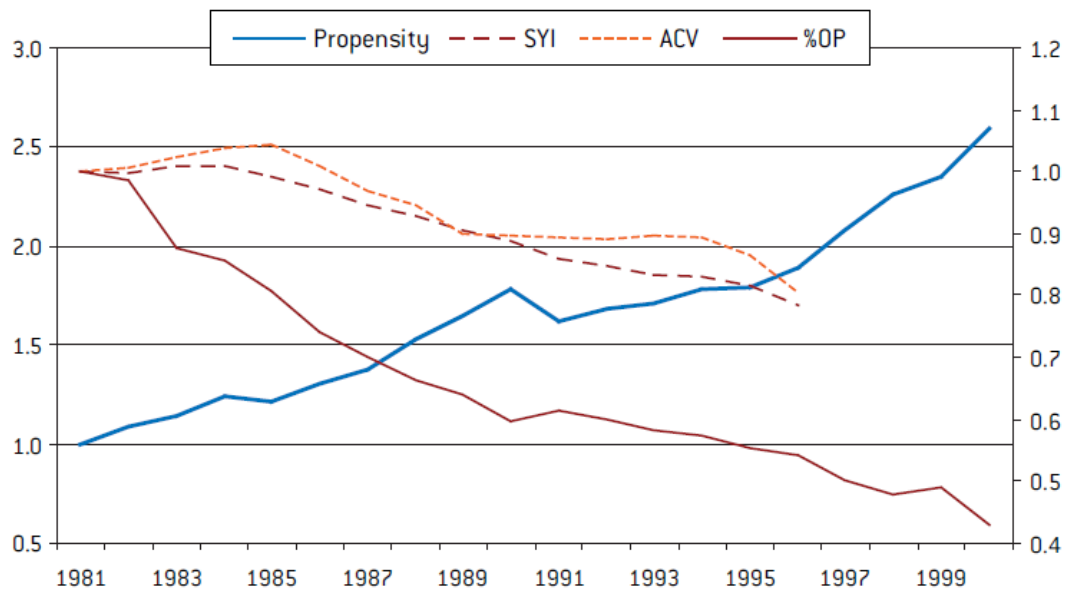
⁷⁴ VIVANT, « Le système des brevets en question », in REMICHE (ed.), *Brevet, Innovation et Intérêt Général*, 2007, p.34.

⁷⁵ BESSEN, MEURER, *Patent failure*, 2008, p.19.

‘defensive patenting strategies’ identified in the Pharmaceutical Final Report: create enforceable rights without allowing potential competitors to know exactly what their exact boundaries are⁷⁶, except for litigation.

This uncertainty evenly stems from a largely acknowledged decreasing and inconsistent quality of patent applications and consequently, of granted patents, which can be demonstrated by the following indicators:

Figure 12 - Patent propensity at the EPO vs value indicators



* ‘Patent propensity’ is the total number of patents filed at the EPO (Euro-Direct+ PCT-international) divided by OECD GERD (gross expenditures on business R&D). SYI is the scope-year index put forward by van Pottelsberghe and van Zeebroeck (2008), which summarises the average geographical scope of protection and the length of the enforcement period. ACV is the average composite value index put forward by van Zeebroeck (2007b), and %OP is the trend in the rate of opposition to EPO-granted patents. Source: Own calculations from EPO and OECD databases, and referred authors.

Source: VAN POTTELSBERGHE, *supra* note 39, p.29.

The EPO suffers further from specific deficits due to the fragmentation of the European patent system. It is indeed relatively affordable to file an opposition *ex ante* before the EPO but not to conduct litigation in all individual EPO countries to challenge a patent *ex*

⁷⁶ COMMISSION Communication, "Executive Summary of the Pharmaceutical Sector Inquiry Report", COM (2009)351 final, 8.07.2009, p.16; COMMISSION, *Pharmaceutical Sectoral Inquiry Final Report*, 8.07.2009, para. 528.

post, all the more if one takes into account the “time paradoxes involved in the processing and enforcement of patents”⁷⁷. Besides, different outcomes are not rare, adding further to the uncertainty stemming from the divided and multi-layered European patent system. Similarly the existence of twin routes to get a patent does not promote consistency of patent quality.

2.1.3 Patents as an Asset.

The ballooning number of patents also results in broader and more diversified uses of patents. The quagmire resulting from patent inflation has led to a widespread licensing and cross-licensing activity, as it is in most cases a pre-requisite to secure a relative freedom to operate or sometimes with the only purpose to earn revenues. Technology licensing indeed generates an estimated US\$ 100 billion worldwide annually⁷⁸. For many large firms, licensing activities have become a line of business of their own⁷⁹, increasing further the demand for patents as markets for technologies develop. Furthermore, patents are nowadays “a quality signal [...] for capital markets and venture capitalists”⁸⁰: patents are a tool to raise funds. Consequently, it can be argued that patents have undoubtedly become ‘the currency of the knowledge economy’⁸¹.

The perceived versatility of today’s patent system is questioning its ability to remain fit for its purposes, hence the necessity to contemplate the implications of the patent crisis on the innovative and competitive processes in order to assess the extent to which these doubts can be upheld.

⁷⁷ VAN POTTELSBERGHE, *supra* note 39, p.15-16.

⁷⁸ EPO, *supra* note 1, p.17.

⁷⁹ JAFFE, LERNER, *Innovation and its discontents*, 2004, p.14.

⁸⁰ GUELLEC, VAN POTTELSBERGHE, *supra* note 10, p.11

⁸¹ *Ibidem*.

2.2 IMPLICATIONS FOR INNOVATION AND COMPETITION

2.2.1 Higher Costs of Entry

From an economic perspective, the global patent warming phenomenon raises barriers to entry⁸², by significantly increasing the costs of entry for any new innovator and competitor, as the patent multiplication forces entrants to develop a portfolio quickly. These barriers take three forms: increased costs of information, of transaction and risks of entry.

Increased costs of information

The backlogs in patent offices are greatly detrimental to the competitive and innovative process insofar as they entail a longer period of legal and economic uncertainty⁸³. Indeed, the current patent system is flooded with applications, whose added value is often very limited and moreover hidden in a maze of useless information. The notice function of patents, meaning the signalling to third parties of the scope and boundaries of the protection a patent holder is entitled to, is not ensured anymore by the patent system as it is working today. Therefore, a prospective technology investor will need to screen an increasingly large number of patents before being sure the field of his innovation is clear:

“If you are selling online, [...] there are 4319 patents you could be violating. If you also planned to advertise, receive payments for, or plan shipments of your goods, you would need to be concerned with approximately 11 000”⁸⁴.

The mere costs of identifying the state of art and the potentially conflicting patents have become prohibitive, all the more so as the increasing number of pending unpublished applications, to whose innovators do not have access, could also be conflicting.

⁸² BESSEN, “Patent Thickets: Strategic Patenting of Complex Technologies”, 2003, p.20.

⁸³ VAN POTTELSBERGHE, *supra* note 39, p.25.

⁸⁴ D. M. MARTIN, CEO of a patent risk management firm, quoted in BESSEN, MEURER, *supra* note 75, p.9.

This dysfunctional information function of patents subjects innovators-competitors to an unavoidably increasing risk of litigation.

Increased costs of transaction

The patent flood has resulted in a clearance process always more difficult and costly, close to infeasible in fact, hence the litigation inflation. Indeed, patent holders are encouraged to sue for infringement of their bulk of opaque patents or at the very least threaten to sue to obtain royalty payments. These risks are now to be integrated in the costs of bringing new products to market⁸⁵. Through such practices, the patent system is undoubtedly generating waste and dis-incentivizing the innovative process, notably the inventing around possibilities, in two ways. Firstly, “valuable [young] technologies have become snarled in a web of litigation and licensing negotiations and have found themselves often unable to commercialise their ideas”⁸⁶. Secondly, many likely invalid patents remain unchallenged because it is obviously cheaper to pay a royalty than to risk thousands of dollars in seeking to overturn them⁸⁷, especially in the European patent system, whose fragmentation is a serious impediment to both the licensing, through prohibitive costs of transaction, and litigation possibilities⁸⁸. Therefore, innovators will in many cases not even bother to engage in a clearing process and will directly seek to negotiate licenses, whose portfolios are the most likely to be infringed.

The skyrocketing costs of transaction illustrate the extent of the ‘distracting’⁸⁹ role played by patents nowadays and the increasing relevance of the tragedy of anti-commons.

Increased risks of entry.

As a consequence of the rising costs of information and of litigation, entry by new competitors is made more costly and above all more risky, since perfect and riskless clearance can only be achieved with great difficulty. The increasing activity of neutrally termed Non-Practising Entities but more famous under the name of patent trolls, whose business is precisely to exploit this uncertainty, demonstrate the extent to which entry is riskier than ever. Therefore, the patent flood can be contemplated as contributing to

⁸⁵ JAFFE, LERNER, *supra* note 27, p.2.

⁸⁶ *Ibidem*, p.4.

⁸⁷ VAVER, “Intellectual Property: the state of the art”, (2000) 116 *LQR* 621-637, p.632.

⁸⁸ BESSEN, MEURER, *supra* note 75, p.71.

⁸⁹ CORNISH, *supra* note 5, p.1.

lessening competition and to lessening innovation competition⁹⁰. The real losers of the current state of facts are the small and medium sized inventors, the SMEs, which most of the time cannot afford such costs and risks and may consequently alter their R&D investments. Moreover, these small firms will tend to shy away from pursuing innovations in areas mined with patent portfolios of large firms⁹¹, not willing to take the risk of infringing one of the ten million unexamined patent applications to be potentially granted.

2.2.2 Patent Wars and Patent Race

The multiplication of patent applications and rights results in a true minefield, where every patent is no longer “a defensive shield” against imitation but a “key weapon of corporate strategy”⁹² in and to a certain extent against competition. Competitors do not want to be excluded from the game because they were unable to secure the necessary patents to operate on their market, therefore, they will also patent to avoid exclusion. “Patenting constitutes one response to patenting by others, [...] like a repeated prisoners’ dilemma; [therefore] if your competitors take out many patents a condition for your survival is to do the same. Hence the [...] equilibrium in that game is characterized by a proliferation of patents”⁹³.

In some sectors of industry, ‘patent wars’ are common: in the chemical industry, in the semi-conductor industry or in the pharmaceutical industry for instance, as confirmed by several declarations from business managers. Thus, Samsung’s IP manager said: “After [1985], major Korean companies realised that filing patents is so important after [being] involved in a patent litigation in the US. We were asked by our top management to enhance our patent portfolio in a short space of time to cope with the situation”⁹⁴. As for the vice-president of IBM, he compared “patent portfolios to missiles and the patent race to an arm race”, within the framework of IBM’s shift or at least partial opening to the open innovation paradigm: “The layer of technology that is open is going to steadily

⁹⁰ ANDERMAN, “The Strategic Use of Patent Enforcement and Acquisition Methods and Competition Law”, in GOVAERE, ULLRICH (eds.), *Intellectual Property, Market Power and the Public Interest*, 2008, p.173.

⁹¹ JAFFE, LERNER, *supra* note 27, p.15.

⁹² EPO, *supra* note 1, p.17.

⁹³ GUELLEC, VAN POTTELSBERGHE, *supra* note 10, p.80.

⁹⁴ KAB-TAE HAN, Samsung IP manager, quoted in GUELLEC, VAN POTTELSBERGHE, *supra* note 10, p.81.

increase, but in going through this transition, we're not going to be crazy. This is like disarmament. You're not going to give away all your missiles as a first step"⁹⁵.

If such strategies make sense from a corporate point of view, they greatly amount to waste from the society's perspective and facilitate foreclosure of market to newcomers⁹⁶.

2.2.3 The Increased Interdependence of Competitors

Under the competitive pressure, firms are pressured into accumulating patents, whose purpose is also to secure some power in licensing or cross-licensing negotiations necessarily stemming from patent thickets and conflicts arising thereof. In this perspective, the bigger the patent portfolio, the bigger the negotiation power.

When multiple patents overlap or are to be applied in one product, it may impede its commercialisation. This kind of overlapping can as well occur at the R&D phase. In both situation, companies willing to pursue their projects, will have to engage in negotiating licenses, cross-licences if they have reciprocal interests in accessing the other's technology, in the pooling of their patents or to embrace a new and open model of innovation. In any case, these agreements are on the one hand costly to negotiate and on the other hand, they increase the interdependence of competitors.

Licensing deals are generally enhancing social welfare as they increase the diffusion of technology within society, but they hamper competition between alternative technologies and may also give rise to anti-competitive practices⁹⁷, mostly exclusionary practices. Indeed, patent thickets induce the risk for innovators and potential competitors-to-be, who will rarely be able to litigate dubious patent rights to clear the field in which they are innovating nor to negotiate on an equal footing, to be forced out of the innovative market and to drop their projects altogether.

⁹⁵ J. KELLY, Vice-President of IBM, quoted in *Ibidem*, p.81.

⁹⁶ *Ibidem*, p.82.

⁹⁷ GUELLEC, VAN POTTELSBERGHE, *supra* note 10, p.99.

The increased dependence of innovation on a competition restricted by the growing interdependence of competitors stifles the innovation process or at the very least, constrains it to the already settled players.

The extent to which patent inflation is hampering competition and innovation has been underlined in this section. The patent crisis is indeed certainly an important explanatory factor of the decline in innovation observed in the pharmaceutical sector, which the Commission acknowledged, by focusing some of its conclusions on the necessary regulatory reform, thereby interrogating the relative significance of “the regulatory impact compared to the impact of conduct by originator companies”⁹⁸ in the reduction of innovation therefore. Hence it is needed to assess whether we are confronted to a failure of the patent system, of which the patent inflation would be symptomatic.

2.3 A SYSTEMIC FAILURE?

In order to assess whether the patent system is currently experiencing a failure, it is foremost necessary to understand the philosophy and the rationale underpinning the system, so as to consider to what extent its equilibrium is endangered by global patent warming to finally examine whether the patent system is still achieving its mission.

2.3.1 The Patent System Rationale and Philosophy

The patent system is fundamentally about trade-offs, about drawing an equilibrium between the interests of the different parties, between incentives and usage, between access and appropriation.

⁹⁸ KILLICK, “The Elephant Uncovered” in “The Outcome of the EC Pharmaceutical Sector Inquiry”, (2009) 3 *Concurrences* 11-25, p.18.

Patents are an instrument of innovation policy, a policy tool deemed “to help to stimulate innovation, contribute to a broad dissemination of knowledge and hence promote sustainable growth”⁹⁹.

By granting an exclusive right for a limited period of time, the patent draws a sequential compromise between the incentive to innovate and the diffusion of the innovation and arbitrates between static and dynamic efficiencies¹⁰⁰. This compromise and function of patent is largely recognised, notably by the Commission, which states that “the protection is limited in time, encouraging the company to bring the innovation to market as quickly as possible and ensuring that company continues to innovate and bring forward future innovative products”¹⁰¹.

The benefit of exclusivity to the innovator, which represents a cost to society, since protection entails a deadweight loss for consumers¹⁰², is the price to pay for innovation and for the disclosure of inventions. From the innovation perspective, it is worth noting that, logically, though patents protect investment in innovation and thereby foster innovation by mitigating the risks of seeing any potential profit from this innovation reaped out by imitators, they may also, logically, threaten another’s potentially competing innovation.

To summarize, the classic patent system is a balance between the interests of society and those of companies. It ensures an open intellectual access for all while constraining the economic access to the patent holder¹⁰³. The diffusion of both technology and knowledge spurs further technological innovation, development and progress¹⁰⁴. This “virtuous circle” is well represented in the following figure:

⁹⁹ VAN POTTELSBERGHE, *supra* note 39, p.3.

¹⁰⁰ LEVEQUE, MENIERE, *Economie de la propriété intellectuelle*, 2003, p.8.

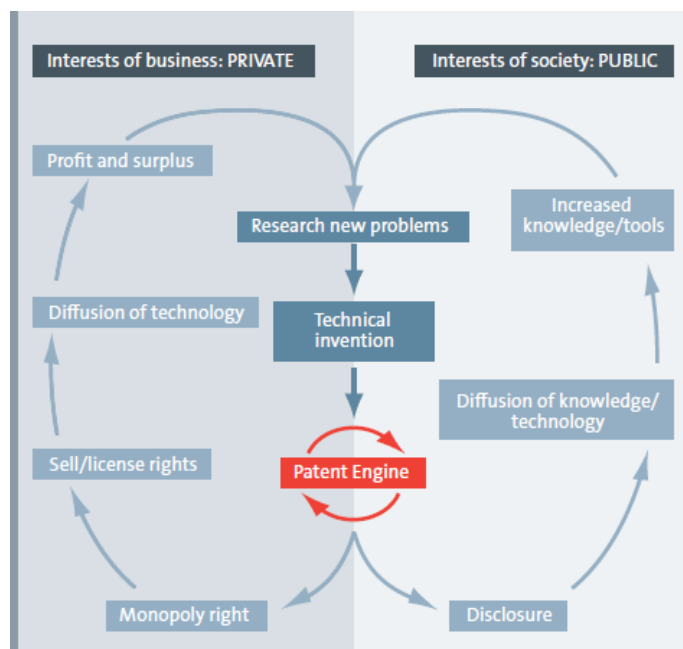
¹⁰¹ COMMISSION Communication “Executive Summary of the Pharmaceutical Sector Inquiry Report” (COM (2009) 351 final), p.7.

¹⁰² RACITI, “Incompletion of the European Common Market: The Problem of Extending Pharmaceutical Patent Protection”, in WEBSTER, PACKER (eds.), *Innovation and the Intellectual Property System*, 1996, p.146.

¹⁰³ VIVANT, *supra* note 74, p.33.

¹⁰⁴ EPO, *supra* note 1, p.17.

Figure 13 - The Classic Patent System



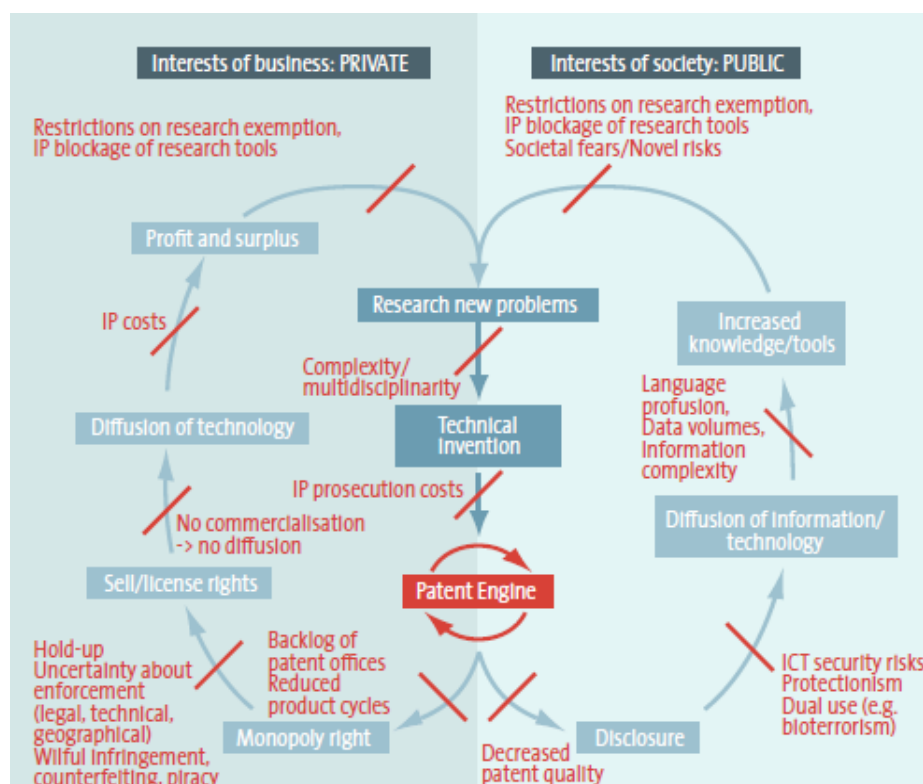
Source: *Scenarios for the future*, EPO: Munich, 2007, p.17.

2.3.2 Patent Inflation as a Threat to the Patent System

The question is now to determine to what extent the patent system as it is supposed to work is endangered by global patent warming. For many, the current system is simply broken and suffers from an “intense pathology”¹⁰⁵: it has lost its balance, patents are too easily granted and too ruthlessly enforced. In the light of the aforementioned blockages throughout the patent system, the opinion that this latter moved away from a virtuous to a vitiated and vicious circle is relatively widespread and below illustrated by the EPO:

¹⁰⁵ JAFFE, LERNER, *supra* note 27, p.19.

Figure 14 - Blockage of the classic patent system



Source: *Scenarios for the future*, EPO: Munich, 2007, p.20.

From this figure, it is clear that the accumulated backlog of patent offices prevents the patent engine from processing all the applications they received in due delay. As a consequence, the patent system can no longer equilibrate nor satisfy the interests of public and private parties.

Therefore, it can be ascertained that the patent system is not fulfilling its mission anymore. On the one hand, the flooded patent system is no longer able to ensure its disclosure and diffusion functions, whereas they are the very justifications and counterparts given to society in exchange for the grant of a temporary exclusive right. On the other hand, it is no longer able to spur innovation because it fails to provide the right incentives: the patent flooding has turned patenting into an end in itself, while it was supposed to be the mere tool to the innovation finality. It may still be considered as a tool, but to the competition finality: the question to be asked is now whether competition is and should be an end in itself.

Furthermore, and this may be more worrisome for the future of the patent system, the patent inflation has greatly contributed to undermine the credibility and legitimacy for companies and society of the patent system as an institution, hence ever harsher critics. Even though “the perceptions of the patent system have historically been cyclical [...] at present, the debate is too black and white: users versus consumers”¹⁰⁶. Indeed, “IP went out of the box”¹⁰⁷ and is today a hot debate involving the whole society, with all the “emotion, appearance[s] and preconceived ideas”¹⁰⁸ that generally underpin this kind of debate. Therefore, for the system to regain more than retain some legitimacy, it is important to check in permanence whether the assigned objectives or functions of the system are achieved or at least still pursued¹⁰⁹.

The patent offices are fully aware that the patent system is no longer as virtuous as it should be and put many efforts into trying to bring it back on the right track. Yet the virtual impossibility of solving this problem given their limited resources, but for profound reforms, leaves the impression that the patent system is sinking into the patent inflation quagmire.

2.3.3 The Patent System and Open Innovation

To conclude this section, it is important to consider to what extent the current patent system can support the new innovative environment, which is more and more characterised by the spreading open innovation paradigm and thus increasingly implies collaborative R&D processes. In this framework, patents have been seen as “the catalyst that enables knowledge to be shared”¹¹⁰, precisely because patents enclose the knowledge into temporary property-like rights and thereby become market instruments, capable to be exchanged, enabling this collaboration.

¹⁰⁶ EPO, *supra* note 1, p.19.

¹⁰⁷ SUEUR, “The technological future and the protection of innovation”, in CORNU, GEVERS (eds.), *supra* note 54, p.224.

¹⁰⁸ *Ibidem*.

¹⁰⁹ NOZARADAN, « Brevet et Intérêt Général », in REMICHE (ed.), *supra* note 74, p.474.

¹¹⁰ EPO, *supra* note 1, p.8.

However, since the property character of patents is largely fading away, because property requires clear, defined and knowable boundaries¹¹¹, it is not clear what the future is of open innovation and more generally all models of innovation resting upon IPRs.

Indeed, in the light of the current blockage of the patent system due to the massive backlogs of patent offices, the costs of negotiating an collaboration agreement as well as the risks stemming from the ambient legal uncertainty surrounding the patent system risk may end up offsetting the benefits of any such collaboration. Therefore, there is a net possibility that the patent inflation hampers the development of open innovation, which was yet a way to circumvent (and to contribute to) the patent crisis, and of innovation in general, which may well no longer find its way through patent thickets.

The patent system has survived many crises since the mid-19th century, when patents were only beginning to spread through the industrialising world and its resilience¹¹² should therefore not be underestimated when considering whether it is failing or not. It has needed bandages of course to resist, so it is probably realistic to consider that some more are needed today and that, on the contrary, a complete abolition of the patent system would not be of much help. However, the question remains of the appropriate extent of the bandages needed.

¹¹¹ BESSEN, MEURER, *supra* note 75, p.7.

¹¹² CORNISH, *supra* note 5, p.5.

3 HOW TO REMEDY “GLOBAL PATENT WARMING”

“At a time when change is needed, one needs a map, a compass, to indicate the directions to take and those to avoid”¹¹³.

The assessment of the current patent system in the second section has revealed “the perverse incentives”¹¹⁴ vitiating this latter and a rather pessimistic diagnosis: the patent system is victim of its own success and on the verge of burnout. Hence the need today to once more “bandage” the system and to make it future-proof, by restoring the “incentives for socially desirable behaviour”¹¹⁵: this obviously requires to stem the tide of patent inflation, to the extent that it is not related to an increase in inventions and innovation and keeping in mind the patent system’s rationale, which is to foster innovation and growth.

This section will therefore contemplate three possible tracks: firstly, remedies within the IP law system (3.1), secondly, remedies within the competition law system (3.2) and finally the abuse of right track will be considered (3.3).

3.1 REMEDIES WITHIN IP LAW

The pharmaceutical sector inquiry stemmed from the intuition that there were competition problems in this industry, where the critical role of patents is widely acknowledged. However, the Final Report admitted that “shortcomings of the regulatory framework also play[ed] a critical role in delaying generic entry and reducing innovation”¹¹⁶, thereby emphasizing the need to remedy these failures of the patent system and to depart from this “faith-based policy”¹¹⁷.

¹¹³ GUELLEC, VAN POTTELSBERGE, *supra* note 10, p.3.

¹¹⁴ VAN POTTELSBERGHE, *supra* note 39, p.18.

¹¹⁵ *Ibidem*.

¹¹⁶ N. PETIT, “Bark at the moon?”, in “The Outcome of the EC Pharmaceutical Sector Inquiry”, (2009) 3 *Concurrences* 11-25, p.12.

¹¹⁷ Pr. J. BOYLE, quoted in BESSEN, MEURER, *supra* note 75, p.(ix).

3.1.1 Actual Remedies

First of all, it must be recalled that patents, despite some critics¹¹⁸ about this point, are not given away on the sole basis of application. Patent law provides for safety nets so as to ensure that patents are granted according to strict criteria. Thus, in the European patent system, as well as in others, an inventor must demonstrate that his invention is patentable with regard to Articles 52 and 53 EPC and that it satisfies the conditions for patentability, that are the novelty, inventive step and industrial application requirements provided for in Articles 54, 56 and 57 EPC. Those rules are intended to limit the proliferation of patent rights.

However, the controlling function of patent offices with regard to these conditions is very variable: thus, the French patent office will only control the industrial application condition, but not the novelty nor the inventive step, whereas the EPO or the JPO will carry out a full examination of all conditions of patentability, hence the fluctuations of the patents' quality and the often heard allegation that two out three patents would be found invalid were they to be challenged. Furthermore, the increasing workload of patent offices necessarily alters the natural trade-off between the quality and quantity of patents, especially when the time spent by an examiner on a patent application has been reduced to an average of twenty hours.

Besides, in order to reduce the backlogs, patent offices are increasingly turning to work-sharing agreements, such as the so-called Patent Prosecution Highways (PPH), whereby patent offices share and recognise each other's patent examination reports and fast-track the patents concerned, thus avoiding the duplication of the costly and time-consuming examination process. The USPTO, whose backlog is the most severe, has already signed such agreements with the JPO, the UK Patent Office, and in September 2008 with the EPO. Besides, the EPO, the USPTO and the UK Office further agree to move forward on work-sharing. However, this may be a risky move, since "as long as the quality of the examination process is not harmonised, [such agreements] might actually drive global patent quality down towards the lowest level available"¹¹⁹.

¹¹⁸ See JAFFE, LERNER, *supra* note 105.

¹¹⁹ VAN POTTELSBERGHE, *supra* note 39, p.40.

The ineffectiveness of the system and of the reforms until now to curb patent inflation questions the capacity of the patent system “to react to criticism by self-examination and re-ordering”¹²⁰ and highlights the need for profound reforms, for which legislators will have to step in and to collaborate.

3.1.2 Potential Improvements

“Even supporters of the existing regime [feel today the need to] go well beyond the mere adaptation of administrative practices and procedural rules”¹²¹. In this perspective, the Final Report draws two conclusions¹²² as to the patent system.

Improving patent quality

Firstly, it calls for improvements of the patent quality, limitation of procedural delays and of the legal uncertainty thereby created, which all are troubles stemming from patent inflation.

From the patent offices perspective, those latter could react to booming applications by tightening the conditions of patentability, a stricter application of which could curb the impression that patents are too easy to get and consequently “break[] the inflationary spiral”¹²³. Three solutions¹²⁴ would allow to “rais[e] the bar”: firstly, improve the status quo via quality standards, via a “global patent standard”¹²⁵; secondly, “limit opportunities for abuse [via] sharper boundaries earlier on in the procedure” and thirdly, by modernising the man skilled in the art, whose conception is now relatively outdated.

To give one example, on the basis of Articles 83 and 84 EPC, setting out the requirements that the description and the claims in the application must satisfy, that is the clarity of the description and of the claims, which must also satisfy a conciseness requirement, patent examiners could reject mega-applications which obviously do not satisfy these criteria.

¹²⁰ CORNISH, *supra* note 5, p.33.

¹²¹ EPO, *supra* note 1, p.13.

¹²² *Pharmaceutical Sector Inquiry Final Report*, *supra* note 35, para. 1578-1579.

¹²³ DE RASSENFOSSE, GUELLEC, *supra* note 30, p.19.

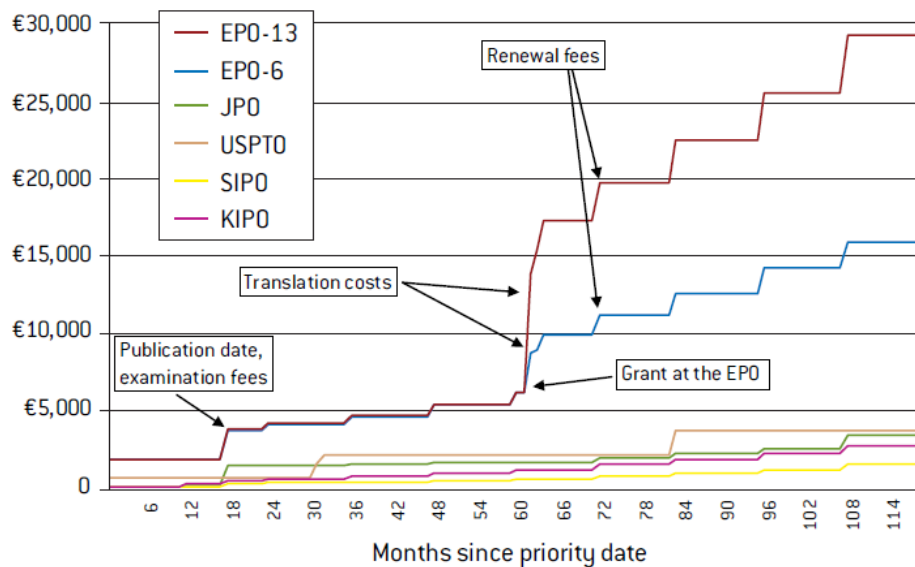
¹²⁴ C. MCGINLEY, *supra* note 4, p.13.

¹²⁵ VAN POTTELSBERGHE, *supra* note 39, p.48.

Fee policy

Similarly, a more appropriate fee schedule could greatly contribute to stop firms from flooding patent offices by deterring them from applying for low-quality patents. Indeed, fees have been showed to be “a factor influencing the propensity to patent, and hence can be considered as an effective policy leverage” to limit patent inflation, particularly in the European system, since the “sharp drop in fees orchestrated by the EPO [...] combined with the negative and significant price elasticity of demand for patents, certainly did contribute to the observed rise in patent filings”¹²⁶.

Figure 15 - When do patent costs kick in?



Source: Own calculations, EPO fee structure as of May 2008 and renewal fees at national patent offices. Translation costs, which occur after the grant of the patent, are taken from van Pottelsberghe and Mejer (2008) and take into account the cost reduction brought about by the London Agreement. EPO6 stands for validation in 6 EPC countries, EPO13 stands for validation in 13 EPC countries. Costs in €1000.

Source: Van Pottelsberghe, *supra* note 39, p.11.

As the graph above shows, most of the fees only kick in after the patent has been granted and are by the way much higher in the EPO than in other offices due to translation fees, while the “entry fee” is close to derisory and as a consequence, the risk to file an application is not acting as a disincentive to multiple filings, because the financial impact

¹²⁶ DE RASSENFOSSÉ, VAN POTTELSBERGHE, "On the Price Elasticity of Demand for Patents", (2012) 74(1) *Oxford Bulletin of Economics and Statistics* 58-77, p.77.

is not substantial. Therefore, a both more stringent and spread in time fee schedule could reduce this trend, without being that socially detrimental in the light of the “growing number of junk applications”¹²⁷ and above all without increasing the administrative burden of patent offices.

However, special attention should be paid to the equilibrium of the system: the fee policy should prevent massive frivolous applications without hampering small innovators and SMEs notably to afford a patent, which may be achieved through special discounts for SMEs for instance.

Harmonising the European Patent System

The Final Report also preaches in favour of a Community patent and single patent litigation system. Indeed, the fragmentation of the European patent system greatly contributes to the artificial multiplication of patents and results in the existence of numerous patent families. With regards to this issue, B. Battistelli, president of the EPO, is “convinced that most of our difficulties are caused not by ‘too much Europe’ but by too little” and “that it is high time to move forwards”.

However, until now, the EU has to a large extent “failed to view the patent system as an indispensable tool [...] for the common market”, contenting itself with short term “creative [though henceforth insufficient] judicial and legislative solutions”¹²⁸. This state of fact underlines the lack of political will to go further, towards a Community patent, which yet has been on the negotiation table since 1962.

However, after the debacle caused by Opinion 1/09 and persistent blockages, mainly by Italy and Spain, a new unitary patent and single European Patent Court package is now being discussed, on the basis of the enhanced cooperation mechanism. Participating Member States have announced they reached an agreement under the Polish Presidency of the Council, except on the issue of the location of the seat of the Court Central division. They committed at the end of January 2012 European Council to reaching a final agreement at the latest in June 2012. At the European Business Summit which took place on April 26th, 2012, Herman Van Rompuy diffused the following message on Twitter:

¹²⁷ *Ibidem.*

¹²⁸ RACITI, *supra* note 102, p.163.

“We are closer than ever to an agreement on the much-awaited European patent. Its launch will come as a big relief to everyone!”

He thereby indicated that probably a final agreement had been reached, though this is only poorly documented on the Council’s website, preventing any further analysis, notably as to the concerns of the legality of such a system still raised by Italy and Spain in the aftermath of Opinion 1/09.

The economic cost-benefit analysis conducted by Harhoff for the Commission has largely underlined the economies and efficiencies which could be drawn from a unified system. Since around 30% of the litigation cases are duplicates of parallel cases in other Member States, with conflicting judgments rendered in 11% of cases, and considering the prohibitive cost of litigating in every Member State¹²⁹, the results of Harhoff’s analysis are not surprising. Then a “single European Patent court could streamline and reduce the costs of challenging patents”¹³⁰, thereby easing the process for competitors of clearing the patent minefield, but only *a posteriori*, while the unitary patent could, *a priori*, contribute to reduce the increase in the gross number of patent applications and patents. Even further, the G20 has launched the idea of a global litigation court that would be hosted by WIPO¹³¹.

In the meanwhile, since the IP law system has been unable until now and still seems to be struggling to handle and limit by itself the global patent warming phenomenon, “competition law [can] on occasion be called upon to apply competition remedies”¹³², in an attempt to restore the proper incentives at the undertakings’ level.

¹²⁹ SCHNICHEL, SULE, "The Pharmaceutical Sector Inquiry and its Impact on Competition Law Enforcement", (2010) 1(2) *Journal of European Competition Law & Practice* 93-111, p.101.

¹³⁰ BATCHELOR, "Patent attack - the EC Sector Inquiry Interim Findings" (2009) 30(5), *ECLR* 212-215, p.215.

¹³¹ VAN POTTELSBERGHE, *supra* note 39, p.48.

¹³² ANDERMAN, *supra* note 90, p.190.

3.2 REMEDIES WITHIN COMPETITION LAW

While the previous section considered internal remedies to the IP system, institutional and systemic remedies somehow, this section will turn to the competition rules as an external means of control to curb patent inflation, focusing therefore on companies' behaviour due to their substantial contribution to this phenomenon through strategic patenting mainly. Firstly, the adequacy and desirability of using competition to supplement IP law where this latter is deemed to fail will be examined. Secondly, the possibility of controlling the accumulation of portfolios with regard to Article 102 TFEU will be assessed.

3.2.1 Competition Law to Regulate Patents: “Fighting Fire with Fire?”¹³³

European Courts have long been regulating IPRs through competition law, but this second tier of regulation on the shoulders of internal regulation within the IP system does not meet general consensus in the IP world, mainly the academic one though. This section will therefore briefly question the interface between IP and competition law and the adequacy and desirability to control the former with the latter.

Two contradictory systems of law?

These subsystems of law have long been perceived as contradictory and mutually exclusive, because “on a very simplistic level, antitrust law was seen as anti-monopoly, whereas the very object of [patents] is monopoly”¹³⁴. Yet they do share the same basic objective of promoting consumer welfare as acknowledged by the Guidelines on the application of Article 101 to TTA¹³⁵. They both aim to encourage innovation, via rewards for patent law, embodying the “carrot theory of innovation”¹³⁶ and by maintaining the

¹³³ KJØLBYE, « Article 82 EC as Remedy to Patent System Imperfections: Fighting Fire with Fire? », (2009) 32(2) *World Competition* 163-188.

¹³⁴ LESLIE, “Antitrust and Patent Law as Component Parts of Innovation Policy”, (2009) 34(4) *The Journal of Corporation Law* 1259-1289, p.1259.

¹³⁵ COMMISSION Notice of 27 April 2004, Guidelines on the Application of Article 81 of the EC Treaty to Technology Transfer Agreements, [2004] O.J. C101/02.

¹³⁶ ANDERMAN, SCHMIDT, *EU Competition Law and Intellectual Property Rights. The Regulation of Innovation*, 2011, p.12.

competitive intensity for competition law, pursuant to the “stick approach”¹³⁷. However, the relative weight of rewards and of the competitive intensity in the promotion of innovation remains difficult to assess. Were it exactly assessed, the scope for intervention for competition law would be clearer.

In the meanwhile, the core dilemma is how the two systems of law can best indirectly control market behaviour in those markets where patents play a role¹³⁸.

The main concern of the IP world is to see the Commission using competition law to address problems that should be resolved through patent law reforms. It is indeed argued that firstly, the Commission lacks competence to correct *ex post* the potential concerns arising from the existence of a patent¹³⁹, but then the question of who is arises, and secondly, that competition law will necessarily fail to integrate the balancing and public interest concerns inherent in patent law. The suggestions in the Final Report that some patenting strategies could be unlawful were worrying, hence the warnings that any competition law intervention should consider its potential chilling effect on innovation and IP protection before attacking the patent system¹⁴⁰. Despite this, the recent pharmaceutical cases have demonstrated the willingness and the capacity of the Commission to widen the reach of competition rules¹⁴¹.

However, until now, competition authorities were responsive to these concerns and have thus been careful in applying competition law to IPRs, by really taking into account their specificities, limiting their intervention to ‘exceptional circumstances’. Notwithstanding, in the light of the increasing concern that patent system imperfections allow patent holders to engage in potentially anti-competitive strategic behaviour¹⁴², the question of which criteria should draw the application of competition rules surfaces again.

It is argued that the benchmark for intervention of competition law should not be the mere failures of the patent system, because competition authorities surely lack the competences to second-guess the work of patent offices. This external layer of regulation on the

¹³⁷ *Ibidem*.

¹³⁸ MAHER, “Exploitative abuses. Which Competition Policy, Which Public Policy?”, in GOVAERE, ULLRICH (eds.), *supra* note 90, p.309.

¹³⁹ LÉVÊQUE, “Droit de la Propriété Intellectuelle et Concurrence”, (2005) 51 *Le Journal de l'Ecole de Paris* 24-30, p.25.

¹⁴⁰ BATCHELOR, *supra* note 130, p.215.

¹⁴¹ ANDERMAN, SCHMIDT, *supra* note 136, p.3.

¹⁴² KJØLBYE, *supra* note 133, p.163.

contrary should pre-require the demonstration that, in a specific case, the patent system is failing to attain its objectives and consequently has a chilling effect on innovation and therefore on consumer welfare. Then, from the moment the public policy element in the act of patenting disappears, from the moment the inherent balance within patents tips in favour of the exclusion element and at the expense of the promotion of follow-on innovation, the “intervention under Article 102 is compatible with the objective of patent system of promoting innovation and the objective of EU competition law of promoting dynamic competition as a key driver of consumer welfare”¹⁴³. In such circumstance, the application of competition law may allow to prevent the manipulation of the patent system in a way contrary to its rationale and objectives.

A consensus about the right way for competition law to intervene is difficult to reach; hence guidance from the Commission as to the interface between the two regimes of law is more warranted than ever in the light of the recent cases.

The distinction between existence and exercise.

There is however a fundamental distinction in the application of competition law to the IPR. In principle, the existence of the rights is not affected by the prohibitions in Articles 101 and 102 of the Treaty and its conditions remains provided for by national legislations, whereas the exercise of such rights may fall within the prohibitions laid down by the Treaty¹⁴⁴. However, this distinction can be criticized for its artificial character and the difficulties relating to its implementation. Indeed, it can be argued that the very existence of the patent right is threatened from the moment its exercise is impeded.

Besides, this distinction tends to fade away, notably following the latest cases investigated by the Commission in the pharmaceutical sector. Thus, in the *AstraZeneca*¹⁴⁵ and *Boehringer*¹⁴⁶ cases, it is the very existence of the IPRs that is challenged through allegations of abuses of the patent authorities in the acquisition process. Moreover, the Court in *AstraZeneca* has rejected the argument according to which an exclusive right has

¹⁴³ *Ibidem*, p.185.

¹⁴⁴ Case 78-70, *Deutsche Grammophon*, [1971] ECR I-487, para. 11.

¹⁴⁵ Case T-321/05, *AstraZeneca v. Commission* [2010] ECR II-02805

¹⁴⁶ See COMMISSION, Press Release IP/11/842.

to be enforced to allow a finding of abuse of dominant position; instead, the mere possession of such a right seems to be considered as sufficient to draw application of competition law. Consequently, via the challenge of the possession, it is the very existence that is questioned. Yet, a slight nuance has to be underlined: competition law does not control the substantive conditions of patentability, but rather the circumstances of the grant, which can amount to an abuse.

Consequently, the control of patent thickets and flooding strategies, whose challenge concerns precisely the existence and the circumstances of existence of those rights, under competition law is no longer hampered by this distinction.

3.2.2 Controlling the Accumulation of Patents

Throughout its Final report in the pharmaceutical sector inquiry, the Commission somehow suggested that commonly used patenting strategies, such as the constitution of patent thickets as a defensive strategy, could be caught as infringing article 102. However, this potentiality has to be assessed with regards to the very fact of patenting, since the purpose of this study is to examine how patent inflation, whose main driver is probably strategic patenting, can be curbed.

Dominant position

First of all, the application of article 102 relies on the existence of a dominant position by an undertaking on a relevant market.

The assessment of market power, which is defined as

“a position of economic strength enjoyed by an undertaking which enables it to hinder the maintenance of effective competition on the relevant market by allowing it to behave to an appreciable extent independently of its competitors and customers and ultimately of consumers”¹⁴⁷,

¹⁴⁷ Case C-27/76, *United Brands V. Commission*, [1978] ECR 207.

is not straightforward in the field of IPRs. Indeed, IPRs bestow on their holder a legal monopoly, but not an economic monopoly. Accordingly, the Commission will assess the actual market power of a company and not derive its assessment from the legal monopoly. Therefore, the market power of the holder of a patent cluster has to be assessed on a case by case basis, with regard firstly to the level of substitutability of competing technologies, meaning the constraints imposed by actual competitors, secondly to the constraints from potential competitors, which will depend on barriers to entry and thirdly to the countervailing buyer. It can be argued that in a market conducive to or/and already mined by one or several patent clusters, the entry costs for any competitor-to-be will probably be prohibitive. Consequently the main determinant of market power will be the relative strength and interdependence of competitors, this last factor being a crucial feature of high tech markets, as the existence of patent pools demonstrates.

In the same manner than a patent does not confer automatically market power on its holder, a patent cluster – as consequent as it may be – does not automatically lead to a finding of dominance. However, some jurisprudential insights suggest that such a finding could be easier in case of a patent portfolio. For instance, the ECJ has considered that the technological lead of a company over its competitors, due to the holding of several patents relating to a same product, is an indication of a dominant position, as well as the technological lead in itself, the absence of potential competition and the relative market shares¹⁴⁸.

Similarly, a decision¹⁴⁹ from the French Competition Authority underlined that the fact that an undertaking is holding most of the patents relating to a certain technology, even after licensing them, is an additional indication of a dominant position, since it enables the undertaking to control the entry of competitors, by licensing or not. The French Authority is also pointing out that the practice of patent thickets and of broad claims are indications of an abuse.

Moreover, in markets where patent clusters are likely to raise competition concern, the Commission could probably rely on the finding of a collective dominant position, as the ECJ considered that:

¹⁴⁸ Case 85/76, *Hoffmann-La Roche v. Commission* [1979] ECR I-461, para. 51.

¹⁴⁹ Conseil de la Concurrence, *Luk Lamellen / Valeo*, avis n°05-A-20, 9.11.2005, para. 95, 98.

“there is nothing [...] to prevent two or more independent economic entities from being, on a specific market, united by such economic links that [...] together they hold a dominant position vis-à-vis the other operators on the same market. This could be the case [...] where two or more independent undertakings jointly have [...] a technological lead affording them the power to behave to an appreciable extent independently [...]”¹⁵⁰.

In a significant number of high tech markets, there is little doubt that such a collective dominant position could be qualified given the interdependence of many firms with regards to essential technologies required for many products.

Consequently, if the Commission were to challenge patent portfolios on the basis of Article 102 TFEU, it would probably not face major difficulties in qualifying a dominant position.

Finding an abuse

Assuming the undertaking under investigation is dominant, the questions now arise to what extent the mere fact of accumulating applications and patents into a portfolio can amount to an abuse of such position and whether such a practice amounts to anticompetitive exclusionary conduct or whether it derives from legitimate competition on the merits? The increase in strategic patenting is a new challenge to Article 102, as this gives the impression that the anti-competitive effects are completely offsetting the traditional counterparts provided for by the patent system. However, whereas several US cases recognise the illegality of patent thickets under section 1 or 2 of the Sherman Act¹⁵¹, this line has not been crossed yet in the EU, hence the need to analyse the EU position as to this issue.

¹⁵⁰ Joined cases T-68/89, T-77/89 and T-78/89, *Società Italiana Vetro v. Commission* [1992] ECR II-1403, para. 358.

¹⁵¹ ROSCH, Speech: "The EC's Pharmaceutical Sector Inquiry Preliminary Report - Wading Into The Thicket of The Antitrust/Intellectual Property Law Overlap", 26.02.2009. See *Kobe, Inc. v. Dempsey Pump Co.*, 198 F.2d 416, 423 (10th Cir. 1952); *Zenith Radio Corp. v. Hazeltine*, 395 U.S. 100 (1969).

Under EU competition law, the mere fact of securing the benefit of an exclusive right cannot be regarded as an abusive method of eliminating competition¹⁵². Similarly, does not amount to an abuse the mere fact for an undertaking to have availed itself of the patent system and secured a maximal protection, not even if the protection acquired might, in terms of number of patents, go beyond what is objectively necessary for the firm to remain innovatively competitive¹⁵³. Indeed, as aggressive and imaginative a strategy it can be, acquiring a patent portfolio will be considered by competition authorities as a perfectly legitimate and lawful strategy, as acknowledged by the CFI in the *Tetra Pak II* case¹⁵⁴, and in most of the cases it “is the result of the normal functioning of the patent system more than an anti-competitive practice”¹⁵⁵. For instance, the Commission acknowledged that “safeguarding a viable commercial development of innovation [was] a legitimate rationale for developing patent clusters”¹⁵⁶. Therefore, such strategies of amassing patents and flooding offices with applications have been long proved to be “essentially compatible with competition on the merits under competition rules”¹⁵⁷.

Notwithstanding, the filing of a large number of applications can raise competition concerns, as stated in the Final Report, for instance when the applicant “pursue[s] the aim of patenting an invention that [he] has no interest in developing [...], with the main purpose of keeping other originators from further developing a specific invention”¹⁵⁸. However, because the abuse would be the very fact of applying for and obtaining a patent, trying to control portfolios with competition law is “fraught with dangers [as] competition regulators cannot seriously second-guess the patent office [...] or dictate when a portfolio has one too many patents”¹⁵⁹ or which ones are considered to confer the anti-competitive effect to the whole portfolio.

There is indeed a substantial difficulty to draw the line between constituting a patent cluster to protect one’s innovation process or freedom to operate and very same conduct with the intent and maybe the effect of foreclosing competitors, taken into consideration

¹⁵² ANDERMAN, SCHMIDT, *supra* note 136, p.18.

¹⁵³ ULLRICH, « Propriété intellectuelle, concurrence et régulation - Limites de protection et limites de contrôle », (2009) 29(4) RIDE 399-450, p.428.

¹⁵⁴ Case T-83/91, *Tetra Pak International SA v Commission* (Tetra Pak II), [1994] ECR II-755, para. 242.

¹⁵⁵ ULLRICH, *supra* note 153, p.429.

¹⁵⁶ Final Report, *supra* note 35, para. 523.

¹⁵⁷ ANDERMAN, SCHMIDT, *supra* note 136, p.8.

¹⁵⁸ Final report, *supra* note 35 para. 1122.

¹⁵⁹ BATCHELOR, *supra* note 130, p.213.

“the entitlement to eliminate competition which is an inherent part of the grant of exclusivity of an IPR.”¹⁶⁰ Therefore, as temporary excluding competitors is the very purpose of any IPR, the finding of an anti-competitive intent or effect is not enough. Further elements have to be demonstrated to explain “why a legitimate procedure [...] can also create an undesirable anti-competitive foreclosure”¹⁶¹. In line with the case law and the way it has taken into account the specificity of IPRs until now, Article 102 should only overturn patents in exceptional circumstances.

If the Commission were to bring infringement actions in the aftermath of the sector inquiry, it would have to demonstrate that companies did not simply avail themselves of the patent system but abused their dominant position by patenting, and to that purpose to establish the existence of such exceptional circumstances. Those could include the intent or the underlying strategy of the firm to maintain its dominant position, when at the time of filing, this latter knew that it did not have a valid claim¹⁶². The easier possibility however would be to consider as anti-competitive the cumulative effect drawn by patent applications coupled with an “additional conduct designed to foreclose the market”¹⁶³. Indeed, aside from proving that a flood-patenting strategy has been allied with some form of abusive exercise of the resulting patents, such a strategy will hardly attract the attention of competition authorities.

Thus, until now, there has been no case where Article 102 has been applied to the mere act of patenting¹⁶⁴, due obviously to the trickiness of establishing that the anti-competitive effect resulting from the patent being granted goes beyond the very same effect inherent and accepted in the grant of a patent. However, the *Boehringer* case came close to such a finding. It related to an antitrust investigation concerning the alleged misuse of the patent system by the German pharmaceutical company Boehringer in order to exclude potential competition from the complainant, on the ground that Boehringer had filed for unmeritorious patents regarding new treatments of a pulmonary disease. The Commission encouraged the parties to find a mutually acceptable solution to their dispute, probably aware that it

¹⁶⁰ ANDERMAN, SCHMIDT, *supra* note 136, p.85.

¹⁶¹ MAGGIOLINO, LILLA MONTAGNANI, “Astrazeneca's Abuse of IPR-Related Procedures: A Hypothesis of Anti-Trust Offence, Abuse of Rights, and IPR Misuse”, (2011) 34(2) *World Competition* 245-259, p.248.

¹⁶² KJØLBYE, *supra* note 133, p.182.

¹⁶³ GALLOWAY, “Driving Innovation: A Case for Targeted Competition Policy in Dynamic Markets”, (2011) 34(1) *World Competition* 73-96, p.85.

¹⁶⁴ KJØLBYE, *supra* note 133, p.179.

did not have much room for action on the basis of antitrust law. It closed the file after an agreement has been found. The General Court went further in *AstraZeneca* by holding that “the submission to the public authorities of misleading information liable to lead them into error and therefore to make possible the grant of an exclusive right [...] constitutes a practice falling outside the scope of competition on the merits”¹⁶⁵ and therefore an abuse. The question is whether submitting thousands of pages with useless information can be considered as “misleading” and mostly, whether the ECJ will uphold the General Court’s ruling.

For now, it remains very unlikely that Article 102 can serve in the future as a legal basis for challenging the constitution of patent thickets, aside maybe from a move towards an effects test, which could to a certain extent ease the reconsideration of the legality of patent thickets, without though removing the fundamental problem that IPRs are precisely designed to exclude.

There is consequently room for “targeted”¹⁶⁶ competition law to control the conduct of applicants when those latter behave outside and irrelevant to the finality of patent law, but this margin of manoeuvre seems very limited with respect to control the legality of patenting strategies. The sector inquiry certainly highlighted the existence of such practices but without assessing their legality with regard to competition law: this probably had indirect educational virtues but some further “positive legal guidance”¹⁶⁷, such as guidelines from the Commission, is still expected by pharmaceutical firms, which remain dubious and unsecure as to the extent to which the various and common practices identified are legal or not.

3.3 ABUSE OF RIGHT

The ‘abuse of right’ track deserves finally to be considered. Indeed, remedies internal to the IP system do not seem, in the short term at least, sufficient to curb strategic patent

¹⁶⁵ *AstraZeneca*, *supra* note 145.

¹⁶⁶ GALLOWAY, *supra* note 163, p.96.

¹⁶⁷ PETIT, *supra* note 116, p.13.

flooding by companies. Similarly, the application of competition law and notably of Article 102 to this practice presents difficulties and is far from being the ideal remedy considering that it does only apply provided the undertaking concerned holds a dominant position, while patent flooding raises the same concerns, whatever the market power of the flooding company is. Hence it is sensible to explore the doctrine of abuse of rights as a potential legal basis to further handle this kind of behaviour.

This third way, that is already well rooted in French law for instance under Article 1382 of the Civil Code, could stem in EU law from the general theory of abuse of right which is developing in other fields of EU law and from the line of cases considering the exercise of IPRs beyond their scope as hampering the single market.

Applied to patents, the abuse of rights doctrine could follow the US example, where judges have been using the IP misuse doctrine for a while now. Indeed, if companies use (or rather misuse) the patent system and its procedures in a way contrary to its philosophy and rationale, thereby causing harm, the theory of abuse may be a more relevant way than competition law to restore the proper functioning of the patent system and thereafter the competitive process. It could all the more be so as it would allow challenging the very numerous applications, even before the grant of the patents.

Some commentators, criticizing the legal basis of the *AstraZeneca* judgment¹⁶⁸, argue that the solution upheld by the General Court was more a latent response to the US IP misuse doctrine than an abuse of dominant position or a new kind of abuse under 102¹⁶⁹. Indeed, firstly, no exceptional circumstances were identified in *AstraZeneca* to support the argument that the observed anti-competitive foreclosure goes beyond the desired effect of the IPR. Secondly, because “when the procedure allegedly abuse is IP-based, its abuses coincides with the abuse of the substantive IPR that underpins the procedure, such manipulation of the [...] procedure”¹⁷⁰ unduly ends up in the IPR being granted or unduly enlarges its scope.

¹⁶⁸ *AstraZeneca*, *supra* note 145.

¹⁶⁹ MAGGIOLINO, LILLA MONTAGNANI, *supra* note 161, p.254.

¹⁷⁰ *Ibidem*, p.254.

The Community abuse of rights doctrine provides that “Community law cannot be relied on for abusive or fraudulent ends [... therefore] Community law does not preclude national courts from applying a provision of national law which enables them to determine whether a right deriving from a Community law provision is being abused”¹⁷¹. Thus, the abuse of a Community right could be challenged on the basis of national law provisions defining such abuses, with regard to “the teleological scope of the Community rules invoked”¹⁷². However, since EU law does not yet provide for a Community patent right, the application of this doctrine is compromised. If the unitary patent and patent litigation court were to be adopted, this doctrine could serve as an effective safeguard and remedy against patent flooding practices by company applying for this new unitary patent.

¹⁷¹ Case C-373/97, *Dionysios Diamantis v. Greece*, [2000] ECR I-1705, para. 33 & 44.

¹⁷² Opinion of the Advocate General Maduro in Case C-255/02, *Halifax*, [2006] I-1609.

4 CONCLUSION: PERSPECTIVES

“There are more questions than answers – and more competing interests than agreed solutions. It is [...] a world where conflict and the need for change co-exist”.

EPO, Scenarios for the future, p.13.

Global patent warming is threatening an increasingly clogged patent system, which has never been so close from the burnout. Pendency, uncertainty and obstructed innovative and competitive processes are the main results of this patent flooding. Thus the patent system is starting to run counterproductive, counter to its own rationale in impeding the development of follow-on innovation and of competition by substitution instead of promoting it.

While competition law increasingly tends to intrude as a corrective tool, it is certainly not the optimal remedy to patent inflation, since it can only intervene on an ex post basis and therefore will not contribute to ease patent offices' backlogs and what they imply. Hence the solution may reside essentially within the patent system itself, along ways that have been suggested.

Beyond those, the EPO is thinking about whether the current patent system can remain fit for purpose and is therefore working on different scenarios according to which the patent regime might evolve, depending on what driving factor will be dominant. Three of the four proposed are of particular relevance: the “Market rules” scenario, in which business is the dominant driver; the “Trees of knowledge” scenario, in which societal needs are the key element and finally the “Blue skies” one, in which technology is the driving force.

Evidences are pointing to all of them: business seems to rule today but is dissatisfied with a system collapsing under its own weight, while societal trust is diminishing and questioning the legitimacy of the system, which cannot ensure the balance between public and private interests anymore, with the new IP needs of complex cumulative new technologies conflicting with the discrete technologies' needs in the background. All these scenarios are highly plausible and one can think about them as alternatives or as different steps towards another regime: consolidation, differentiation, erosion. The patent

system is now bending not to break down, but eventually, its survival will depend on two elements: its capacity to adapt to the conflicting pressures it is subjected to and its ability to regain broad social acceptance and legitimacy. Indeed, if a complete abolition of the patent system can hardly be imagined according to Machlup's memorable verdict, concurrent ways are currently being explored and experienced, such as the diffusion of open innovation, open source or open science model demonstrates.

Instead of quarrelling about the shadow, such as the town where a court is to seat, the patent system stakeholders should not lose the substance and "shore up their banks before the torrent becomes a flood"¹⁷³, which involves restoring the right incentives for a sparkling innovation and restoring the fundamental public-private equilibrium as a reality and no longer a mere philosophical justification.

¹⁷³ CORNISH, *supra* note 5, p.39.

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