

Patent Reform in Europe and the United States

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Abstract

The patent system has gained political attention in both Europe and the US as the core regulatory regime of an increasingly knowledge-based economy. Europe and the US alike have recently engaged in a series of reform efforts of their patent systems. These efforts reflect a shift from a legal and administrative emphasis on harmonization and globalization toward greater attention to issues of innovation and competition. However, the complexity of the systems, the asymmetric distribution of costs and benefits of change, the diversity of economic and political interests, and the high technical profile of this regulatory field, make reform difficult and slow. Whereas Europe focuses on regional integration, the US focuses on substantive and procedural solutions to perceived failings and abuses. The purpose of this paper is to provide an overview of the trajectory of reform in each jurisdiction and to consider whether and how the experiences of each may be of value to the other.

1. Introduction

Today, both Europe and the United States are engaged in patent reform but in very different ways. Europe is focused on structural reform in the name of market integration and efficiency, while the US is focused on substantive and procedural reform. The highly centralized and integrated US patent system has long served as a model for efforts to consolidate, harmonize and eventually unify the European system. Yet while patent professionals and institutions in Europe have taken an interest in US developments, including recent efforts to monetize patents, there has also been political resistance to the perceived excesses of US patent practice.

In the wake of the failed EU directive on computer-implemented inventions, the current reform agenda in Europe is focused on the overdue goal of regional harmonization and unification. In the US, the international harmonization agenda that dominated much of the 1980s and 1990s remains but has been upstaged by growing controversy and inter-industry division over the performance of the US system, especially in how the system plays out in business practice and litigation. Legislative attempts in the US at comprehensive reform have thus far foundered on issues that pit complex product industries – notably software, ICTs, and financial services – against pharmaceuticals and biotechnology, the patent bar, universities, and small inventors. However, meaningful change has come from a rare series of US Supreme Court decisions.

The reform process has become politicised in both patent systems. Within Europe, politicisation reflects recurring high-level issues over language, institutions, market integration, and national sovereignty. In the US, it reflects the competing economic interests of private stakeholders, along two axes: discrete-complex products as well as upstream-downstream (universities and “independent inventors” against producers).

A globalised economy is putting strong pressures on the administration of territorially based patent systems, resulting in delays and backlogs at both the EPO and the USPTO. This creates pressure for greater cooperation among patent offices, but it also increases concern for the “quality” of patents. In both Europe and the US, there is a growing sense that more complex products and services in the economy have raised the costs and risks of patent practice, meaning uncertain benefits accrue.

This paper provides an overview of the commonalities and differences of the European and US patent systems, as reflected in the push for reform pursued on both sides of the Atlantic. What specific challenges are these systems facing in the complex and rapidly globalizing knowledge-based economy? What explains different responses to apparently similar economic challenges? What lessons can Europe and the US draw, if at all, from each other’s experiences and efforts toward patent reform?

2. Common characteristics and problems

The two systems share basic features common to all patent systems. Notably, a government agency administers grants of exclusive property-like rights, which must be privately enforced. Both

systems and right holders therein, rely on courts and agencies to assist with interpretation and enforcement. Initially, a designated patent office examines the application privately, publishes it after 18 months, and finally grants (or denies) the patent. This is done by the US Patent and Trademark Office (USPTO) in the US and the European Patent Office (EPO) in Europe.¹ If requested, the office may reconsider validity through opposition proceedings in Europe or a more limited re-examination in the US. Infringement issues are dealt with through national court systems, which may also conduct a full inquiry into validity. Both systems are “unitary” to the extent the law does not normally distinguish among different kinds of technology.ⁱ

Given the same basic underpinnings, unsurprisingly the European and US patent systems share the same fundamental conundrum: While the goal of the system is innovation and economic advance, patent administration and practice is legal and process-oriented. This tension creates several obstacles to effective reform. First, the technical nature of patent law and the private nature of patent enforcement make it difficult for non-practitioners to contribute meaningfully to policy developments, leaving those who manage the process to retain control of evolving policy. Although patent offices assume no responsibility for how patents work once they are granted, policymakers habitually look to them for policy advice. The offices in turn look to patent professionals and applicants (their “customers” or “users”) for advice on substantive policy as well as patent administration. Therefore, policy development tends to favour interests and perspectives of 1.) professional intermediaries (e.g., enlarging the scope and scale of the system); 2.) industries most benefited by patents (pharmaceuticals, biotechnology); and 3.) the largest customers (i.e., portfolio owners).

A second and related aspect is the knowledge gap between socio-economic goals of the patent system and its legal-procedural praxis as reflected in the insularity of patent law from economic and other social sciences analysis. Policy development remains primarily oriented to application of established law in individual cases with little empirical grounding or socio-economic analysis about the overall implications of specific decisions. Unlike other regulatory regimes, such as the regulation of competition and public utilities, there has been remarkably little integration of legal and economic analysis.ⁱⁱ

A third problem is that patent policy is often lumped with copyright policy as a matter of personal rights rather than economic policy. Thus, the JURI Committee in the European Parliament and the Judiciary Committees in the US Senate and House of Representatives have primary responsibility for all intellectual property matters, spanning regimes with very different rationales and rules. So patents are often viewed as legal entitlements rather than economic tools with costs, benefits, and relationship to other forms and aspects of innovation. Despite the purpose of the patent system, it remains virtually unconnected to other technology and innovation policies.

3. Key differences

3.1 Structure of the system(s)

¹ Within the European system, national offices continue to grant rights at a national level. The purpose of the EPO and its legal structures is to offer users a centralised system effectively administered day-to-day by its executive body, the EPO. The EPO operates on behalf of all EPC contracting states, i.e. all Member States of the EU plus Iceland, Liechtenstein, Monaco, Switzerland and Turkey.

In contrast to the integrated US system, the European patent system is a system of systems. The national patent systems and the European Patent Organisation (EPOrg) exist in an uneasy relationship, both complementing and competing with each other. In addition, the EU has the authority to set EU law, through which it can demand the harmonization of national laws beyond what is required by the European Patent Convention (EPC).ⁱⁱⁱ

Each contracting state to the EPC has its own national patent law and institutions – and is responsible for determining patent validity and infringement within its territory. National patent offices examine applications and grant patents that are limited in effect to the particular country. Then there is the European patent established by the EPC. The EPC's governing body is the EPOrg; its administrative arm is the EPO. Despite its name, the European patent is not a Europe-wide right but a bundle of national patents for the particular countries designated in the application. Only a single application and examination is needed, but applicants must pay to register in each country for which protection is sought. While the EPO has its own patent bar, practitioners admitted to national patent bars are also entitled to practice before the EPO.

After the European patent has been granted and issued, it confers on the patentee in each contracting state the same rights as would be conferred by a national patent of the respective state (in most cases depending upon a national validation). Infringement is determined under national law by national courts. The national courts can also adjudicate validity under national law. Although there may be differences in judicial interpretation, national laws are written largely to conform to the EPC and any relevant harmonizing directives of the EU.

All initiatives to establish a genuine transnational patent right, the Community patent, have failed (Benjamini 1993; Di Cataldo 2002). The first attempts date back to the 1950s and ended in a 1962 pre-draft that collapsed due to the general crisis of the European Communities at that time (Govarere 1996; Krieger 1998). The second initiative began in the late 1960s/early 1970s resulting in the Community Patent Convention (CPC) of 1975.^{iv} Despite amendments in 1985 and 1989, it also failed to materialise by not receiving the required number of ratifications.

However, the Convention on the Harmonization of Certain Points of Substantive Patent Law^v as well as the EPC, has led to a substantial harmonization of national patent laws. In addition, the EU has exercised some oversight over national patent law and policy through the harmonization of national law on patentable subject matter, such as the Directive on Legal Protection of Biotechnological Inventions and the failed Directive on Computer-Implemented Inventions.

In contrast to the European system(s), the United States has one uniform integrated system competent for patent issues arising in the whole of the United States. US patent law is authorized by the US Constitution, and the Supreme Court has determined that there is federal pre-emption, i.e., states cannot grant patent-like rights. The USPTO is responsible for granting and issuing patents, establishing procedural rules, conducting re-examinations, disseminating patent information, and overseeing admission to patent practice. It also participates in international deliberations on patent administration and policy.

Uniformity in case law is achieved by the United States Court of Appeals for the Federal Circuit (Federal Circuit). Established by the Federal Courts Improvements Act of 1982, the Federal Circuit has jurisdiction over a number of federal tribunals but is best known as the appeals court for patent litigation as well as the decisions of the USPTO's Board of Patent Appeals and Interferences.

Whether the Federal Circuit has fulfilled the expectation that it would bring predictability and stability to patent law and whether it has succeeded in fulfilling its role of stewardship for the patent system remains open to debate (Dreyfuss 2004; Michel 1999). Until the past few years, the US Supreme Court rarely accepted appeals in patent cases from the Federal Circuit.

3.2 Scope of patentable subject matter

In the US, patent-eligible subject matter has expanded dramatically under the jurisprudence of the Federal Circuit (Chisum 1994; Thomas 1999). Laws of nature, physical phenomena, and abstract ideas are unpatentable under the US and European systems. Article 52 EPC provides for explicit limitations on subject matter. However, Article 52 has built-in ambiguity, and the EU has vigorously debated the limits of patentability in software patents, business methods, and biotechnology patents. There has been confusion about the extent to which software is patentable under EPO practice (Park, 2005). Political moves towards harmonizing national laws in this area, by means of an EU directive, were rejected by the European Parliament in 2005 (see section 4.2 below).

In the US the position is much clearer and the Federal Circuit has made it easy to obtain software patents. Indeed that court's decision in *State Street Bank & Trust v. Signature Financial Group* summarily abolished a long-standing judicial rule excluding patents on methods of doing business.² However, its recent *Bilski* decision uses alternative language from Supreme Court decisions to effectively exclude pure business methods that are not tied to a particular machine.³

In Europe, the requirement that an invention be technical, building on the German patent law requirement of technical improvement, has largely restricted the patenting of pure business methods. That said there is evidence that the EPO has allowed such patents (Wagner, 2004). The limits drawn by the EU directive for biotechnology inventions are also more restrictive than US practice.

3.3 First-to-file versus first-to-invent

Only the US follows a first-to-invent system, while Europe and the rest of the world's patent systems are first-to-file. The main argument against first-to-file is that it discriminates against universities and independent inventors, who need longer to prepare an application.⁴ However, others have argued that difference is greater on paper than in practice – that the “interference” proceedings to determine the first inventor usually end in favour of the first to file (Mossinghoff 2005).

Europe appears to draw a bright line between competing inventors on the basis of who wins the race to the patent office, whereas the US allows an earlier inventor to win in an interference proceeding if it can be shown that there was no delay in reducing the invention to practice. The US is also more solicitous of inventors in permitting a one-year grace period after public disclosure of the

² See *State Street Bank & Trust Co. v. Signature Financial Group, Inc.*, 149 F.3d 1368 (Fed. Cir. 1998). Referred to as “State Street”.

³ *In re Bilski*. 545 F.3d 943 (Fed. Cir. 2008); certiorari granted by the U.S. Supreme Court June 1, 2009. Referred to as “Bilski”.

⁴ There is also some concern that first-to-file would result in a rush of half-baked applications to the patent office that would add further to the quality and backlog problems.

invention in which the inventor may still file, whereas in most European countries public disclosure immediately eliminates the opportunity to patent. Again, a bright line that demands discipline from aspiring applicants.

On the other hand, European practice softens the granted patent right in certain respects. Prior user rights allow firms who have practiced an invention without disclosing it to keep practicing it if someone else patents it. In the US, prior user rights are applicable only to business methods. Furthermore, most European jurisdictions have an experimental use exception, whereas the Federal Circuit recently eviscerated the experimental use defence in *Madey v. Duke* (2002).⁵

3.4 Opposition and re-examination

In line with the “softer” European patent, anyone may file a post-grant opposition within nine months of grant, and such oppositions are common. Opposition may be based on a purported lack of patentability, insufficient disclosure, and extension beyond the content of the original filing.⁶ By contrast, ex parte re-examination in the US is a very limited proceeding. In fact, it is often used by patent owners to limit the scope of an issued patent, thereby making it less vulnerable to invalidation. Third-party petitioners do not participate in ex parte re-examinations and may only request re-examination on limited grounds, such as the discovery of invalidating prior art. Inter partes re-examination was introduced in 1999, but it has been used infrequently because of estoppel provisions and limits on participation. Although re-examination offers challengers less of an opportunity than an opposition, re-examination is not limited to a nine-month window following the patent grant but may be initiated at any time in the life of the patent.

4. Patent reform in Europe

For decades, there has been widespread agreement in Europe that the current fragmented and overlapping system needs simplification, not just for the sake of patent applicants and holders but for the sake of European economic integration. In effect, the patent system (of systems) in Europe remains an unfinished reform dating from the 1970s. There are two distinct dimensions: structural and substantive.

4.1 The structural dimension

The key structural question is whether integration of the co-existing patent systems in Europe should proceed under the auspices of the EU, or through the existing international order under the EPC. The European Commission has been an ardent supporter of a supranational solution: a Community patent based on a single regulation and valid for the entire EU. After unsuccessful attempts in the 1970s and late 1980s, the Commission issued a Green Paper on patents (1997)^{vi} followed by a proposal for an EU regulation to create a Community patent (2000).^{vii} Both these attempts failed due to political concerns about language and judicial enforcement, including issues of national sovereignty, translation costs, linguistic-legal accuracy in translation, and fair and effective notice. Neither the three-language solution of the EPO (English, French, German), nor the

⁵ See *Madey v. Duke University*, 307 F.3d 1351 (Fed. Cir. 2002).

⁶ National patent laws in Europe differ as to whether national opposition proceedings take place before or after the patent is granted, as too do the grounds, requirements, and time limits for filing an opposition.

five-language solution of the EU Community trade mark system (English, French, German, Spanish, Italian) seemed to offer a politically viable solution.

The proposed regulation suggested the creation of a single Community Patent Court along the lines of the Court of First Instance under the European Court of Justice. The new Court would have jurisdiction over validity and infringement of patents, while national courts would decide extrinsic matters such as assignments and licenses. This proposal met scepticism regarding the policy-related effects of such a centralized system and the technical quality of jurisprudence, as well as concern over function and future of national patent offices. Furthermore, those in opposition feared that a highly unified system would impose uneven costs and benefits on the EU's Member States due to greater litigation costs for small and medium-sized enterprises (SMEs) and uneven access to sophisticated legal services.

Meanwhile modest change in the international order under the EPC was achieved through amendments of the EPC in 2000, which took effect in 2007, including updating the text of the convention to conform to TRIPS and making some procedural improvements (limited judicial review of Boards of Appeal decisions). A more significant reform was given effect by 14 of the 34 member states of EPOrg in the London Agreement of 2000 that became effective in May 2008. This agreement reduces language translation costs for European patents because it allows each signatory to designate use of one of the three working languages of the EPO (English, French, or German).^{viii} Another structural reform in the making is the European Patent Litigation Agreement (EPLA), which would create a European Patent Court competent to determine infringement of patents of EPC contracting states. Drafted initially in 2003, the EPLA agreement is still not in place and its future remains uncertain, particularly since it faces competition with the EU supranational vision (see below).

With an energetic 'big push' by Internal Market Commissioner McCreevy, the Barroso administration has recently resurrected political negotiations on the Community patent. The Commission's communication of 2007 is "of the opinion that the creation of a single Community patent continues to be a key objective for Europe".^{ix} The major political hurdles continue to be the language translation issues, distribution of revenue from renewal fees (half of EPO renewals go to national patent offices), and the form of the judicial system. Whereas the legal services of the European Parliament and the Commission favour an EU rather than EPLA solution, not all EU Member States agree. Some national delegations advocate for a separation of both issues, namely the litigation system and the Community patent, and other delegations prefer a consensus on both simultaneously.^x To overcome the problems of country-by-country litigation, the Commission has recently suggested creating a Unified Patent Litigation System with jurisdiction over existing European patents and future Community patents.^{xi} This suggestion is still rather vague, but it supports the idea of a "largely decentralized first instance, a single appeal instance, and a role of the European Court of Justice aimed at providing a consistent interpretation and application of Community law" (Commission 2009: 4). Including the ECJ in this system raises issues of the Court's technical competence and its current problem of work overload. However, ECJ oversight would parallel the role of the Supreme Court in overseeing the patent system in the US, which, many would argue, has been critical to reining in the unbalanced jurisprudence of the Federal Circuit.

4.2 The substantive dimension

With regard to the substantive aspects of patent reform in Europe, there have been significant efforts, at EU level, to harmonize the scope of the patentable subject matter in the fields of biotechnology and software. These efforts have become somewhat consumed and distracted in a very public debate not only over the limits of patentable subject matter but also over democratic control of patent granting agencies, especially the EPO. An attempt to pass an EU regulation on biotechnology failed when the European Parliament rejected the conciliation document in 1995, although an EU directive was finally passed in 1998.^{xii} The Netherlands and various other EU Member States subsequently raised a case of nullification before the European Court of Justice, which was not accepted. The debate centred on ethical issues (Ford, 1997; Vinje 1995) and controlling the EPO's granting praxis (Doern, 1997).

The European Commission's proposal for a directive on "computer-implemented inventions,"^{xiii} popularly known as the software patent directive, proved even more controversial. First broached alongside the Community Patent in the 1997 Green Paper and the 2000 Communication, then formally proposed in early 2002, the directive elicited deep divisions among software interests. It also created extraordinary tensions between the Commission and the Council on one side and a conflicted but highly sceptical European Parliament on the other. Significantly, the idea of harmonizing subject matter was first presented in emulation of the more permissive US practice. However, after the effects of the 1998 *State Street Bank* case from the US became clear, i.e. that of opening up the US system to subject matter well beyond the European requirement of technical contribution, the EU directive was offered as a bulwark against US-style business method patents. Although the proposed EU directive was supported by the patent establishment, major equipment manufacturers, and large software companies, organized opposition arose from within the open source movement and gained political traction from small software companies, computer professionals, academics, and SME organizations. The visible role of Microsoft and its allies engendered scepticism among members of the European Parliament, especially at a time when DG Competition was engaged in litigation against Microsoft.

The struggle was easily seen as a grass-roots battle against multinational corporate and legal interests, especially established US firms that might use software patents to extend their market dominance. The debate cut across party lines in the European Parliament, but the much-amended directive that came out of its first reading virtually reversed the thrust of the original draft to drastically limit patentability. Yet, national governments within the Council of Ministers appeared to favour software patents, and the revisions they offered were insignificant departures from the original proposal. In July 2005, making use of its veto power, the European Parliament rejected the directive on its second reading at the outset by an extraordinarily lop-sided 648 to 14.^{xiv} This debacle of constitutional proportions means it unlikely that the issue will be revisited directly anytime in the near future, at least in the EU context. However, in the international context, EPO President Alison Brimelow resurrected the matter in 2008 by asking the EPO's Enlarged Board of Appeals to resolve four questions on which conflicting views were attributed to different Board of Appeals decisions. The referral framed the debate in narrow legal terms rather than economic or policy terms, thus making the issue more manageable while keeping it divorced from the democratic processes of the EU.

The EPOrg has been preoccupied with internal issues, especially the rapidly increasing backlog of patent applications against a history of pendency substantially longer than in the US . The Administrative Council of the EPOrg endorsed a five point strategy in December 2007 to reduce the backlog, namely: 1) 'raising the bar' (granting patents only when there is sufficient inventive

merit); 2) utilising work done by other patent offices in Europe and elsewhere; 3) building a European patent network for a tight cooperation between national patent offices and the EPO; 4) improving the efficiency of the process; and 5) a review of the governance and finance of the EPO.

5. Patent reform in the US

Patent reform has been a recurrent issue in the US. From time to time, patents have been viewed with great suspicion as tools of cartels and dominant firms – as in Europe. Recently, attention has been drawn to the behaviour of 19th Century patent “sharks” that travelled the country shaking down farmers who happened to be using infringing ploughs (Magliocca 2007). However, there is also a strong positive mythology in the US surrounding patents that harkens back to Thomas Edison and the “Golden Age of Invention”. And even today, there is a sizeable community of independent inventors who speak emotionally against reform.

Any discussion of patent reform in the US logically begins with the creation of the Federal Circuit court in 1980. In the 1970s, differences in treatment of patents by the regional appellate courts were argued as a reason to create a common court of appeals for patent cases, an argument for integration and legal certainty that foreshadows the current push in Europe for a common patent court system. Although the official rationale for a single patent appeals court was consistency, a number of judges were patent lawyers, some of whom believed that they were implicitly charged with restoring US competitiveness through reinvigorating the patent system. This conviction led to decisions that made patents easier to get and enforce, and harder to invalidate, giving the court a “pro-patent” reputation that eventually led to ‘corrections’ by the Supreme Court.

While the Federal Circuit regularized and expanded the reach of patent law during the 1980s and 1990s, US policy otherwise focused on globalization. This took two principal forms: promotion of minimum standards via TRIPs and harmonization of US law in favour of the European norms (first-to-file, pre-grant publication, post-grant review, and prior user rights). Since the latter required changes in US Law, an Advisory Commission on Patent Law Reform was set up in 1991. Its 1992 report reached the conclusions it was designed to reach in perfunctory legalistic manner (including summarily dismissing complaints about software patents, an issue that drew an unexpected and unwanted amount of attention). The report did set the stage for a drawn-out effort for long and contentious public debate, punctuated by claims that the proposed reforms were a giveaway to foreign interests.

This debate eventually culminated in the “American Inventors Protection Act of 1999,” passed as a small part of an omnibus budget reconciliation bill,^{xv} a tactic used to get difficult legislation through the US Congress. But the Act accomplished very little of substance. It did manage to inaugurate early publication but only if the patent applicant retained the option to file abroad where early publication was already the rule. Prior user rights were introduced but limited to business methods, a last-minute manoeuvre that preserved the framework for prior user rights but only for subject matter that the Federal Circuit in the *State Street* decision had just concluded did not exist as a category. Thus, the discredited category of business methods was resurrected because it could be argued that firms that had practiced business methods as trade secrets were blindsided by *State Street*.

Another ambiguous achievement of the Act was to upgrade the Assistant Secretary of Commerce and Commissioner of Patents and Trademarks to the status of Undersecretary of Commerce for Intellectual Property, with the requirement that he or she have “a professional background and experience in patent or trademark law.” In practice, this meant someone closely aligned with the interests of the patent bar.

This long, laborious, and often emotional course of patent reform in 1990s with very limited results did not bode well for future legislative reform in the US. Indeed, the 1999 Act remains the last significant patent legislation despite a growing and increasingly public perception that the US patent system has become dysfunctional, at least in some sectors.

A renewed clamour for reform came from a long and intense series of hearings held by the Federal Trade Commission (FTC) and the Department of Justice in 2002, which led to a landmark FTC report in October 2003.^{xvi} The hearings did not address USPTO operations but rather the functioning of patents in the marketplace, a subject that the USPTO had no competence to address. The hearings revealed for the first time a remarkable scope of discontent with the functioning of the patent system in the ICT sector, especially in the area of software and Internet applications.

Much more so than in Europe, the US debate over reform is often framed as a problem of *quality*, reflecting a growing sentiment that the patent system is in some sense “out of control” or “broken” (Jaffe and Lerner 2004). This is contested by the patent bar, independent inventors, and the industries where it has worked best, such as pharmaceuticals. While there is now a reasonably broad consensus that there is a quality problem, none exists as to the nature or source of the problem, or how to deal with it.

One of the main aspects focused on is the quality of the USPTO’s work, and its problem of backlog (1.2 million applications at the time of writing). In the past, the USPTO has been shown to grant patents more liberally than the EPO and the Japanese Patent Office (Jensen, Palangkaraya and Webster, 2006). However, it has recently emphasized a commitment to quality over quantity. There has been much interest in experimenting with allowing applicants to choose among different processes, ranging from expedited peer review to deferred examination. On the other hand, modest USPTO efforts to rein in continuation practice or constrain the number of claims have faced determined opposition from the patent bar (Lemley and Moore 2004). Now that the US Congress no longer diverts patent fees to other government purposes, the question of what is needed and how the examination process should be reengineered can be addressed more directly. In fact, the office’s figures now show a decline in the grant rate from 70% in 2000 to 44% in 2008, with an especially steep decline in the last few years.

The significant reforms since 1999 have come from a series of Supreme Court decisions reversing Federal Circuit jurisprudence that had made patents easier to get, more powerful, and more difficult to challenge. First, in *eBay v. MercExchange* (2006), the Court abolished the Federal Circuit’s presumption of automatic injunctive relief, subjecting successful patent plaintiffs to the same equitable standards that apply in other cases.⁷ In *Medimmune v. Genentech* (2007), the Court made it possible for licensees to sue for declaratory judgment on invalidity.⁸ In *KSR v. Teleflex* (2007), the Court significantly raised the standard of non-obviousness (inventive step) from that applied by

⁷ See *eBay Inc v. MercExchange, L.L.C.*, 547 U.S. 388 (2006). Referred to as “*eBay v. MercExchange*”.

⁸ See *MedImmune, Inc. v. Genentech, Inc.*, 549 U.S. 118 (2007). Referred to as “*Medimmune v. Genentech*”.

the Federal Circuit.⁹ In *Quanta v. LG* (2008), the Court strengthened the exhaustion doctrine, precluding patent holders that have licensed rights to component manufacturers from requiring new licenses from downstream component assemblers.¹⁰ The Court has also shown an interest in patent-eligible subject matter, which it has not addressed since *Diamond v. Diehr* in 1981.¹¹ However, in a rare reversal of its own decision to review a case, the Court declined to decide *Labcorp v. Metabolite* (2006), a case involving diagnostic information.¹² It is likely that the Court will do so when a more suitable case comes along. Perhaps anticipating this, the Federal Circuit decided in *In re Bilski* (2008) to abandon the permissive standard of its *State Street* decision in favour of earlier Supreme Court language requiring a process to either transform material or be tied to a particular machine.^{xvii} *Bilski* involved a pure business method without a computer, so it posed but did not answer the question of whether pure software is patentable where it is implemented only on a general purpose computer. If the Federal Circuit addresses the other prong of the test in the same spirit (as the PTO's internal appeals board has), it could move the US back toward the European standard for computer programs, perhaps to an even more restrictive standard.

These judicial decisions effected reforms on issues too controversial for legislative consideration. In all of these high-profile cases, patent lawyers, represented by the American Intellectual Property Law Association, consistently filed amicus briefs on the side of the patent holder (applicant in the case of *Bilski*). The Supreme Court's newfound willingness to reverse the case law of the Federal Circuit illustrates the dangers of specialized courts where key judges are likely to be drawn from a professional corps interested in expanding the legal and economic scope of its activities – with important lessons for European efforts underway to establish a system of patent courts.

Within the current reform legislation, the single most contentious issue of is “apportionment of damages” – language that would limit damages to the contribution made by the patented technology in relation to the product as a whole. At present, damages are governed by an unwieldy 15-factor test that can mean unpredictable results. This apportionment provision is a high priority for the ICT sector, but is resisted by others who believe that it would devalue patents, especially where the value of the invention lies in combining known elements.

Another controversial issue in the US reform legislation is the form of administrative review. The present bill in the House of the Representatives provides for a post-grant review similar to the available within twelve months after the patent is published. However, the bill also expands the scope of *inter partes* re-examination and limits the estoppel effect. There are no time limits for re-examination, so this option is likely to be of interest in the ICT sector where little attention is paid to the very high volume of patents they issue. While post-grant review may be seen as an extension of the examination process designed to improve patent quality, both forms of re-examination serve as more limited alternatives to litigation, which is extremely costly in the US.^{xviii}

One interesting provision of the reform legislation, now dropped, would have allowed the USPTO to engage in substantive rule-making – that is, to issue regulations interpreting the substance of patent law, subject to judicial review. As complex as the patent system and patent practice have grown, it would seem reasonable for the USPTO to have broader regulatory responsibilities. The

⁹ See *KSR Int'l Co. v. Teleflex Inc.*, 550 U.S. 398 (2007). Referred to as “KSR v. Teleflex”.

¹⁰ See *Quanta Computer, Inc. v. LG Electronics, Inc.*, 553 U.S. ____ (2008). Referred to as “Quanta v. LG”.

¹¹ See *Diamond v. Diehr*, 450 U.S. 175 (1981).

¹² See *Lab. Corp. of Am. Holdings v. Metabolite Labs., Inc.*, 546 U.S. 1166 (2006). Referred to as “Labcorp v. Metabolite”.

office recently created an economist position, albeit five years after the EPO provided for a chief economist. It is becoming increasingly difficult for US Congress to manage patent reform on its own as unresolved issues and tensions among stakeholders continue to mount. The alternative is to leave patent policy to the courts, and there are many who feel that the courts, especially with the Supreme Court now keeping a close watch on the Federal Circuit, are the best vehicle for developing coherent policy in an increasingly diverse environment (Burk and Lemley 2009).

6. Conclusion: Challenges for Europe and the US

The trajectory, politics, and content of the patent reform agendas in the US and Europe have been different – although by no means conflicting. In Europe, there is a driving desire to integrate the national, regional and supranational systems in the interests of simplification, consistency, and efficiency. There are also unresolved substantive issues in Europe, particularly about the proper scope of the system and about patent quality and backlog. These are not easy to deal with in Europe's complex supranational and international decision processes. By contrast, structural reform is not an issue in the US where both the USPTO and Federal Circuit operate as integrated national institutions. Instead, there is vigorous debate over reform driven by difference in stakeholder perspectives in both the US Congress and courts.

Greater challenges lie ahead for both sets of patent systems. In many respects, the system has become a victim of enjoying success on its own terms; and buckling under its own weight. This seems especially the case in the US, where patents have been feted as the crown jewels of the intangible economy. Consequently, in its effort to integrate and simplify, Europe now finds itself torn between emulation of the US system: on one hand there is generalized admiration for their track record on innovation; on the other hand there is a questioning of the excesses that spurred US Supreme Court interventions and corrections.

Europe and the US alike face the problem of what the EPO calls “global patent warming” – the great difficulty of realizing quality in examining a growing number of applications. This phenomenon is driven in part by the simple arithmetic of globalization. As trade grows and supply chains and markets globalise, patent systems remain territorial in nature and effect, so similar patent applications are examined and processed many times over. But there also common concerns about the ability of bureaucracies to maintain high expectations of “quality” and about whether the requisite inventive step is high enough in different fields. These problems draw attention because the numbers are so conspicuous for both backlog volume and processing time. The recent US interest in experimenting with allowing applicants to choose among different processes, ranging from expedited peer review (already implemented on an experimental basis in some fields) to deferred examination (as in Japan), might be one possible venue to address the problem. There is a common interest in sharing workload among patent offices, although an amendment to the US Senate reform bill effectively forbids this by requiring search and examination to be performed within the US by federal employees. For both the European and US patent agencies, the challenge remains that of balancing quality against quantity, in a context where the number of applications from China, India, and elsewhere is expected to grow exponentially over coming years.

Reform has become extremely contentious. Grand reform plans are difficult to frame, let alone to enforce. So reforms are ‘muddling through’ in the European and US patent systems. In Europe, the possibility of a future community patent is politically offered as an alternative to the “European

patent” and national patents currently available. This third option makes the system more complex in the short-term, but with the hope that it will prove the most attractive in the long-term.

Certainly, a remarkable shift away from the “more is better” mantra (that prevailed especially in the 1990s) towards a focus on quality and on the functioning of both patent systems is taking place. While there is widespread concern about patent quality within industry,^{xix} the focus on practical effects reveals the likelihood of two distinct behavioural equilibria: one centred in pharma, where knowledge flows and patent awareness are aligned; and another centred in IT, software in particular, where engineers work from tacit knowledge without reference to patents. These divergent practices might suggest that the nominally unitary system is breaking apart from the inside – and help explain why legislative reform may be very difficult to achieve with the systems structured as they currently are. While it has long been understood that the value of patent information varies considerably among industries (Arundel 2001), recent research points to the cost burden imposed by the failure of the disclosure function in the US. Some of the failure can be attributed to the notorious indeterminacy of claims interpretation, as seen in the frequency that District Court interpretations are overruled by the Federal Circuit (Moore 2005), a problem that is exacerbated by the abstract language of software and business methods (Bessen and Meurer 2008). But it is also a consequence of the extreme functional complexity of IT products, and too many patents of poor or uncertain quality.

At a deeper level, both sides of the Atlantic continue to share a disconnection between the socio-economic goals of the patent system and the legal dimension of patents and its institutions. In both cases, there is a remarkable dearth of data on the use and abuse of patents (Guellec and van Pottelsberghe 2007) as well as on the problem of social legitimacy (Borrás 2006). Instead, patent policy is tethered to case law that is necessarily fact-specific and therefore anecdotal. Fortunately, attention within the academic community is starting to influence the political agenda, such as the recognition of role of patent portfolios (Wagner and Parchomovsky 2005). This shift toward empiricism (and, it is hoped toward evidence-based policy development) is accelerated by the differences in industry perspective, which help illuminate many of the problems of patent practice. In this respect, the EPO has led the way in developing relations with academic researchers, hiring a chief economist, and thinking proactively and creatively about economic and political futures (*Scenarios for the Future*). While the USPTO remains relatively insular and unengaged with scholarship, the law and economics movement in the US has oriented a number of prominent legal scholars towards empirical research and economic analysis.

One way or another, meaningful patent reform in Europe and the US alike will likely depend on a better understanding of the patent system based on solid economic analysis. At a time when patent markets remain rudimentary, private, and no more regulated than credit default swaps, we have little insight into the scale, scope, and nature of patent licensing and how it plays out in markets for products and services. Indeed, we are only just emerging from era in which patents have been sold to policymakers and businesses as the intangible equivalent to real property – as the bedrock on which innovation and economic growth take place. But the more we understand of the increasingly differentiated and complex ecology of innovation, the more we will need to understand patents as tools that can be used in a growing diversity of ways to serve private interests, whether they promote or retard innovation.

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ⁱ Although there are exceptions, the principle of “non-discrimination” among technologies was embedded in Article 27(1) of TRIPs in between trade policy principles concerning the country of invention and local working of the invention. This provision does not appear in national patent laws or the original EPC but was sought by both the US and Europe for their powerful pharmaceutical interests, who wanted assurance that product patents on drugs would be universally available (Sell, 2003).

ⁱⁱ For a sense of the patent community resistance to economic analysis, see *AIPLA Response to the FTC Report* (AIPLA, 2004) vehemently opposing use of economic learning; available at http://www.aipla.org/Content/ContentGroups/Issues_and_Advocacy/Comments2/Patent_and_Trademark_Office/2004/ResponseToFTC.pdf

ⁱⁱⁱ Convention on the Grant of European Patents, Munich, October 5, 1973 (EPC).

^{iv} Convention for the European Patent for the Common Market, Luxembourg, December 15, 1975 as amended by the Luxembourg Conferences of 1985 and 1989 (CPC).

^v Strasbourg November 27, 1963, effective as of August 1, 1980. For an introduction see Paterson, 2001; Singer and Stauder, 2003.

^{vi} European Commission (1997): Commission’s Green Paper on the Community Patent and patent system in Europe: Promoting innovation through patents” Com (1997) 314, Brussels.

^{vii} European Commission (2000): Proposal for a Council regulation on the Community Patent, Com (2000) 412 final.

^{viii} The signatory states dispense from translation to their national language the description of the European patent. Each country prescribes which of the three working languages of the EPO shall be valid in their country (for example, the prescribed language for European patents in Denmark, as decided by Denmark itself, is English).

^{ix} “Enhancing the patent system in Europe” Communication from the Commission to the European Parliament and the Council. Com (2007) 165 final. Brussels, 3.4.2007.

^x Council of the European Union: Progress report about “Enhancing the patent system in Europe” from the Slovenian Presidency to the Competitiveness Council 22. May 2008. Nr. Document 9473/08.

^{xi} European Commission (2009): “Recommendation from the Commission to the Council to authorise the Commission to open negotiations for the adoption of an Agreement creating a Unified Patent Litigation System”. SEC (2009) 330 final. See http://ec.europa.eu/internal_market/indprop/docs/patent/recommendation_sec09-330_en.pdf.

^{xii} Directive 98/44/EC, OJ L 213, 30/07/1998, pp. 13-2.1.

^{xiii} Commission of the European Union: Proposal for a directive on the patentability of computer-implemented inventions. Com (2002) 92 final. Brussels 20.02.2002.

^{xiv} <http://www.heise.de/english/newsticker/news/61487>.

^{xv} Public Law 106-113.

^{xvi} “To Promote Innovation: The Proper Balance of Competition and Patent Law and Policy”

A Report by the Federal Trade Commission, October 2003; <http://www.ftc.gov/opa/2003/10/cpreport.shtm>.

^{xvii} <http://www.cafc.uscourts.gov/opinions/07-1130.pdf>.

^{xviii} The 2007 AIPLA survey shows median costs (inclusive of witness fees, court costs, appeals, etc.) in terms of the amount in controversy. When the amount is over \$25 million, the median is \$5 million per side; when \$1-25 million, it is \$2.5 million; when under \$1 million, it is \$600 thousand per side. AIPLA Report of the Economy Survey 2007, I-90-93. Thus, small cases are simply not worth litigating. The CJA Associates study of patent litigation insurance prepared for the Europe Commission shows costs to be an order of magnitude lower, even in high-cost countries such as the U.K. and Germany; see Appendix 3 at page 46,

http://ec.europa.eu/internal_market/indprop/docs/patent/studies/pli_appendices_en.pdf.

^{xix} A 2005 study commissioned the Intellectual Property Owners Association (IPO) showed nearly as much concern about quality in chemicals/pharmaceuticals/biotech as in IT. See

http://www.ipo.org/AM/Template.cfm?Section=General_Publications&Template=/CM/ContentDisplay.cfm&ContentID=3461.