



*A Patently Political Dispute:
Software Patents in the
European Community*

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A PATENTLY POLITICAL DISPUTE: SOFTWARE PATENTS IN THE EUROPEAN COMMUNITY

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Abstract

This paper is a study of a changing political economy of communication. It presents some examples of political and economic pressures on the members of the European Parliament to extend a US-style software patent regime into the European Union. Two case studies are presented to illustrate the proposed changes to Europe's existing legal frameworks, and how stakeholders are engaging with the proposed reforms. The Computer Implemented Invention Directive ("CII Directive") and the European Patent Litigation Agreement ("EPLA") are two reformist proposals to create a Community Patent system that accommodates computer software. The proposals received significant attention from software industry lobbyists, free and open source software developers, small and medium sized enterprises, and civil society groups. The paper evaluates the significance of these intellectual property rights reforms for Europe's standing in the balance of international trade in software.

INTRODUCTION: INTELLECTUAL PROPERTY RIGHTS AND TRADE POLICY

In modern economic systems, monopolists typically require special dispensation from regulators and trade authorities in order to exert total controls on trade in a market. Because trade in intellectual property (especially patents, copyright, and trademarks) operates with unusual characteristics, the politics of trade and intellectual property rights presents a special case for researchers. Because communication per se does not create an exhaustible good, ideas and their technical expressions as innovations cannot be used up, even if the entire world makes use of those innovations. Moreover, it is difficult to exclude anyone in the world from partaking of new ideas. Thus, without imposing a scheme for restricting access to knowledge – and communication- based innovations, and imposing scarcity, the “products” of the intellect cannot be commercialized in ways that are typical for other products.

Patents create a temporary monopoly for a private (or public) patent-holder in an area of scientific or technical knowledge. On the other hand, patents also create scarcity for non-patent holders. Changes in patent laws change the relative trade advantages and power relationships, disrupting existing power structures and political and economic relationships. The extension of monopoly controls into a new zone of economic activity, especially international trade in computer software, is the subject matter of this paper. The state sanctioning of scarcity in software-based industries re-creates a political economy of communication. Patent reforms would restructure the production of knowledge and information organized in, and through, software. The stakeholders include the major software producers (or vendors) in Europe and globally, smaller and medium sized software their users (consumers), and the public, whose interests have been represented, by national governments, the European Union, and civil-society based groups, variously.

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Software patents are a relatively new category of financial and economic asset, and their emergence into the European Community's economic system has been a source of political conflict and legal uncertainty. It may well be the case that, for Europe and the world, software "code is law" in cyberspace (Lessig 2000). In social space, IPR laws that are indeterminate and unclear create new risks or business uncertainties that could impact the development of new software applications and environments. Because software business models are both commercial and non-commercial, patents do not serve the same interests of both kinds of firm. Yet, for a creative industry that expends billions of euros for talent to create new ideas and inventions in the process of research and development, the law can expand or constrict the scope and value of existing and potential software markets. In this way, IPRs can constrain or expand some of the potential industrial formats and social uses of software code.

Corporate advocates for a harmonized software patent system for the EC, such as Siemens and Nokia (Sliva 2005) and the Business Software Alliance (Software patents 2005), have presented a case for seeking improved innovation, which leads to competitive advantages in software investment and trade. Opponents see risks of higher barriers to entry within the existing European software market, new opportunities for anti-competitive behavior by US based transnationals, and new weapons that can be used against FOSS.

The commercial software sector sees growing financial stakes in the game. The EU creates approximately 20 percent of global ICT production, about the same as Japan, and behind the US, which creates about 30 percent of global ICT production ("Shaping Europe's Future" 2006, 16).

The European software market generated total revenues of \$52.7 billion in 2005, this represented a compound annual growth rate (CAGR) of 3.9% for the five-year period spanning 2001-2005. In comparison, the Asia-Pacific market recorded a CAGR of 9.4% for same period. This pushed the market to a value of \$20.4 billion in 2005 (Europe – Software 2005).

As the market for software expands¹, the financial stakes grow for intellectual property rights ("IPR") holders in the software industry to maintain or improve their positions. Software firms tend to measure their intellectual assets, and markets tend to value these assets, by the content of IPR in their portfolios. IPR portfolios themselves are the bulk of value in most media and software industries, rather than hard assets (such as plant and warehouses). These portfolios, increasingly, are populated with patents alongside copyrights.

Although hypothesis – testing is out of scope for this paper, a working hypothesis is that software patent reformers hope to improve the internal market power of EC based software companies, to help recapture the regional market from US firms, and consolidate the region's market structure into an oligopoly of regional champions that can begin an export-led growth spurt for the sector. Europe has 34 percent of the global market for software, whereas Asia-Pacific has 13 percent, and the US has 48 percent ("Europe – Software," 2005). Of the four largest players in the European software market, only one (SAP) is European ("Europe – Software" 2005). The "packaged software market is dominated by US companies such as Microsoft, Oracle, Adobe, IBM and Sun" ("Shaping Europe's Future" 2006, 19). Ted Olson, former US Solicitor General, attributes US advantages in technology commercialization and trade to its patent system: "The patent system is the foundation for the United States' global leadership position in technological development" (in Waldmeir 2006, 11).

"In 2000, European leaders meeting in Lisbon declared that by 2010 Europe should have the world's leading knowledge-based economy" (Wild 2005, 31). Promoters of this growth-oriented vision for the software industry have appealed principally to regional patent law harmonization as a means to the end of stimulating high-tech trade, investment, and research and development. Whether or not there is a demonstrable correlation between improved innovation in software and the extension of patentability of software, or between patentability and enhanced competitiveness, are propositions that remain in dispute. Some reformers hope that failed IPR reforms contribute to the so-called "Eurosclerosis" in IT that inhibits a broad-based tech boom throughout the region.

Two case studies presented in this paper illustrate the dynamics of software trade policy (1) the European patent litigation agreement (“EPLA”), a treaty project that aims to create a European Patent court between signatories of the 31 countries of the European Patent Convention (“EPC”), and (2), the struggle over the adoption the so-called “computer-implemented invention” (“CII”) clause by the European Parliament’s Council of Ministers to key EC trade agreements. EPLA and CII were both efforts that failed in 2005 – 2006 to substitute a harmonized, regional patents regime covering software for the patchwork of 25 national-level patent regimes that exists today (Europe struggles 2005).²

The significance of software patent reform for the EC ripples far beyond the regional software sector. Firms and other organizations that rely on software as part of their revenue model also develop dependencies upon the software industry. Software is not just an industry standing alone, but has important cross-ownership and other linkages with hardware, digital media, information services, financial and business services, and many other knowledge-based industries. The Internet’s dependency on standardized formats and interoperable software infrastructures, flexibility for media delivery, and global scope, contribute to the factors that create network effects. Resolving many software patent disputes over technologies with a larger user base “amplifies” network effects (“The patentability” 2002, 22). On the Internet, a legalized monopoly market power over a software innovation or business model can embolden anti-competitive business strategies in software and in a number of non-software industries, including media and information services, while simultaneously reducing a firm’s exposure to regulatory oversight.

LAWS GOVERNING SOFTWARE PATENTABILITY IN EUROPE

An admixture of national and multilateral laws for patent protection and dispute resolution in the computer software industry creates high transaction costs for processing patent applications and litigating patent related disputes. Sorting out these relationships is a complex interpretive task for the crafters of EC jurisprudence and trade policy, and for software researchers. Imagining for a moment

Europe’s individual countries’ legal systems as a map, a contiguous “layer” on top is demarcated by political boundaries. There is also second layer above the first, which represents regional agreements. The EU framework creates a third legal overlay, on top of existing regional and national IPR systems. The European Commission adjudicates disputes arising from the substance or procedures of the region, including patent systems. National-level courts still have the authority to adjudicate IPR disputes, including the authority to reject a specific EPO decision. In other words, EPO case law on software patents is not binding, according to European Commission (FFII n.d.).

The Technical Board of Appeal of the EPO made an early claim to a technical effect or process in software in 1986³, and since then, both practice and case law have allowed the limited patentability of so-called “computer implemented inventions” that involve a technical effect (Guadamuz 2006, 4). Competing definitions of “technical contribution” of a software innovation yield different numbers of patentable applications (Guadamuz 2006, 7). As Tobias Buck says in a *Financial Times* article on December 6, 2006, “In order to settle a legal disagreement over patents, parties are currently forced to obtain separate rulings in the different member states – a costly and time-consuming exercise” (Buck 2006). Despite the EPO clearinghouse process, national sovereignty over patent cases is preserved in the current scheme. The EPO confers to owners national level patent protections for all of the countries under the treaty. National courts of contracting states decide infringement issues, and even though an independent Board of Appeal adjudicates disputes, inconsistent treatments can follow across countries (“The patentability” 2002). The EPLA was designed to overcome these country-by-country uncertainties.

As it happens, classification of software code as being within or outside the scope of patentability is a complex task, for any IPR regime. Generally speaking, patent offices have to decide on the basis of comparisons whether or not software code is too abstract or sufficiently concrete, less general or more specific, and “pure” software or a software/hardware mix (Tamai 1998, 256). In Japan, Europe, US, and Japan, patent claims related to software tend to fare

better with patent offices for inventions with closer links to concrete hardware, and most especially software that is built into hardware apparatuses (Tamai 1998, 257). Free-standing algorithms fare poorly. Critics of software and business method patents note that the larger quantity of granted patents has reduced the overall quality of patents. In Europe, on the whole, “the vast majority of software patent applications proceed through the EPO without objection.... Patent protection for software of widely differing types is being routinely obtained. The applications rejected on appeal are the exception rather than the rule,” and as of 2001, the EPO had granted an estimated 15,000 patents to software (Beresford 2001, 254). That number had grown to 30,000 by 2005 (Software 2005).

Global trade law does not create any obligations for software patentability in the EC that would help resolve the current state of affairs in Europe. The EC is a World Trade Organization (“WTO”) member, and thereby committed to the WTO rules on intellectual property (Trade-Related aspects of Intellectual Property rights, or “TRIPS”) Article 27(1), which makes patents available for inventions from all fields of technology, as long as the inventions are new, involve an innovative step, and are capable of industrial application (“The patentability” 2002, 13). But TRIPS provides little guidance, as it provides no legal definition of “invention,” software is not specified, and business methods are not considered to be a field of technology (“The patentability” 2002, 13).

PROMOTING EU MARKET POWER THROUGH THE EPLA AND CII DIRECTIVE

The European Parliament has decided so far that IPR reforms would not decisively promote EU market power in global markets for software. In 2006, the Parliament of the European Community ended a contentious round of lobbying and debates about whether or not Community member patent offices and courts should explicitly authorize and grant patent protection to computer software, in the face of a *de facto* software patent granting practice of the European Patent Office.⁴ The CII Directive initiative failed with much fanfare from smaller software developers, who opposed new hurdles that a patent regime would impose on them.

IPR regimes for media, information, and software range from minimalist to maximalist. Minimalist IPR policy provides for exceptions to private ownership rights in cases such as FOSS, interoperability, open standards, broader consumer rights, stronger antitrust regulation, and fair use of media and software. IPR maximalists advocate for stronger, harmonized, enforceable, and more global protections for the legal owners of proprietary software and media formats, and proffer criminal sanctions for IP infringers. The US and Japan serve as models of IPR maximalism, whereas Europe on the national level and as a Community has exhibited minimalist tendencies, especially in Scandinavian countries. For example, Europe considers the production of interoperable software code to be a pro-competitive business activity, and permits reverse engineering to facilitate interoperability (“The patentability” 2002, 7; Samuelson 2003), whereas this is not the case in the US and Japan.

During the 1970s, when personal computers and home networking were not even nascent technology practices, software development was a business activity dominated by large corporations and large government agencies. The US developed a commercial software sector around mainframes and mini-mainframes, with a standardized set of products, and moreover, a “culture of software” (Carmel 1997). The large national market in the US facilitated both the economies of scale in the market, and the interconnected reservoirs of local knowledge and sociality to promote the software culture.

“Europe was quite different. It was a heterogeneous collection of small markets, each with very specific ways of doing business” (Cane 1992, 1726). Software was built based on the demands of individual customers, so that very every installation was a custom job. Language differences and tariff and non-tariff barriers to trade excluded many international players from national markets. The computing services industry in Europe comprised a large number of small, aggressively entrepreneurial companies, and the largest company could claim only a five percent share of the European market. Only a small number of European software companies broke into the US market for mainframe and mini-mainframe software.

Between the 1970s and the 1990s, when European industry transnationalized, personal computers, private data networks, and the Internet dominated the technological demands for software. During the same period, European software sector consolidated, with intense pressure on smaller firms (Cane 1992, 1727). Today, the software industry consolidation in Europe is incomplete, but proceeding rapidly (Geall et al., 2006). European software companies still tend to focus on markets of corporate clients with large expenditures, and tend to develop customized (or “bespoke”), enterprise-class products that run on proprietary platforms, rather than standardized packaged products.

Vertical integration is not yet a feature of the European software producers, but arguably would be accelerated through software patent harmonization, because the advantages of a market power of a regional monopoly on a new innovation—particularly a new standard—can be compounded, and expenses recouped, through every link in the value chain of a vertically integrated firm. Demands for standardization and interoperability are growing, but only a small number of European companies provide enterprise applications for each layer of the software “stack” (Geall, et al. 2006, 5), and the software-saturated “information technology services sector” in Europe “remains highly fragmented” with the largest market share per firm at 7.2 percent, going to IBM (Geall, et al. 2006, 6). IPR reformers would like to see stronger EU vendors of operating systems and applications at all layers of the stack, and the slogan of a “European technology platform” (“Overview” 2006) rhetorically unifies software integration with economic integration strategies.

Established EU trade policy promotes research and development (“R&D”) activities in software, as a means of stimulating innovation and promoting a common internal market. Europe’s 18 percent of total R&D expenditures for ICTs is below the US’s 54 percent, and Japan’s 23 percent (“Coordination” 2005, 4). The EU is creating investment programs and business environments conducive to the private sector development of “European technology platforms” (“Overview” 2006), many of which make use of FOSS.

SITES OF UNCERTAINTY:

SOFTWARE AS SPEECH, SOFTWARE AS TOOL

The main problem for the IPR reformers, and the crux of their reformist position, is that software “as such”⁵ is still not patentable, according to Article 52, section 3 of the 1973 European Patent Convention (FFII n.d.). Software vendors in the EC can make *de facto* patent claims at national and EPO levels, but still not enjoy *de jure* protections regionally to press or defend patent claims. The world’s largest software exporters and for intellectual property rights lobbyists are seeking to overturn Article 52 to gain stronger protections for their products.

Copyright, which includes an “idea – expression dichotomy,” currently protects software world-wide. Patent law does not use the distinction between an idea and its expression as the basis of granting a claim (Guadamuz 2006, 3). Patents are not automatically granted for any inventions in any country, but instead, are approved by their respective national patent offices. The minimum requirements for modern patents are novelty, involvement of an inventive step from the “prior art” (or any existing techniques) to the invention, and industrial applicability (van Dijk and Duysters 1998, 937). If the software “invention produces a ‘useful, concrete and tangible’ result, there is no objection against patentability” (“The patentability” 2002, 13). Patent applications can fail each requirement; for example, the existence of a “prior art” disqualifies a novelty claim, the inventive step claim can be challenged, and an interpretation of “industry” can exclude many applications.

In the wake of EPLA and CII failures, “intellectual asset managers” see a European “patent crisis” in the making (Wild 2006, 31).

Since its introduction in February 2002 as legislation designed to harmonize Europe’s approach to the protection of computer implemented inventions, the CII Directive had sparked a debate of increasing ferocity – and no little animosity – between those who saw it as an essential exercise in clarifying practice and those who felt it would lead to a US-style system of software patents (Wild 2005, 31).

The CII Directive yielded no consensus on formally embracing software patents.

The uncertainty about the levels of available protections for software, vis-à-vis other industrial tools and instrumentation, derives in part from software's close contact with knowledge, language, and communication.

Is software an act of engineering or communication? If software is a rational endeavor, improving quality involves better and more resources: better management, better tools, more disciplined production, and more programmers. If software is a craft, improving quality involves the exact opposite: focusing on less hierarchy, better knowledge, more-skilled programmers, and greater development flexibility (Eischen, in Guadamuz 2006, 13).

Put differently, "Is there a fundamental difference between traditional nuts-and-bolts technology and software technology" ("The patentability" 2002, 5), and how should institutions of government learn better practices from any differences that do emerge?

With a minimalist style of IPR regime, European countries have, by in large, followed the software-as-craft model of governance. Computer software in Europe has been protected under copyright as "literary works" since 1991 and the adoption of the European Directive on the legal protection of computer programs ("The patentability" 2002, 7). The European Union of Crafts and Small and Medium-Sized Enterprises has lobbied against the reforms (Software patents 2005). But even within the tradecraft worldview, there are problems that emerge with the preservation of the legal fiction of software as a kind of literary work. Legal classification remains a significant problem, because a program's lines of code have a function that is independent of the grammatical construction of the code; because two programs can use different code to achieve the same functionality; and because a program's source and object code are linked but substantively different (Guadamuz 2006, 2). The difficulty with protecting both the "literal" and "non-literal" elements of software has created the perceived need for the patentability of software (Guadamuz 2006, 3).

Yet, software innovation in Europe has "thrived in absence of patent system" ("The patentability" 2002, 21). The members of the European Parliament have repeatedly addressed calls from large software companies to "harmonize up" to US standards, and solidify a regional patent system for computer software, responding to pressure from IT, media, and software industries. Also, in large part, the CII Directive and EPLA are appeals for a legitimation and sanction for authorizing the *de facto*, pan-European software patent system that is now growing through the patent-granting activities of the European Patent Office.

The copyright system for EC software protection is well-established and entrenched. Copyright in Europe for software has been harmonized through a European Council Directive on the Legal Protection of Computer Programs (Guadamuz 2006, 2, note 11). Individual countries also have enabling legislation for software copyright based on the Berne Convention for the Protection of Literary and Artistic Works. In European countries, copyright protections for software inhere upon creation, and therefore provide a cheap basis for any future legal claims made on IPR. Copyright adheres to machine-readable source code at the moment of its compilation, and protects the expression of the source code, but not the ideas behind the source code.

No public disclosure of source or object code is required for a software work to attain copyright. So, if a rival programmer can find an alternative coding technique to achieve the same objective and idea in an existing piece of software, then that programmer does not violate copyright in the new creation. The largest transnational software companies would prefer to own patent rights to software as well, that would permit them to restrict the functionality of software to competitors or would-be competitors. As debates rage about the thresholds for evaluating concreteness and tangibility of software patents, software producers in the EC continue to claim copyright protections for their products across the region.

THE EPLA, CII DIRECTIVE, AND THE COMMUNITY PATENT PROJECT

The EPLA would have provided a regional institution for adjudicating community patent disputes for

patents issued by the EPO, resolving the enforceability problem emerging from national case law.

The EPLA envisages the creation of a European Patent Court that would have exclusive jurisdiction to hear cases concerning actual or threatened infringements of European patents, and actions and counterclaims for the revocation of European patents, as long as the defendant were domiciled in a contracting state of the European Patent Convention. Any decision to revoke a European patent would be applicable in all contracting states to the EPLA, so making the European patent a unitary right in those countries that signed up to the Agreement (Wild 2005, 31).

The European Commission and certain European business groups, sponsored the community patent to make it cheaper and easier to establish and defend international patent cases. Paul Meller noted in an *International Herald Tribune* article on June 23, 2006 that:

the Commission had asked for a mandate to negotiate the EU's entry into the EPLA, which aims to establish a central European patent court and common rules for disputes in lower courts. However, the plan on [December 4, 2006] failed to secure backing from national governments, after several ministers called for the EU to pursue its own patent litigation regime (Meller 2006a).

As a result of this lack of consensus,

the EPLA has yet to be ratified by national governments. One of the biggest obstacles to this happening has been the European Commission, which is reluctant to endorse the plan, on the basis that it represents only a second best option to the Community patent and may, in any case, run contrary to EU law (Wild 2005, 31).

The breakdown of the EPLA negotiations helps preserve the status quo for software, which has never enjoyed patent protection in the EU. Charlie

McCreevy, Commissioner for the EC Internal Market, said, "The vote and the far-reaching debate which preceded it demonstrated that the time was not ripe for a meaningful piece of legislation to be adopted on this issue...As a consequence, the legal framework applicable to computer-implemented inventions in Europe remains Article 52 of the European Patent Convention, which excludes computer programs as such from patentability" (in FFII 2006). The CII Directive provided the language that would have made Article 52 compatible with software patents, by defining certain "computer implemented inventions" as patentable.

Supporters of software patents tend to be lawyers, established industry players, and government agencies. Their concerns include protection of development investment, equality with the US, and opening up of global markets. They have recommended harmonization of existing EPO practices and implementation of the EPLA (PbT Consultants 2000, 4). Supporters justify software patents with reference to improved competitiveness and innovation in global markets, primarily by arguing that the "information function" of the patent system may foster innovation ("The patentability" 2000, 21) by disclosing novel techniques and applications to the public.

The European Commission's antitrust department continues to press for implementing penalties in response to anticompetitive behaviors by Microsoft, which is the leading global software firm (Meller, 2006b). The proposed extension of software patents to companies doing business in the EU would give new advantages to large foreign vendors such as Microsoft. Arguably, Microsoft would enjoy more of a "home field advantage" vis-à-vis European regulators if it were to litigate software patents in the EU under community patents in an EPLA regime.

Intellectual property harmonization in the EU has advanced with copyright, but not with patents. The European Patent Convention is a treaty based organization that grants patents for inventions, under Article 52, susceptible of industrial application, new, and not obvious. Computer programs are excluded in subsection 2 ("The patentability" 2002). No harmonized European patent law exists, and national-level patent applications are still requested and often

granted. The European Patent Office, which was created in 1978 as part of the Munich European Patent Convention process, grants Union-wide patents for tradable goods and services (van Dijk and Duysters 1998, 938). However, the EC disputes the authority of the EPO to issue patents, on the basis that the EPO itself is not a member of the EC.

Business method patents are related to software, because a business method to accomplish something by a technical means using a “special device” is patentable in the EU. The special device can be a computer system programmed with software that contributes an inventive step (“The patentability” 2000, 11). Like other patent protections, the business method patent protections last 20 years (“The patentability” 2000, 11).

CRITIQUES OF SOFTWARE PATENTS

Among academic critiques of software patents are the studies that take a critical and suspicious attitude towards commodification of new software and media markets generally, insofar as these enable the globalization of the capitalist commodity form. Others doubt the ability of personal property rights based regime to respect or defend the “public goods” aspects of software or media, which include many non-economic values to society. A political economic approach to software, telecommunications and new media scrutinizes the restructuring of power relationships between citizens and consumers, the larger corporate power holders, and regulators that occurs with multilateral IPR reforms, and looks for alternatives (e.g. Mansell 2004).

Inside the EU bureaucracies, The European Parliament’s own research office claims that patent harmonization could be an unnecessary legal reform: “There are no factual data providing solid proof that software patents provide any benefits to society; neither is there firm evidence of the opposite” (“The patentability” 2002, 5). “Empirical data do not support any conclusions on the effects of changes to the patent system on innovation” (“The patentability” 2002, 17). Moreover, software patents can be used in a purely defensive or strategic fashion, to prevent their use by others (“The patentability” 2002, 22). Used defensively by monopolists, software patents

can present high barriers to entry by SMEs. Even frivolous claims are threats that can deter competitors, due to the high expense of patent litigation.

“Patent thickets” are employed to create anti-competitive barriers to entry, by creating a “dense undergrowth of interrelated patents that researchers have to navigate in order to develop new technologies” (Shapiro, in Guadamuz 2006, 12). “Patent thickets increase the cost of innovation; they encourage inefficiency through the creation of complex cross-licensing relations between companies and they may even stop newcomers entering the market if they fail to penetrate the thicket” (Shapiro, in Guadamuz 2006, 13). Anticompetitive patent “trolls” are firms that hide among patent-thickets of low quality IPR, and that prey on unwitting software vendors stumbling into their patent traps.⁶

Critics of software patents often claim that many patents are too obvious, that the level of disclosure is inadequate, that they are too often “strategic” and not real innovations, that they are often too broad, last too long, and that they tend to complicate copyright protections for software (Campbell-Kelly and Valduriez 2005, 250-251). In a European survey of software patentability by the European Commission in 2000,

those opposed to software patents claimed that software technology was sufficiently different to justify a different approach. Both the nature of the technology itself, for example, the incremental nature of the development process and the existence of a supposedly unique business model, i.e. open-source, were cited as key differentiators of the technology (PbT Consultants 2000, 4).

Software patents may impede innovation in certain cases. Patents grant monopolies in “core inventions” that are impossible to work around with a new design for code (“The patentability” 2002, 21), squelching add-on innovations. A patent holder can ask a higher price for a license, increasing the costs of innovations to potentially unaffordable levels. “Second inventors” must seek license to use their patented prior invention (“The patentability” 2002, 21). In cases where patents are not claimed, but available, a firm can publish its

underlying findings in order to remove patentability from would-be competitors (“The patentability” 2002, 21).

The prior art problem remains fundamental to quality control for software patents in the US (Woellert 2006). Likewise, with between 60 and 95 percent of software patents estimated to be invalid due to the existence of prior art, the EC market is “a software environment polluted by bad software patents that affect open source developers who do not have the resources to defend themselves against allegations of infringement and cannot attempt to declare the patents invalid” (Guadamuz 2006, 14).

Since a patent application and a patent challenge both rely on a demonstration of prior art, the industry and other industries that depend on software confront a massive knowledge management problem. No comprehensive database exists of code that falls “in” or “out” of IP protection (Poynder 2001), and although a FOSS “vault” exists for recording open-source innovations, patent officers in the US rarely or never use them (“Digital vault” 2006).

Programmers routinely design large and complex systems from scratch. They do so largely without reference to the patent literature (partly because they consider it deficient), although they generally respect copyright and trade secrecy constraints on their work. With tens of thousands of programmers writing code that could well infringe on hundreds of patents without their knowing it, there is an increased risk of inadvertent infringement. An added disincentive to searching the patent literature is the danger that learning about an existing patent would increase the risk of being found to be a wilful infringer. The patent literature may thus not be providing to the software world one of its traditional purposes – providing information about the evolving state of the art (National Research Council, in Kahin 2004, 58).

Software patent thickets can be unknown and undiscovered until it is too late for a firm, including a more vulnerable SME, to avoid one. Litigating patent infringement requires an expensive application

process, and defending a patent challenge likewise can create a substantial financial burden, even for a large player like IBM, which is fighting off Linux related patent disputes from SCO Group (Weiss 2006).

The open source segment in Europe is significant for its quality, wide diffusion, leveragability, and innovativeness. In the case of the operating systems based on Linux,

Scandinavian markets have been quick to embrace this platform, with the Norwegian, Swedish and Danish governments actively backing the use of open source software. Consumers in the UK, France and Germany remain cautious, with most opting to wait for further testing and improvements to storage and systems management before undertaking the large costs involved in migrating over to this platform (“Europe – Software” 2005).

Open source software distributors are alarmed that their non-commercial business model will not accommodate either the ownership of, or litigation against, software patents. Software patent lawsuits against open source developers is a long-awaited threat, finally arrived in SCO’s challenges, and in a suit against the Linux developer, Red Hat (Perens 2006). Otherwise, “the real enemy of open-source software -- and software innovation more generally - - is the abysmal implementation of software patents, not the concept” (Jaffe and Lerner, in Guadamuz 2006, 14). Moreover, copyright offers the basic IPR protections needed by FOSS users and distributors.

CONCLUSION

IPRs are negotiated by interest groups exerting economic, political, and cultural influence on decision-makers. Europe is wrangling with the social dimensions of the software patent problems that were flagged by researchers and software developers upon their creation in the early 1990s (Garfinkel, Stallman, and Kapor 1991; Samuelson 1990). The significance of the recent EPLA and CII Directives is that these reform initiatives failed, leaving Europe’s IPR regime in software resting to a larger degree on regional and global provisions of copyright law, and to a lesser

degree on nationally held patents. Reformists will worry that Europe's balance of trade in software will suffer, and FOSS activists will promote open standards, interoperability, and antitrust measures, and continue to root out "bad patents" (FFII 2005).

In the politics of commerce at the European Parliament, lobbyists for and against software patents combine formal briefings and reports with new social movement-styled political theatre. Raphael Minder, in a dispatch from Strasbourg in 2006, reported in the *Financial Times*,

While prime minister of France, more than a decade ago, Michel Rocard had to confront anti-nuclear activists trying to stop France from testing weapons in the Pacific. But even the veteran French politician, now a member of the European parliament, was surprised by the lobbying he witnessed last year after taking charge of reviewing plans for new European patent regime for software. During the European parliament's key voting session, a moat surrounding the Strasbourg assembly was the scene of an unlikely confrontation between anti-patent protesters in kayaks and patent directive supporters on a motorboat. "In all my years in the parliament, I had never seen lobbying like this, and certainly never seen it turn into a naval battle," said Mr. Rocard.

The adoption of theatrical new social movement – style politics around software patents has been a strategy adopted by FOSS activists to publicize and politicize an otherwise arcane aspect of commercial law. FOSS activism suggests another example of conflicts over corporate controls over knowledge based industries that have spilled over from state, corporate, and professional interest groups into broader swaths of civil society. FOSS activists such as the FFII demonstrated repeated successes in handling the Community Patent negotiations, and particularly the EPLA and CII Directive.

Several current software patent-related cases await resolution that could affect the pace of innovations and standard-setting for the next-generation of the Internet. The Internet Engineering Task Force

Working Group, which had been developing the "syslog" protocol, was confronted by an undisclosed software patent by one of its Working Group members, the Chinese company Huawei. This patent supposedly covers part of the work done by the standards group. Huawei proposes a royalty free license, but the working group remains unhappy, because the proposed license can be revoked at any time. The FFII compares the syslog case to the case of JPEG image compression, when the software patent owners went bankrupt, their assets and patents went to a new company, and the new company forced firms to pay for using an image format which had become the standard for every web site and digital camera (FFII 2006b).

As PTOs and the EPO change their function from patent application evaluation sites to patent approval clearinghouses, they shed many of their public interest responsibilities. The official scrutiny required for patent quality assurance, and for identifying antitrust implications, patent trolling, and other purely defensive manoeuvres, loses political support. At the same time, the repetitive pushes for maximalist IPR reforms in the EC illustrate a system-level impetus for expansion and consolidation of the software sector. Both trends mark a more aggressive EU trade policy in the ICT sectors, and could help clear the way for the emergence of an oligopoly of vertically integrated software powerhouses.

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- (2006), and Bostyn (2006). "There is no idea/expression dichotomy in patent law" (Guadamuz 2006, 3) as there is with copyright law.
5. The "as such" qualifier generates a tremendous legal literature about the boundaries between protected and unprotected code.
 6. SCO Group has been accused of patent trolling, with IBM's Linux projects as specific targets.

Notes

1. Software includes operating systems and applications. The patentability of business methods and the IPR status of databases are out of scope for this paper.
2. Significant business uncertainty prevails over the legal status of existing software patents. Currently, the European Patent Office ("EPO") processes patents for software on a de facto basis, but EPO patents have been rejected by case law judges.
3. A case called VICOM, T208/84 from 1986 serves as an important precedent (Guadamuz 2006, 4 note 30).
4. Patents protect the functional aspects of works by granting an exclusive or monopolistic right to the application. The exclusivity of rights is handled differently with copyright. Copyright protects original expressions, whereas patents protect the application of an idea to a problem. So, patents create monopolies over inventive ideas applied instrumentally to a problem, whereas copyrights allow for alternative expressions that serve the same instrumental purpose. See Guadamuz

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