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ECONOMIC INCONGRUITIES IN THE EUROPEAN PATENT SYSTEM

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Economic incongruities in the European patent system

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Abstract: This paper argues that the consequences of the 'fragmentation' of the European patent system are more dramatic than the mere prohibitive costs of maintaining a patent in force in many jurisdictions. First, detailed analysis of judicial systems in several European countries and four case studies provide evidence suggesting that heterogeneous national litigation costs, practices and outcome induce a high level of *uncertainty*. Second, a high degree of managerial complexity results from systemic incongruities due to easier 'parallel imports', possible 'time paradoxes' and the *de facto* paradox of having EU-level competition policy and granting authority ultimately facing national jurisdictional primacy on patent issues. These high degrees of uncertainty and complexity contribute to reduce the effectiveness of the European patent system and provide additional arguments in favour of the Community patent and a centralized litigation in Europe.

JEL: K41, P14, O34
Keywords: European patent system, patent cost, litigation process, enforcement, uncertainty

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1. A fragmented patent system

The European patent system was put in place in 1978, when eight European countries ratified the European Patent Convention (EPC). Under the EPC, the process of granting a patent was centralised and allocated to the EPO (European Patent Office). The EPC has since then continuously attracted new member states (there are 34 countries nowadays), witnessing the success of the system and a wide recognition of the usefulness of the services provided by the EPO. The EPC does not, however, provide a uniform system to enforce European patents once they are granted. A European patent only takes effect as a national patent in each state where it is validated and enforced after its grant by the EPO. In other words, once granted a patent is subject to the national rules and practices of the member states. In addition, several national patent offices within Europe continue to provide examination services for their own jurisdiction, independently from the EPO[1].

Such a fragmented system has two main implications for applicants. The first one is the well known prohibitive cost of patent protection in Europe. In contrast to other large regional or national patent offices in the world, payment of national validation and renewal fees, and the translation requirements must be multiplied by the number of countries where the applicant wants to have an effective protection. Despite the implementation of the London Agreement that , aims at reducing translation requirements a European patent is still at least five times more expensive than in the United States (van Pottelsberghe and Mejer 2008)

The second implication concerns post-grant enforcement mechanisms and is less frequently heard of. It is related to the high uncertainty and managerial complexity induced by variegated national approaches towards patent-related litigations and to the possibility of having opposite decisions (and hence outcome) in case of parallel litigations. Once the patent is validated in a patent office, the national jurisdiction has the competence to decide on patent litigation cases (infringement and validity cases) with effect on their own territory. Due to heterogeneous legal practices across countries, in case of multiple litigations there is a risk of observing courts reaching opposite conclusions. Such a decentralized enforcement system, where national jurisdictions have a supremacy over the patent issues, together with the lack of the common European market for the technology, where the patent rights are generally enforced in a few countries, generate a strong managerial complexity.

The objective of this paper is to investigate the implications of the fragmented system for managing and enforcing patent rights in Europe. The description of litigation systems in four European countries, together with case studies, clearly expose the systemic incongruities that are induced by the European patent system in its current form Easier 'parallel imports', possible 'time paradoxes' and the *de facto* paradox of having EU-level competition policy and granting authority facing national jurisdictional primacy on patent issues make the management of intellectual property rights in Europe not only costly but also highly complex.

[1] cf. van Pottelsberghe (2009) for recent data on this issue.

The paper is structured as follows: the next section describes the litigation costs and institutional heterogeneity of judicial systems across four EPC contracting states and in the US. In section 3, three economic incongruities induced by the highly fragmented European patent system are described and illustrated through four case studies. Section 4 concludes.

The results show that the prohibitive costs of litigation in Europe together with 'systemic incongruities' induced by national primacy over patent issues induce a high level of uncertainty regarding the validity of a patent (and its market reach) and considerable managerial complexity. Such a system without doubt reduces the effectiveness and the attractiveness of the European patent system in terms of stimulating more innovation. The clear solution to these incongruities would be to implement the Community patent jointly with a centralized jurisdiction mechanism.

2. High uncertainty

Enforcing patents in Europe is made complex by the number of institutions involved in the process and the possibility of having different outcomes across countries for a given patent. Patent validity can be challenged independently at both the European and national level. Within nine months following the decision to grant by the EPO, third parties can file an opposition to the grant before the EPO in order to revoke or amend a patent.[2] What makes this procedure especially attractive for opponents is that the EPO decision on European patent validity is effective in all the states where the European patent is to be enforced. A decision of the EPO to revoke a European patent is supposedly final; the patent is cancelled in all the states where it was effectively validated.[3] However, a decision to uphold a European patent (the decision to maintain the patent as granted or in an amended form) leaves the way open for further validity challenges before national courts that can pass judgement on the patent as of the validation date.[4] The decision taken by the national court is binding only within the borders of the particular state where the litigation took place. As for infringement cases, the patent is subject to the respective laws of each individual state, having an effect on both legal certainty and managerial complexity; two issues that are tackled with and the following two subsections.[5]

2.1. Litigation costs

It is relatively affordable to file an opposition before the EPO, as the cost varies between €6000 and €50,000 (including patent lawyers' fees).[6] However, in case of multiple litigations

[2] According to Art. 138 of the EPC there are three possible grounds of opposition: the claimed invention is not patentable (either because the subject matter is excluded from patentability or because it lacks novelty or an inventive step); the specification of the patent does not reveal the invention sufficiently clearly and completely for it to be carried out by a person skilled in the art; or the subject matter of the European patent extends beyond the content of the European application as originally filed.

[3] Art. 105(3) of the EPC.

[4] Art. 137(2) of the EPC.

[5] Until recently, companies tried to apply to patent cases the possibility of cross-border injunction granted under Art. VI of the Brussels Convention. This provision allows a party to sue several defendants domiciled in different countries for a given proceeding. However, the European Court of Justice in Roche v. Rimus (C-539/03) and GAT v Luk (C-4/03) ruled that national courts have exclusive jurisdiction over patent law, thus closing the way for cross-border injunctions.

[6] Mewburn Ellis LPP suggests that the cost of an opposition procedure at the EPO ranges between €6000 and €50000. This estimate is based on a case involving up to two rounds of correspondence between the parties during the opposition procedure and preparing for and taking oral proceedings. Similar costs are likely to be

in national jurisdictions, the costs must be cumulated over the number of countries where litigation is initiated. Currently, no official statistical data on patent litigation costs in the EPC contracting states is available. The main problem with collecting and simulating these costs comes from the high heterogeneity of legal practices across countries (to be discussed later in this section). So far, the most reliable information is probably the one published by the EPO (WPL/4/03) provides an estimation of a litigation's costs (including court fees, fees for hearing the witnesses as well as patent attorney's cost) in the four EPC contracting states (Germany, France, the Netherlands and United Kingdom) where 90% of patent litigations in Europe currently take place. Table 1 presents the estimates along with US litigation costs.

The costs are estimated for small market value patents (ie with an amount in dispute of less than €1 million). The cost of litigation would however increase with the amount at stake and with the complexity of the case. For example, in Germany the total litigation costs can be as high as €2 million with €10 million at stake (IP Campenhausen, 2004), whereas in the US the litigation costs may reach about €2,5 million if the amount at stake is higher than €16 million (Bessen and Meurer, 2006).[7]

Table 1: Patent litigation costs and litigation activity in four EPC contracting states and US (in €1000)

	Germany	France	The Netherlands	United Kingdom	Cumulative 4 EPC	United States
Litigation cost[1]						
1st Instance	50 to 250	50 to 200	60 to 200	150 to 1,500	310 to 2,150	n.a.
2nd Instance	90 to 190	40 to 150	40 to 150	150 to 1,000	320 to 1,490	n.a.
Total	140 to 440	90 to 350	100 to 350	300 to 2,500	630 to 3,640	420
Litigation activity[2]						
# of patents in force	412,000	389,000	141,000	319,000	-	1,650,000
# of patents litigated	200 (nullity) 500 (infringement)	300	70	85	-	3,075

(1) Estimations apply to a patent with an amount in dispute equivalent to about €1 million. For Germany numbers are given for both validity and infringement case. Cf. Table A.4 in the Appendix. Litigation cost is adapted from EPO Doc. WPL/11/05 Rev. 1, 16 February 2006 and AIPLA (2005), Bessen and Meurer (2006). (2) Total number of patents in force is adapted from WIPO Patent Report (2007 Edition) pp. 43 http://www.wipo.int/ipstats/en/statistics/patents/patent_report_2007.html and from data directly provided by national patent offices. Number of patents litigated adapted from EPO WPL/4/03, Gesamtstatistik über die Tätigkeit des Bundespatentgerichts (2004) and Bessen and Meurer (2008) for the US.

Litigation costs vary significantly across jurisdictions. The United Kingdom is by far the most expensive jurisdiction among EPC member states. The cost is much higher than in the three other jurisdictions, and is nearly as high as their cumulated costs. The litigation costs in Germany, France and the Netherlands are similar. However, in case of multiple litigations,

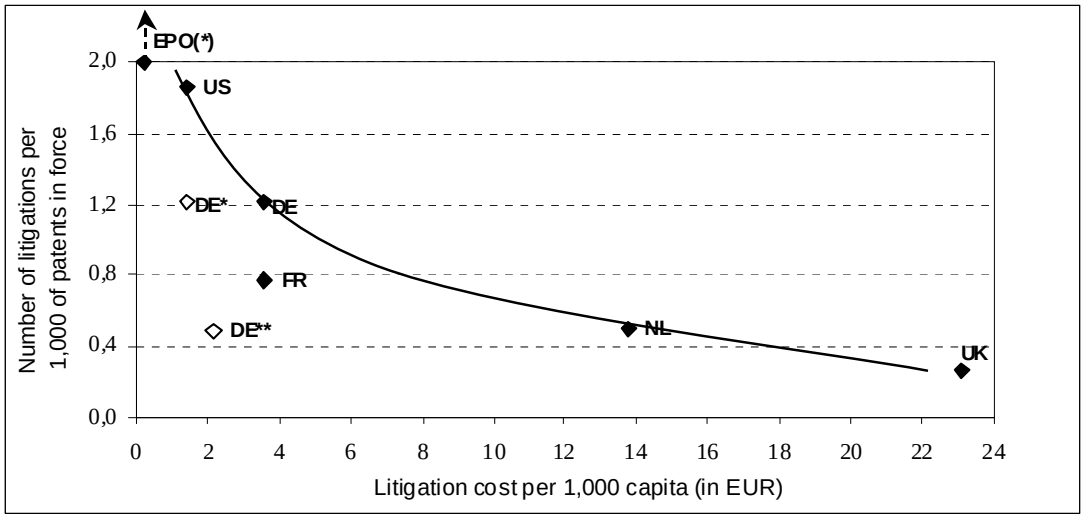
incurred for an appeal (www.mewburn.com/Patents/European_Patents/European_Patents:_Oppositions.htm, September 1st, 2008). Similar cost approximation are provided by Harhoff (2006) who estimates that the cost of opposition ranges between € 15,000 and €25,0000 for each party.

[7] In extreme cases, the lawyers cost can be as high as tens of millions of US dollars. For example, in Bristol Myers Squibb v. Rhone-Poulenc Rorer, the accused infringer, Bristol Myers, was awarded over US$25 million in legal fees from Rhone-Poulenc Rorer.

costs have to be cumulated across jurisdictions: they vary from €310,000 before the four tribunals of first instance up to €3.6 million when accounting for the cost of appeal at second instance. The cost of multiple litigations is prohibitive, especially for individuals and small and medium-sized firms. Compared with the United States the cost of multiple litigations in Europe is at least double.

Table 1 also presents the number of patents in force and the number of cases of litigation in the four European jurisdictions and in the US. The US system, which covers a market of 300 million inhabitants, has four to six times more patents in force than the largest European economies, which are individually at least three times smaller. The countries with the highest number of patents enforced logically have a large proportion of litigations. However, the share of litigations in the total number of patents varies substantially across countries. Germany is the country with the cheapest and most renowned judicial system for patent-related litigations within Europe. Figure 4 displays the position of the five countries along two dimensions: the average cost of litigation per thousand capita on the horizontal axis and the share of litigation in the total number of patents enforced in the country on the vertical axis. A traditional non-linear demand curve seems to drive the relationship, with at one extreme Germany (with relatively low costs but many litigations) and at the other extreme the United Kingdom with much fewer - but expensive - litigations. For litigations with higher value at stake the curve would mainly shift towards the right-hand side.

Figure 4: A litigation demand curve – small market value patents, 2004



(*) For the EPO, instead of the total number of patents in force, the total number of EPO granted patents in 2004 was taken as the denominator. It is assumed that on average 6% of EPO patents granted are opposed (Graham, 2006). European patents are on average validated in six countries, therefore population size for the EPO is assumed to be the sum of the population is those six countries. In Germany the courts hearing infringement and validity cases are shown separately. DE* presents the data for infringement cases in Germany and DE** for nullity cases. Source: Cf. Table 1.

In the US, the relatively large market reduces to some extent the prohibitive costs associated with litigation, hence the relatively high litigation rate. The oppositions are much cheaper at the EPO (they still cover a huge market) and are therefore much more frequent than the litigations in a given country. It could be argued that Figure 4 does not provide a comprehensive picture of how patent systems actually work. Indeed, the quality of the examination process and other institutional differences are not presented (ie whether the

system allows for the opposition or for the re-examination of patents).[8] The fact that the relationship holds good for the four European countries supports somewhat the view that relative litigation costs do influence the propensity to litigate.

2.2 Institutional heterogeneity

The five jurisdictions differ not only in terms of cost of proceedings but also in terms of institutional design and legal practices (ie procedural law, speed and quality of proceedings, damage assessment, type of relief or possible permanent injunction threats) as illustrated in Table 2.

Table 2: Characteristics of judicial systems in four EPC states and the US, 2004

	Germany	France	The Netherlands	United Kingdom	United States
Institutional design					
Judicial system	Dual system	Single system	Single system	Single system	Single System
Specialised court	Federal Patent Court (validity); 12 District Courts (infringement);	10 Tribunal de Grande Instance; specialised patent judges in Paris and Lyon	specialised IP chamber at District Court in The Hague	Patents County Courts; the Patents Court of the High Court	Federal Courts; Court of Appeals for the Federal Circuit
Quality of injunctions - The Court of First Instance					
Legally qualified judges	62	40	6	6	-
Technically qualified judges	46	0	0	5	-
Composition of the court	3 or 5	3	3	1	-
Assessment of damages					
Lost profits	Limitation by production capacity and proof that infringing product could act as a substitute.	Only if patent is used: calculated by amount of counterfeit products, loss of turnover and amount of lost profits.	Same as Germany.	Yes, likelihood of having made the infringer's sales, deduction of infringer's efforts to commercialise	Yes, requirements: demand, marketing capacity, absence of competition, non-infringing substitutes.
Licencing fee	Most common form of calculation, normally agreed upon in court settlement.	When the invention is not used. Infringer's turnover multiplied by an appropriate royalty rate	The minimum that can be claimed as lost profits	Yes, a notional royalty as the minimum of lost profits	Fall-back provision where lost profits cannot be or are not claimed
Infringer's profits	Yes, deduction of infringer's expenses but marketing efforts are accounted for.	No	Yes	Yes, but rarely requested	No
Choice for plaintiff	Yes, claim for inspection of infringer's accounts allowed prior to choice of calculation base	Yes, if patent is actually used	Yes, after inspection of documents	Yes, after review of the defendant's commercial documents	Yes

Source: Adapted from Allgayer (2005), Council of the European Union Document No 11622/07, Heath et al. (2005).

[8] Rotstein (2008) provides a comparison of different patent review systems: post-grant (opposition) in Europe, pre-grant in Austria and reexamination in the United States.

There are two different organisational models for judicial systems. Germany is an example of a country with a dual judicial system where the courts hearing infringement cases are separate from the court that decides on patent validity (revocation), albeit in France, the Netherlands, United Kingdom and in the US the same court hears and judges in both cases. Furthermore, some countries have specialized intellectual property chambers (France and the Netherlands), while others have specialized patent courts (Germany and United Kingdom). Countries also have different legal practice, as illustrated in Table 2. With regard to the quality of proceedings, Germany has the highest number of legally and technically qualified judges. There are apparently no technically qualified judges in France and the Netherlands.[9]

Jurisdictions also differ with respect to their understanding of what 'damages' are and how to quantify them (Heath et al., 2005). There are three methods for indemnification: (i) lost profits, (ii) a licensing fee and (iii) infringer's profits[10] and the way they are applied across jurisdictions is present in Table 2. The number of methods varies. In Germany and the Netherlands it is possible to assess damages on the basis of the infringer's profits, whereas this method is not available in France and in the US. 'Forum shopping' is allowed in all the countries as indicated in the last row of Table 2. The plaintiff can choose the preferred method for assessing damages in his/her case.[11]

There were attempts at the European level to address the problem of heterogeneity of enforcement practices. In 2004 the directive on the harmonization of the IP enforcement was adopted with the aim to ensure a 'high, equivalent and homogenous level of protection' throughout the EU.[12] The Directive set minimum requirements regarding the enforcement issues but it does not address the factors that affect the outcome of the trial (ie quality of proceedings). In 2008 the Directive was eventually implemented by all EU member states, but with drastically different interpretations of the rules, therefore keeping significant disparities between jurisdictions.[13]

The data presented in this section show high and heterogeneous relative litigation costs across the EPC contracting states and the US for small market value patents. The multiplicity of small markets (as compared to the US) actually exacerbates the prohibitive costs of managing and enforcing patents in Europe, especially in case of multiple parallel litigations within Europe. Furthermore, as countries rely on different legal procedures there is a possibility that the courts may issue substantially different or even opposite judgements on

[9] However, the judge or the parties can designate a consultant (engineer or researcher) who is actively involved in the proceedings but does not participate in the judges' deliberations (Council of the EU, 11622/07).

[10] Damages calculated as '*loss profits*' refer to losses incurred by the patent owner compared to the hypothetical situation in which he would have produced and sold the patented technology without being infringed. *Licencing fee* is calculated on the assumption that the patent holder and the infringer had entered into a licencing agreement before the unlawful use of protected technology took place. *Infringer's profits* are the net profits of the third party earned through the unlawful use of the patented technology.

[11] Guellec and van Pottelsberghe (2007) show that the design of patent systems matters, including fees, inventive step, duration, subject matter etc. This chapter provides evidence that the design of post-grant enforcement conditions and legal practice also exhibit specific designs. Cf. Mejer and van Pottelsberghe (2008) for further details on institutional differences between the four European countries.

[12] Directive 2004/48/EC of the European Parliament and of the Council of 29 April 2004 on the enforcement of intellectual property rights (OJ L 157, 30.4.2004)

[13] Forum shopping prospects despite Enforcement Directive, 2008, Managing Intellectual Property available at http://www.managingip.com/Article/1968542/Forum-shopping-prospers-despite-Enforcement-Directive.html

the same litigation case. But the current architecture of the European patent system induces even more complexity and uncertainty for assignees, as illustrated in the next section.

3. Managerial complexity

The current institutional setting of the European patent system actually divides the internal market into geographical areas where the patent is enforced and those where it is not.[14] Further, national jurisdictions have the final 'say' in any enforcement issue, from patent validity to infringement. Such a situation entails three related economic incongruities:

a. **EU-wide competition policy and national patents**: The patent system is justified by the *dynamic efficiency* it is supposed to generate: the monopolistic power associated with a patent aims to stimulate firms to innovate. It is generally opposed to the *static efficiency* ensured by antitrust or competition policy. More competition contributes to reduce prices and hence to increase demand. The latter is controlled centrally in Europe, by the European Commission's Directorate General Competition, for the whole European Union. There is therefore a flagrant inconsistency within the European Union: its competition policy authority has a reach over the whole European market and the countervailing leverage provided by intellectual property policy is ultimately run at the national level in each of the 34 EPC contracting states. Europe is therefore evolving into an apparently centralised system, but where national authorities may invalidate a patent centrally granted by the EPO, and where a national application might actually be granted independently from the EPO.

b. **Unfair intra-EU 'parallel' trade:** The principle of free movement of goods in the EU makes it relatively easy for imitators, infringers or parallel importers to enter the European Union through a country where the patent has not been enforced, and then distribute it widely within Europe including the countries where the patent is enforced. This of course does not preclude enforcing the patent in the countries where it has been effectively validated, but makes it more difficult to identify imitated goods and counterfeited products. The company has to deploy financial and managerial resources to secure its markets against potential infringers (this function was partly performed by border controls in the past). Once the alleged infringer is identified in one of the national markets the patent holder must rely on the legal procedures of this particular state to enforce his rights: injunctions, seizure orders, and other judicial remedies which will be granted in accordance with provisions of national law.[15] The counter-argument would be that, if the probability of infringement is high, and if the patented invention is 'worth it', one would logically expect the applicant to validate and enforce its patent in the 34 EPC member states. This latter argument is rather fragile however, as it fails to grasp the real option mechanism associated with all innovation processes. There is a time-lag between the moment the invention is made and its potential market success. At the beginning of the innovation process the entrepreneur does not have the resources, not to mention the time, to bear prohibitive patenting costs in numerous (small) member states.

[14] A small fraction of patents are currently validated in the 34 countries. This occurs more frequently with patents filed in the pharmaceutical industry and in the biotech sector.

[15] There is an obvious conflict between an intellectual property rights policy, whose scope is limited to national markets, and the principle of free movement of goods. Art. 28 Treaty of the European Union (TUE) prohibits quantitative restrictions on imports and all measures having an equivalent effect between member states. Cf Keeling (2003, p. 22-30) for further discussion.

c. **Time paradox**: The current institutional setting within the EU allows for time inconsistencies in the treatment and enforcement of patents. Within nine months of the decision to grant by the EPO, third parties can file an opposition against the patent (either for revocation or for amendments) at the EPO. The EPO decision on an opposition case is supposed to apply in all the countries where the patent is effectively enforced. However, the EPC allows third parties to challenge the validity of a patent under the legal rules of the countries in which the patent has been effectively validated. Such an action for nullity can be made directly from the date of validation in a national patent office, even if there is still an opposition pending at the EPO. Likewise, the patentee can sue potential infringers from the date of grant. The effect of the EPO opposition proceedings on parallel infringement case is not clear. For example, as of 2008, Belgium and France will stay the main proceeding until a final decision has been reached by the EPO whereas in Germany,[16] Italy, the Netherlands and in the United Kingdom such a stay is not automatic and in most cases the courts will continue the proceedings notwithstanding the opposition.[17] As it takes on average three years for the EPO to tackle an opposition case (cf. Graham 2002) it is therefore possible to be accused of infringement and pay damages or even endure permanent injunction at national level while the patent is later declared invalid by the EPO.

[16] However, in Germany national nullity proceedings cannot be started before the Federal Patent Court until the EPO opposition proceedings have been concluded or the opposition period has expired.
[17] Vandermeulen, 2008, Pan-European litigation checklist available at http://recht.nl/21867

Table 3: Case studies - stylised facts

	EPILADY		SENSEO		EURO		STENT	
Patent Litigation key data								
No of EP	EP 0101656 B1		EP 0904717		EP 0455750 B1		EP 0706376 B2	
Patent holder	Epilady		Sara Lee/DE and Philips Electronics		Document Security System (DSS)		Angiotech	
Date of filing (EPO)	1983		1998		1991		1994	
Date of grant (EPO)	1986		2001		2002		1997	
Alleged infringer	Remington		Group of Dutch and Belgian companies[2]		European Central Bank		Conor Medsystems	
Year of litigation	1989		2001		2005		2005	
Decisions of the Courts								
	VAL	INF	VAL	INF	VAL	INF	VAL	INF
CFI of the EU[1]	n.r	-	n.r	-	n.r	declined jurisdiction	n.r	-
EPO	upheld	n.r	revoked	n.r	-	n.r	upheld	n.r
AT	-	NO	-	-	*pending*	-	-	-
BE	-	YES	upheld	YES	*pending*	-	-	-
DE	-	YES	-	-	upheld	-	-	-
ES	-	-	-	-	*pending*	-	-	-
IT	-	YES	-	-	*pending*	-	-	-
FR	-	NO	-	-	revoked	-	-	-
NL	-	YES	delayed	NO	upheld	-	upheld	YES
UK	-	NO	-	-	revoked	-	revoked	-
Incongruities								
EU competition vs national patents	x		x		x		x	
Intra-EU 'parallel' trade	x		x		x			
Time paradox			x				x	

(1) Court of First Instance of the European Union (2) Retail chains: Coöperatieve Inkoopvereniging Intergro BA, Vomar and Drie Mollen in The Netherlands as well as Fort Koffiebranderij, Cafes Liégois and Beyers Koffie in Belgium. Source: Council of the EU, Document No 11622/0; Bird and Bird, November 2004, Patent Update Newsletter, Benelux – Coffee Wars, pp 7-9 http://www.twobirds.com/english/publications/newsletters/upload/19918_1.pdf; and Boyes Turner, 12 June 2007, The Mystery of the Euro Bank Note: A Strange Case of Patent Infringement, http://www.boyesturner.com/news-article.html?id=197; CMS European Patent Review, January 2007, pp. 18-19 http://en.cms-dsb.com/legal_news/publications/cms_european_patents_review Anna McKay, February 2007, Angiotech, Conor - not so Obvious. Different approaches to considering the inventive step, www.annamckay.com/article16.html

Four case studies illustrate these economic incongruities induced by the European patent system and the managerial complexity this implies for firms. The case studies are briefly described in Table 3.

The property hedge: Epilady v. Remington

In the early 1980s Epilady invented its famous device: a '*hair remover for use on ladies legs*'. Once having been granted a European patent for its invention in 1986, Epilady successfully marketed it in eleven EPC contracting states. During the first two years of marketing and selling, Epilady sued 28 competitors who infringed its patented invention by producing one-to-one products and won in all cases. In 1988, Remington entered the European market with *Smooth and Silky*, a device that performed exactly the same function as *Epilady* but with a slightly different mechanism (the former used a rotating helical spring system whereas *Smooth and Silky* used a rotating rubber bar with slits in it) and within the same year it had filed an opposition at the EPO questioning the validity of Epilady's patent.[18] In order to maintain its monopolistic position within Europe Epilady brought a patent infringement action against Remington in Austria, Belgium, Germany, France, Italy, the Netherlands and the United Kingdom. Meanwhile, in 1991 the EPO upheld the Epilady patent.

Despite the harmonised laws on interpretations of the extent of protection granted through European patents, the subsequent rulings of the national courts on infringement differed across jurisdictions.[19] Courts in Austria, France and the United Kingdom judged that there was no infringement of the Epilady patent, whereas courts in Belgium, Germany, Italy and the Netherlands ruled that infringement took place. This case study illustrates the 'non-European' dimension of the European patent system: a clear lack of consistency Europe wide.

Coffee wars: Senseo

The Dutch-American company Sara Lee/DE and Philips Electronics developed the *Senseo* coffee machine, which makes an individual cup of coffee supplied in circular pads that are inserted into the machine by the user. For this technology they were granted a European patent worded '*assembly for the use in a coffee machine for preparing a coffee, container and pouch (pad) of said assembly*'. The coffee machine proved to be a great success and competitors started entering the market for coffee pads and delivering copy-cat products in shops. In order to maintain a monopolistic position in the market for pads, towards the end of 2001 Sara Lee initiated a number of infringement proceedings against several competitors in Belgium and in the Netherlands. It argued that as the pads constituted an essential part of the innovation, producing those pads constituted an indirect infringement of the patent. Shortly after grant, in September 2001, the firm Albert Heijn B.V filed an opposition before the EPO. In mid 2002 the Court of Appeal in The Hague held in its preliminary proceedings that there was no indirect infringement action. Therefore, the Dutch competitors were allowed to continue selling their copy-cat products. Further rulings were put in abeyance pending the EPO decision concerning European patent validity.

[18] The first opposition against the Epilady patent was filed at the EPO in 1987 by Beasille Marketing Limited.

[19] Art 69(1) of the EPC reads as follows: *The extent of the protection conferred by a European patent or a European patent application shall be determined by the terms of the claims. Nevertheless, the description and drawings shall be used to interpret the claims*. During the discussions at the diplomatic conference on the final version of the EPC this simple rule was interpreted in a completely different way by the UK and German courts. Instead of rewording the Article, a protocol on the interpretation of this Article was agreed upon and incorporated into the draft of the EPC (Straus, 2000 and Connor 2008).

At the end of 2003 Sara Lee's competitors seeking a declaration of non-infringement in Belgium filed an action before the Court of First Instance in Antwerp and won. Sara Lee appealed this decision and in 2004 the Antwerp Court of Appeal, without waiting for the outcome of the opposition at EPO, held that the competitors had infringed the patent: '*they had delivered means that allowed third parties to make use of the patent which constituted an indirect infringement of the patent'*. Sara Lee won in Belgium and kept its monopolistic situation until August 2006, when the EPO eventually revoked her patent in full for lack of inventive step.

The *Senseo* case shows that the current system not only allows for discrepancies in interpreting the claims but also induces time inconsistencies, especially when the EPO and national courts decide in parallel on the validity of a patent. In this case, the infringers in Belgium had to pay damages despite the fact that the patent was to be revoked two years later by the EPO.

The euro: a local currency?

An American company, Document Security System Inc. (DSS), which is specialised in developing, licencing and selling anti-counterfeiting technology and products, holds a European patent for *'non-replicable document and method of making same'*.[20] This technology makes special images (ie stripes) on banknotes, which prevents replication when copying or scanning. In August 2005 DSS filed a patent infringement suit in the European Union's CFI[21] against the European Central Bank (ECB) claiming that the ECB was using their technology (ECJ case T-295/05).[22] Shortly after the proceedings before the CFI started, the ECB filed claims to invalidate the DSS Patent in Austria, Belgium, Germany, France, Italy, Luxembourg, the Netherlands and the United Kingdom.

In March 2007, two contradictory rulings on the DSS patent were issued. The United Kingdom Patent Court invalidated it, whereas the German Patent Court upheld it. Judgement on validity was delivered in January 2008 by the French court in Paris and was in line with the decision taken in the UK. Two months later, the Dutch court in The Hague adopted a decision similar to the German one and upheld the patent. In the meantime, in September 2007, the CFI of the European Union officially refused jurisdiction in the DDS patent infringement suit, paving the way for country-by-country infringement litigation related to the 'single' currency.[23] Mr Patrick White, the CEO of the DSS, commenting on the decision of Dutch court expressed his wish to further pursue the infringement cases, at least in the Netherlands: *'We fully believe that the ECB will appeal this decision, but we do not expect*

[20] Before 2001 DSS was called New Sky Communications, Inc. and was specialised in the development and production of theatrical motion pictures and home video cassettes. In 2002 it acquired four companies: Lester Levin, Inc. d/b/a Patrick Printing; Document Security Consultants, Inc. and Imperial Encryption, Inc., Thomas M. Wicker Enterprises, Inc., and changed its name to DSS. With those acquisitions the company came into the possession of intangible assets, including the European Patent EP0455750 B1.

[21] Under Art. 235 of the EC Treaty (with reference to Art 288), a person claiming compensation from one of the European institutions can bring his action before the Court of First Instance of the European Union.

[22] In June 2005, shortly before filing the opposition, the official name of the patent-holder was changed from Wicker Ralph to Document Security System, Inc.
http://v3.espacenet.com/legal?DB=EPODOC&IDX=EP0101656&F=8&QPN=EP0101656

[23] Mr. Patrick White, the CEO of the DSS, made the following comment on the CFI ruling: '*At long last, we have an answer as to jurisdiction (…) we now have a specific road map with the appropriate venues for further (infringement) actions'* http://findarticles.com/p/articles/mi_m0EIN/is_2007_Sept_11/ai_n27370463

that this likely appeal will impact our ability to move forward with infringement proceedings on our timeline. Here, our focus will be on substantial monetary damages for the unauthorized use of our patented technology by not only the ECB, but printers and third parties as well, including those who print bank notes in other European countries that are used in the Netherlands."[24]

Stents: Angiotech v. Conor

The patentee, Angiotech, is a Vancouver-based pharmaceutical company that, among other things, invents and markets innovative technologies for complications associated with medical device implants. In the early 1990s, it developed and patented an innovative stent coated with paclitaxel-containing polymer that prevents *restenosis*, a typical problem following angioplasty.[25] In 1997, Angiotech was granted a European patent EP 0706376B1 where it claims paclitaxel/polymer-coated stents but gives little description of them. In the mid 1990s, Conor Medsystems, a Californian company specialising in the development of drug-eluting coronary stents, conducted similar research and patented a stent that also contained paclitaxel.

Shortly after the grant, in spring 1998, Angiotech's patent was opposed at the EPO by five different companies, including Conor. In February 2005, Angiotech initiated patent infringement action in the Netherlands against Conor. Shortly after, a claim was filed by Conor in the United Kingdom alleging that Angiotech's stent patent was invalid. In February 2006, the court of first instance in the UK held the Angiotech patent invalid due to the lack of inventive step (hence non obviousness). Its decision was further upheld by the UK Court of Appeal in January 2007. Subsequently, the District Court in The Hague held the opposite, validating Angiotech's patent. Eventually, after nine years of opposition proceedings, in March 2007, the EPO decided to uphold Angiotech's patent, however making very extensive amendments to the claims.[26] This example shows that the definition of 'inventive step' is far from being obvious and varies across member states, which leads to different outcomes for a given product.

The bottom rows of Table 4 show which of the 'incongruities' is illustrated in each case study. The two incongruities related to the antagonism between EU competition jurisdiction and national jurisdictions and to the easier intra-EU parallel trade are nearly as frequent as the number of patents in force in Europe. They affect the managerial complexity and litigation costs 'only' when infringement occurs. 'Time paradox' is a less frequent event because it takes place only when a centralised process (ie with litigation at the EU's CFI or an opposition at the EPO) occurs simultaneously with one or several national cases of litigation. This type of incongruity is, however, more frequent than it appears at first sight, and the decisions of national courts exacerbate this effect.

[24] Reuters press release, 12 March 2008, available at www.reuters.com/article/pressRelease/idUS162584+12-Mar-2008+BW20080312,

[25] Stents are mesh tubes that hold coronary arteries open and improve blood flow to the heart muscle. Originally, stents were made of bare metal that very often caused proliferation of tissue which results in *restenosis*, arterial blockage caused by scar tissue. Nowadays, stents are often coated with products whose purpose is to restrain the proliferation of tissue such as paclitaxel.

[26] In January 2005, the European Patent Office Opposition Division maintained the validity of Angiotech Patent No. EP0706376 including claims to stents coated with a composition of paclitaxel and a polymeric carrier. Appeal to this decision was filled by Conor Medsystems Inc. and Sahajanand Medical Technologies Pvt. Ltd. The decision on the Appeal was delivered two years later in 2007.

For instance, in May 2007, the UK Court of Appeal ruled that damages for patent infringements awarded by a UK court are not required to be paid back even if the patent is later declared invalid by the EPO.[27] In this ruling, Lord Justice Jacob justified his decision by the need for certainty in business, which is quite symptomatic:

'First and foremost, the defendant has had a full and fair opportunity of attacking the validity of the patent in his own proceedings. Next there is a very strong public interest in the finality of litigation.[…] It is much better that he knows that the first litigation about validity is the time and place for him to get his best case together – that he knows he will have no second chance'.

What motivated Lord Justice Jacob in this case was not the simple question of which court was superior, but of how to best operate with an imperfect European patents system.[28]

4. Concluding remarks

The fact that one judge, in the UK for instance, may actually criticise the outcome of a seemingly slow centralised opposition procedure (at the EPO) in favour of a localised speedy, but potentially unfair, decision underlines the lack of political will to create a truly European patent system. The EPO was created in 1978 to grant 'European' patents. However, once granted they must be enforced in each member state where protection is required, which each have the power to grant or invalidate patents in their own national jurisdictions and to assess infringements, independently from the EPO.

The present paper has analysed the consequences of this highly fragmented European patent system, where national jurisdictions actually prevail for the enforcement of patent rights. The analysis mainly focuses on post-grant patenting activities in Europe, and relies on comparative litigation designs and occurrences, and case studies.

Litigation costs vary significantly across jurisdictions, including within Europe. While absolute litigation costs are somewhat lower in continental Europe than in the US or the UK, relative costs are much higher in the UK and in smaller countries like the Netherlands. The multiplicity of small markets (as compared to the US) increases the already prohibitive costs of managing and enforcing patents in Europe, especially when multiple parallel litigation occurs. Furthermore, as legal procedures differ across jurisdictions, there is a clear possibility of substantially different judgements occurring on the same subject matter. Despite the efforts to harmonize the enforcement of intellectual property rights (including patent rights) at the European level disparities will still prevail.

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[27] In the case Unilin Beheer vs Berry Floor in the UK, the dispute concerned the validity and infringement of Unilin's European patent for hardwood floor coverings. In the UK the patent had been held valid and infringed, while it was still in opposition at the EPO, an opposition that would presumably last for two more years. Even if the EPO proceedings did result in the patent being revoked, this would not affect Berry's liability to pay damages, because the validity and infringement of the patent had already been subject to a final determination by the UK courts. "*The judge was not prepared to allow the conclusion of UK litigation to be dependent on the workload of the EPO*" [M. Graham Burnett-Hall (Associate, Marks & Clerk Solicitors)] cf.: http://www.marks-clerk.com/solicitors/the-epo-and-national-courts-an-odd-relationship.html for a description of the case.

[28] Cf. http://www.theregister.co.uk/2007/05/10/patent_damages_not_refunded/; OUT-LAW.COM, Published Thursday 10th May 2007 10:32 GMT.

But the current architecture of the European patent system generates even more complexity and uncertainty for patentees. The lack of a single market for innovations, where the industrial property rights are generally enforced in a few countries, together with the supremacy of national jurisdictions in patent issues, entails three related economic incongruities: an EU-wide competition policy but national patent rights; intra-EU 'parallel' trade and patent protection; and a time paradox. Four case studies illustrate these incongruities and their implications for managers. There is no Europe-wide market for technology, and even the supposedly centralised procedure, the substantive examination performed by the EPO, is actually not really 'centralised' or 'European': it is possible for a national court to invalidate a patent granted by the EPO, or to grant a patent that has not been granted by the EPO. And such decisions may occur in up to 34 countries.

These 'incongruities' and the prohibitive costs of enforcement or litigation in Europe generate both a high level of uncertainty regarding the validity of a patent (and its market reach) and considerable managerial complexity which clearly reduces the effectiveness and the attractiveness of the European patent system in terms of stimulating innovation.

Resolving these incongruities would require the implementation of a Community patent together with a centralised jurisdiction mechanism. The national patent offices of the European Union are *de facto* deliberately blocking the implementation of a truly European patent system, thereby hindering the speed of internationalisation of their own small and medium-sized firms. Special tax incentives may help, but they will certainly not alleviate the problem of the cost, complexity and diversity of practice which generate a lack of confidence in the system.

References

Allgayer U., 2005, A comparison of the litigations systems in Germany, France and United Kingdom, Patenta (Patent Attorney).

American Intellectual Property Law Association (AIPLA), 2005, Report of the economic survey, Washington, D.C., Fetzer-Kraus.

Bessen J., and M.J. Meurer, 2006, Patent litigation with endogenous disputes, American Economic Review, No 92(2), pp. 77-81.

Bessen J., and M.J. Meurer, 2008, Patent failure, Princeton University Press, p.330

Council of the European Union, 2007, Towards an enhanced patent litigation system and a community patent - How to take discussions further, Working Party on Intellectual Property (Patents), Document No 11622

Connor M., 2008, European Patents: What's new in 2008 for the Applicants? Journal of the Patent and Trademark Office Society, 90 (6), p. 587-608.

European Patent Organization, Assessment of the impact of European Patent Litigation Agreement (EPLA) on litigation of European Patents, WPL/11/05, 16.02.2006

European Patent Organization, Workload and cost of the European Patent judiciary, WPL/4/03, 31.10.2003

Graham S. J. and D. Harhoff, 2006, Can post-grant reviews improve patent system design? A Twin Study of US and European Patents, CEPR Discussion Papers, No 5680

Graham S., B. Hall, D. Harhoff. and D. Mowery, 2003, Patent quality control: A comparison of U.S. patent re-examinations and European Patent oppositions, in Patents and the knowledge based economy, 2003, edited by Cohen W. and S. Merrill, National Academies Press, Washington D.C.

Guellec D. and van Pottelsberghe de la Potterie B., 2007, The economics of the European patent system, Oxford University Press, Oxford, 250 p.

Harhoff D., 2006, The battle for patent rights, In: Peeters C. and B. v. Pottelsberghe de la Potterie (Ed.), Economic and management perspectives on intellectual property rights, New York: Palgrave Macmillan

Heath C., J. Henkel, and M. Reitzig, 2005, Patent Indemnification Rules and International Legal Comparison. Munich/ Copenhagen, Mimeo.

IP Campenhausen, 2004, Patent nullity proceeding and cost of patent litigation, available at http://ip-campenhausen.de/Nullity.pdf (Patent Attorney)

Keeling D.T., 2003, Intellectual property rights in the EU law: free movement and competition law, Vol.1, Oxford EC Law Library, p. 410

Pakes A. and M. Schankerman, 1979, The rate of obsolescence of knowledge, research gestation lags, and the private return to research resources, NBER Working Paper 0346.

Rotstein F. and C. Dent, 2008, Third party patent challenges in Europe, the United States and Australia: A comparative analysis, forthcoming.

Straus J., 2000, Patent litigation in Europe - A glimmer of hope? Present status and future Perspectives, Journal of Law and Policy, Vol 2

Urbanchuk, G.J., and Tubridge, J.R., 2008, Patent damages: the European landscape, Journal of Intellectual Law and Practice, 3, 576-579.

van Pottelsberghe de la Potterie B., 2009, The European patent system, Bruegel Blue Print, 66 p.

van Pottelsberghe de la Potterie B. and M. Mejer, 2008, The London Agreement and the relative cost of patenting in Europe, CEPR Discussion Paper, 7033.