

Source code and ownership

Software regulation in the US and the EU

1 Introduction¹

Given the OECD countries' ongoing transformation from industrial into knowledge based societies (Stehr 1994), software programmes play a crucial role. The development is only comparable to the emergence of the railway system for the 19th century's industrial upspring. While software engineering in itself results from an accelerating scientific progress, its implementation in industrial and cultural goods of all sorts impressively lowers production, transportation, and communication costs (Möller 2005). From mobile phones to washing machines and from business communication to spaceflight – our modern world is unimaginable without software applications. Hence, the definition of property rights in software sets the course for future technological, economical and social developments.

Comparing the US and the European approach towards intellectual property regulation in software programmes, fundamental differences seem to persist and even to increase. Software generally is patentable in the US, which means that its author or right holder is entitled to encompassing private property privileges, whereas in the EU, the copyright protection of computer programmes leaves a wide margin between private ownership and public domain.

These differences seem to fit in the analytic framework of diverging “social systems of innovation and production (SSIP)” (Amable 1999). Funding innovation by private venture capital, which may be regarded as a classical feature of the US market-based system, would require that intellectual assets can be transformed into merchantable commodities (Amable 2000; Hall/Soskice 2001; Drahos/Maher 2004: 6f). Public procurement policies, however, could serve as a substitute for market capitalisation in a European public SSIP (Amable 1999), and rather imply that software innovations are partially perceived as a common good. Nevertheless, the SSIP approach remains indifferent to the driving forces which sustain or impair the varieties of software regulation (Boyer 2005: 528). The article attempts to bridge this gap.

¹ The paper summarises initial findings of my ongoing dissertation project „Software Regulation in the EU“. As yet, empirical evidence is obtained by internet-based enquiries and personal talks during the WIPO SPLT Open Forum from March 1 to 3, 2006. I am deeply indebted to Dagmar Eberle, Lars Holtkamp, Susanne Lütz, Gerald Piuk and Dorothee Post for helpful comments and suggestions.

After a short comparative oversight about the juridical and economical background (2), I will argue that distinctive perceptions of property (3), varying actors' orientations (4) and diverging institutional opportunity structures (5) sustain the persisting differences. These factors have been proved to be useful independent variables in other studies of international political economy (Lenschow et al. 2005; Schirm 2005). Articulating their interests, actors both draw on given social norms and propose new interpretations (Halbert 1999: 2ff; Carruthers/Ariovich 2004: 34). Due to the prevailing balance of power, institutions reflect a compromise between their rivalling conceptions (Moe 2005). At the same time, the institutional setting in itself has a strong impact on the chances of success for challengers of the status quo (Mayntz/Scharpf 1995). The article concludes with some tentative remarks about possible future developments (6).

2 Juridical and economical background

The programming of a machine-readable command sequence (object code) in a language reasonably understandable for human programmers (source code) is a time consuming effort. But once uploaded on an internet server, computer programs may be duplicated and distributed at nearly zero cost. Virtually nobody can be excluded from using existing algorithms, and their utilisation by some applicants does not impede any other disposal. The non-exclusiveness and non-rivalry in use classifies software as a common good (Välimäki 2005: 53; Bakels 2005: 7). Though partially contested, these characteristics make most economists and jurists assume that legal instruments are needed to correct the conceivable market failures. They argue that free riding would lead to an under-provision, if the availability of software was not restricted by authors' and right holders' entitlements to collect license fees from their users. In this logic, intellectual property rights (IPR) prevent welfare losses inter al. in software development (Arkenbout et al. 2004).

Until the early 1980s, computer programs were protected by copyright both in the US and the EU (Graham/Mowery 2003: 224). But since the mid-1980s, the emerging US software industry has increasingly achieved patent protection for their inventions. In contrast to copyright, a patent specification is drawn up for a solution to a defined (technical) problem. That means that a patent holder disposes of a broad entitlement which prevents others from using similar approaches without his consent and remuneration by licence fees. At the same time, the US Patent and Trademark Office (USPTO) has lowered the threshold for granting these temporary monopolies, and both the USPTO and the US jurisdiction have extended the

patentable subject matter. Even programs for administrative and commercial purposes (business methods) are patentable in the US.

In the EU, patents are granted nationally or by the European Patent Office (EPO) as a bundle of national patents. Due to translation requirements, patent applications in the EU are rather expensive. “Software as such” cannot be patented unless the inventor is able to claim a “further technical effect” induced by the combination of an algorithm and a machine (Goodwin 2005). The EPO does not grant patents for business methods (Engelfriet 2006: 70). Usually, software is protected by copyright. Software engineers’ claims only embrace a distinct sequence of commands readable by a machine (program listing) and plagiarisms from a specific layout (Esteve 2006: 283). Not only does another programmer has the right to create and distribute a diverging solution to the same computational problem, but he also is entitled do dispose of the same algorithm if he is able to prove that he did not simply copy and paste from the other programme (Klemens 2006: 6ff). Furthermore, the copyright protection of software does not prohibit that software developers transform a programme’s object code into intelligible source code in order to facilitate the interoperability between two programmes. The copyright scheme enables an author to define the conditions under which his inventions may be used by others. Some open source licensing agreements (e.g. GNU) allow the free usage and further developments of a programme, if the licensee is ready to distribute his amendments under the same conditions (Lerner/Tirole 2004: 6). In consequence, the copyright regulation in the EU is open to both commercial and non-commercial creation and distribution of software, whereas the patent protection in the US stimulates a genuine private property perspective both in production and supply of computer programmes.

Given the incremental innovation process, patenting software has lead to unintended consequences in the US, which are inclined to hamper further progress. Writing source code, software engineers permanently fear to infringe their competitors’ patent claims. Therefore, large software corporations seek patent protection not only to draw on licence fees but also to strike in bargain with potential claimants. The more patent titles they have acquired, the more likely they can succeed in cross-licensing agreements (“strategic patenting”). Although this behaviour seems rational from an individual perspective, competition is hindered on a large scale, and small entities with fewer patents are disadvantaged to enter the market due to the spreading “patent thicket” (Bessen/Hunt 2004: 7; Evans/Layne-Farrar 2004: 26f). These problems are aggravated by the poor examination quality of the USPTO, which grants protection for even trivial inventions. Some corporations – so called “patent trolls” – profit by these deficits requiring licence fees based on dubious patents. Others abuse the prolongations

of the examination procedures in order to show up with their entitlements just after another corporation has started selling a product unwittingly infringing their claims (“submarine patents”) (Klemens 2006: 83ff). In consequence, burdensome patent litigation has become the shadow side of software engineering in the US.

So far, these problems do not prevail in the EU. Nevertheless, software developers could suffer from similar problems due to the ambiguous jurisdiction of the EPO. Even if genuine software patents are not accepted, the legal position is anything but clear, because the EPO’s ambiguous jurisdiction increasingly leads to patents on computer-implemented inventions. Large corporations essentially from the US seek to achieve patent protection in Europe, thus endangering the developments of small and medium enterprises (SME) in the EU, who usually rely on copyright protection for their inventions (Blind et al. 2003; Wagner 2004: 14). Critical observers speak about 30,000 software patents and more than 4,000 patents on business methods the EPO has granted without explicit authorisation (Egitto 2004).

In the US, ongoing debates and legislative attempts to readjust the patent system criss-cross. Alternative venues to patent protection are rarely discussed, and within community weblogs, they are often discarded as European idiosyncrasies. Contrary to the US, the attempts of the European Commission to extend or at least to clarify the conditions under which software shall become patentable are constantly blocked. Moreover, the resistance to an expanded “commodification” (May 2000; 2004) of software programs and other digital goods spreads like wildfire. The underlying mechanisms for the persisting differences between the US and the EU shall be revealed in the following paragraphs.

3 Perceptions of property

Political decision-making is always embedded within a framework of social norms. Even if a given set of values contains minor contradictions, it implies certain patterns of behaviour and rules out a range of alternatives, which are inconsistent with the prevailing general view (Hollingsworth 2000; Schirm 2005: 831). As regards software regulation, differences between the common law and the civil law perception of property may account for divergent preliminary decisions. Methodologically, these differences are hardly measurable, but they can be extracted from traditional and contemporary legal philosophy documents.

In an explicit repudiation of the Roman law tradition during Modern Times (Brocker 1992: 83ff), the British case law follows a Lockean definition of property. Ownership is conceived as a part of human self-preservation and defined as the result of the human manipulation of

natural resources, which God has given to man for the satisfaction of his needs. Ontologically, property represents a mixture of nature and human labour, and appropriation is perceived as a natural right (Locke 1978 [1690]: 129f). Neither the State nor society is entitled to interfere with the citizens' legitimate acquisitions. Rather, the existence of governmental authority is legitimized by preserving the citizens' possessions (Locke 1978 [1690]: 188). Locke's perception of property does not directly refer to intellectual property, although the enlightenment philosopher was involved with the British parliament's debate about copyright legislation (Oberndörfer 2003: 52ff). But his writings strongly influenced the case law on intellectual property and legal theory during the 18th and 19th century. (Drahos 1996: 25ff; Mayer-Schönberger 2005: 4ff) Following Locke, the British jurist William Blackstone (1723-1780) defines property as "that sole and despotic dominion which one man claims and exercises over the external things of the world, in total exclusion of the right of any other individual in the universe." Within his *Commentaries of the Law of England (1765-1969)*, he confers his conception of property on copyright issues (Alfino 1991). Blackstone's central metaphor for infringements, trespassing, nowadays serves as a leitmotif running through the whole American patent law.

Despite its apologetic approach, the Lockean allowance of property is limited by certain conditions. Firstly, no one is entitled to possessions which may perish if they are not consumed or utilised. Secondly, an appropriation is only allowed, if sufficient resources for others' needs are left. Both conditions refer to a state of nature. When adopting a monetised economy, the underlying goals may be achieved by financial compensations (Locke 1978 [1690]: 134ff). The Lockean provisos illustrate that property is not understood as an end in itself. Due to the mixture of nature with human labour, the greed of possession is expected to effectuate a surplus to the available resources and to enhance the general welfare of society.

Refined by the works of D. Hume and A. Smith, the utilitarian argumentation serves as a second pillar in the common law's property rights' justification (Fricke 2005). In comparison to Britain, it is even sharpened in the US legislation (Dieselhorst 1995: 13f) and pervades the foundations of patent law. Intellectual property is defined as a constitutional right "to promote the Progress of Science and useful Arts, by securing for limited Times to Authors and Inventors the exclusive Right to their respective Writings and Discoveries" (US Constitution, Art. I). During the 19th century, however, the constitutional protection of intellectual property did not impede the US Government to exclude foreigners from its privileges in order to facilitate the imitation of European inventions (Ostergard 2003: 79ff; May 2004: 411f). From the 17th to the 19th century, the acquisition of patents in Britain was associated with

remarkable bureaucratic obstacles, which were justified by the pervading distrust of the economic consequences of monopolies. Nevertheless, during the patent right controversy in Great Britain in the 19th century, supporters of intellectual property (J. Bentham, A. Smith, and J. S. Mill) drew on both natural right and utilitarian arguments to defend patents against the abolishment movement (Machlup/Penrose 2002). Their emphasis on incentives or rewards for innovators mirrors the Lockean assumption, that human efforts are most effectively stimulated by “possessiveness”.

To conclude, the notion of private property even in immaterial goods is deeply rooted in the common law tradition. Property as such is regarded as a natural right, though its institutional design may vary according to societal needs. Attempts to replace Locke’s nexus of labour and property by a “bundle of rights” theory like in Hohfeld’s writings of the 1930s have been rejected by American and British legal theorists (Stepanians 2005). Arguing within the Lockean framework, critics of an unduly appropriation have to overcome the barrier of a natural right assumption. So far, the only way to demand a limitation on ownership is to deliver hard evidence that its utilitarian intentions have failed (cf. Boyle 2001; Moor 2001; Lemley 2003). That’s why American and British jurists occasionally try to justify restrictions on copyright by the Lockean provisos (Gordon 2003). However, most contemporary critics on intellectual property directly (cf. Mitchell 2005) or indirectly² (cf. Drahos 1996) refer to philosophers and jurists of the civil law tradition.

The continental European thinking about property rights differs from its common law counterpart in at least four aspects. Ontologically, Locke’s mixture of labour and nature as constitutive elements of property are explicitly declined by Kant. If a property right was a direct result of man’s labour on nature without societal consent, an appropriated object should have an inherent obligation towards its appropriator. As this assumption is absurd, Kant concludes that property always must rely on a social compact in which both the modes of acquisition and the subject matters of potential ownership are defined (Kant 1966 [1797]: 73f et pass.). He explicitly transfers his definition from physical goods to immaterial property (Oberndörfer 2003: 101). Within the continental European legal philosophy, property is not perceived as a natural but a positive right, i.e. an interpersonal relation based on the legal assumption of a social contract. The German Constitution after World War II for example clearly remains within this tradition (Körsgen 2005). Furthermore, the welfare function of property is passionately debated in the European political thinking. From Rousseau to Marx,

² As Drahos (1996: 173ff) adapts Rawls’ *Theory of Justice* theorems to the ethics of intellectual property, he inevitably argues within the Kantian framework.

the degeneration of mankind is closely associated with the introduction of individual ownership (Rehm 2005; Drahos 1996: 97). Proudhon (1847: Chapter 5 sec. 3) takes the French patent law as an example for the self-contradictory nature of modern capitalism. "Here legislation is more than anti-economic, it borders on the silly."

But even if private property is welcomed, the continental European legal tradition usually states that citizens' possessions depend on a governmental superior ownership. Within the assumption of a social compact, property eventually belongs to the sovereign, who may dispose of his entitlements for the sake of community. Whereas the sovereign is imagined as a monarch by Modern Times philosophers like Grotius (1950 [1625]: 158ff) and Pufendorf (1994 [1673]: 200f), the enlightenment writers like Kant tentatively transfer the concept of sovereignty from monarchy to a republican democracy. Hence, individual property depends on public consent and may be repudiated if its consequences are deemed detrimental to general welfare. In the case of patent law, the Lord Chancellor of the German Reich, Otto v. Bismarck, thwarted the institutionalisation for a long time, but finally gave in after serious struggles with German industry pressure groups (Yu 2004). In Switzerland, the implementation of patent law was rejected twice by referenda during the 19th century, and in the Netherlands, the patent system was completely abolished by parliament in 1869 (Machlup/Penrose 2002: 12).

To sum up, both civil and common law assume that property rights on physical objects shall be adapted to immaterial goods. Nevertheless, they diverge in their general perception of property in regard to its ontological determination, its normative evaluation, and its embeddedness within a given social structure. Firstly, the Lockean proposal of individual property as a mixture of human labour and natural resources is incompatible with Kant's presentation of property as the result of a social compact. Secondly, the utilitarian assumption that private property in any case enhances public welfare is not accepted by most legal and political philosophers in continental Europe. Thirdly, most jurists in the common law tradition would not endorse the idea of an encompassing public ownership superior to individual entitlements. As regards the regulation of innovations in software, the patent protection in the US corresponds with an individualistic perception of property and a utilitarian appreciation for private ownership. However, the ongoing resistance against a mere private property approach in Europe falls in line with a latent suspicion especially of intellectual property.

4 Actors' orientations

Different legal initiating positions in the US and the EU have given rise to varying advocacy coalitions. As regards the US, a multitude of interest groups is divided upon particular aspects of the proposed legislations, whereas in the EU, supporters and opponents of software patents can be clearly distinguished. The following section offers an oversight of the diverging actors' orientations.

4.1 US stalemate

Current debates about patent reform in the US evolve from two competing bills introduced in the House of Representatives (H. R. 2795) and the Senate (S. 3818). Both legislations propose a reform of litigation procedures and the patent examination process. Large ITC corporations strongly welcome both objectives. Although their business models generally rely on patents and license fees for their products (Välimäki 2005: 28), they feel threatened by patent infringement claims of small entities. Even for large corporations like *Microsoft*, litigation costs of more than 100 million US\$ for 30 to 40 patent trials per annum seriously affect business profits and are inclined to reduce shareholder value. Moreover, recent judicial conflicts like *NTP vs. RIM* have demonstrated the risk of sales and distribution being stopped due to patent infringements.³ Therefore, large ICT corporations as well as the financial services industry support reforms, which deter plaintiffs from what they perceive as frivolous litigation. Especially, they plead for a modification of preliminary and injunctive relief. Furthermore, they campaign for a calculation of damages awards based on the economic value of the plaintiff's validated patent claims.

Most ICT corporations are members of the *Business Software Alliance* (BSA), which promotes a more fundamental reform of the US patent system. Firstly, not the first inventor but the first applicant should be granted a patent by the USPTO (first-to-file system). Secondly, the BSA and ICT corporations recommend the introduction of extended opposition proceedings after a patent has been granted. Thirdly, they support an obligatory publication of patent claims 18 months after filing date in order to avoid the risk of "submarine patents". The bundle of reforms could stimulate a worldwide patent law harmonisation, which would benefit the export-orientated US software industry to a large extent. Most corporations and the BSA are also involved with the ongoing debate at the World Intellectual Property

³ After several years of litigation, Research in Motion Ltd. has finally paid more than 600 million US\$ to NTP, Inc. in order to reach a settlement agreement with regard to its blackberry production and distribution. The court proceedings had almost affected three million users within the US, including numerous governmental agencies. (heise news 2006)

Organisation (WIPO). In this forum, they experience that the US has to make some concessions to the European Union in order to form a coalition against the developing countries' resistance to a worldwide Substantive Patent Law Treaty (SPLT).

As regards the litigation reforms, large corporations' ambitions are backed by prominent economic academics, which act on their own behalf or represent influential think tanks like the *Brookings Institution* or the *Rand Corporation*. Economists like James Bessen also contribute to a special interest consumer group, the *Public Patent Foundation* (PubPat), which supports the abolishment of preliminary and permanent injunctions and claims for more rigorous patent examinations including public review procedures throughout a patent's period of validity. These claims are echoed by citizens' rights movements specialised on digital freedom like the *Electronic Frontier Foundation* (EFF).

The ICT industry also cooperates with open source firms like *Red Hat* within the *Computer and Communications Industry Association* (CCIA). Although *Microsoft* has overtly menaced to sue the Linux community for patent infringements, both parties agree that low patent quality endangers proprietary and open source software development at the same time. Presently, *Red Hat*, *Open Source Development Labs* (OSDL) and *Sourceforge* are holding meetings with IBM to debate potential common goals (Woellert 2006). The unorthodox alliance between open source supporters and large ITC corporations might be interpreted as the open source organisations' price for a "ceasefire". *Novell*, *Nokia* and *Sun Microsystems* have promised the OSDL to abstain from infringement claims for the time being, and IBM even contributes to a patent pool devoted to open source developments.

However, the broad alliance of patent reform supporters is counterbalanced by the *21st Century Coalition for Patent Reform*, the *Professional Inventors Alliance*, and university representatives. To begin with the *21st Century Coalition*, its members predominantly support the reforms of the examination process, but oppose the amendment of litigation procedures. The intellectual property lawyers' associations (*American Intellectual Property Law Association* and the *American Bar Association*) within the coalition claim to protect small entities' interests, which are suggested to be endangered by Chinese and Russian counterfeiters (HR 109-24). Actually, the lawyers' associations rather seem to obscure their own financial interests. The existing legislations have set an incentive for lawyers to work on a contingency basis based on an average cut of one third of the gross revenue after settlement (The Lawyer 2006). Abolishing preliminary and injunctive relief, but also other proposed reform details like the adoption of the "loser pays" principal are expected to discourage

potential claimants. Resisting the litigation amendments, the lawyers' associations attempt to safeguard potential earnings.

The large pharmaceutical industry members of the coalition, the *Pharmaceutical Research and Manufacturers of America* (PhRMA) and the *Biotechnology Industry Organization* (BIO) usually rely on a single patent for a distinct product. Once a patent has been granted, they can only recoup their R&D investments if they face no competition from generic drug manufacturers (Schacht 2006: 1f). That's why they oppose any reform jeopardising their chances to sue competitors for infringement. However, pharmaceutical industry's federations and the *Intellectual Property Owners' Association* (IPO) representing broader industry interests within the *21st Century Coalition* agree with the ICT corporations about the need to reform the patent examination process. Apparently, they attach more value to increased export opportunities due to an internationally harmonised patent system than to potential risks in patent opposition procedures. Nevertheless, the *21st Century Coalition* also seeks to dilute the latter reforms.

The *Professional Inventors Alliance* (PIA) and the *Wisconsin Alumni Research Foundation* (WARF), however, are strongly opposed to a first-to-file system and broader attempts to improve the examination process. They fear that rising examination costs would be detrimental to independent developers and university departments, which partially are financed by licence fees (Hansen et al. 2005). The obligatory publication of patent claims 18 months after filing date is demonized as a means for foreign competitors to counterfeit US inventions. Referring to the EU and developing countries, Pat Choate (PIA) criticises the attempts to elevate the threshold for patent protection as follows: "Most other nations, however, still view an originator's discovery as a legacy to society almost from the inception." (Choate 2006) Furthermore, small entities and university research units resist any reform of litigation procedures. In their eyes, the large ICT corporations' requirements clearly discriminate against independent developers' legitimate attempts to secure their intellectual assets. They are not only afraid of foreign, but also of domestic "piracy" of inventions.

As it is summarised in figure 1, the debate about patent system reforms in the US has led to a stalemate. Most actors base their arguments on a mere private property approach to inventions. Moreover, they use the notion of private property to reframe their claims as necessary amendments to prevent foreign or domestic counterfeiting. But as both supporters and opponents of the patent reform allude to the piracy topic, the argument loses in value. Fundamental challengers to software patents, like R. Stallman's *Free Software Foundation*

(FSF), are not integrated into the ongoing discussions. The coalition between moderate Open Source supporters and large ICT corporations splits the opponents of a mere proprietary software development. Additionally, the ideological conflict between Open Source pragmatists and communitarian, communist and libertarian Free Software supporters (Välämäki 2005: 36ff; Grassmuck 2004: 231) will be sharpened by the Free Software Foundation's handling of software patents within the proposed amendment of the GNU licence. Thus, regardless of whether or not the US patent reform succeeds, patents on computer programs and business methods will not be seriously contested for the time being.

Fig. 1: US principal actors' orientation

Pressure groups	Litigation reforms	Examination reforms
Pharmaceutical industry (BIO, PhRMA)	Strong opposition	Support / attenuation
Lawyers' associations (AIPLA, ABA)	Strong opposition	Support / attenuation
Small ICT entities (PIA)	Opposition	Strong opposition
Universities (WARF)	Opposition	Strong opposition
Large ICT corporations (Microsoft, IBM etc.)	Strong approval	Approval
Consumer and citizens' rights groups (PubPat, EFF)	Approval	Strong approval
Open source firms / associations (RedHat, OSI)	Approval	Strong approval
Critical academics, think tanks (Brookings; Rand Corp.)	Approval	Strong approval
Free Software supporters (FSF)	Abstention	Abstention

4.2 The European debate

Starting from a completely different legal situation, the actors' constellation in the EU is hardly comparable to the US. After the European parliament's rejection of the directive on computer-implemented inventions (CII directive) in July 2005, the European Commission (DG Internal Market) tries to legitimise software patents as a by-product of the European patent litigation agreement (EPLA).⁴ The Commission's subtle strategy entails a rather moderate behaviour of the software patent supporters. The *European Information, Communications and Consumer Electronics Industry Technology Association* (EICTA) representing large European and American ICT corporations simply refers to the Trade

⁴ The EPLA legitimises the case law of the EPO and thereby overrules national courts' dissent.

Related Intellectual Property Rights (TRIPS) provisions to imply a necessity of patenting software if it's used for technical purposes. The *European Software Alliance* (ESA) takes up an ambiguous stance, while declared supporters of software patents, like the German *SAP* abstain from a vociferous acclamation.

The reluctance of software patent supporters may also be interpreted as a reaction of last years' defeat in the European Parliament, after their *Campaign for Creativity* was characterised as "Astroturf" (Lyon/Maxwell 2004) by critical NGOs.⁵ A third reason may be seen in the lack of genuine European backers for software patents. Besides *SAP* and the mobile telecommunication firms, there are hardly European corporations which definitely would profit from an expanded patent protection. Even *Nokia*, a fierce supporter of the proposed CII directive, remains sceptical about the ongoing activities of the DG Internal Market. The German patent lawyers' chamber disapproves of the proposed European centralisation of patent litigation. Thus, merely US-based corporations like *Microsoft* overtly campaign for software patents in the EU. All organisations claiming for an expanded patent protection – BSA, EICTA, the *Computing Technology Industry Association* (CompTIA) and the *Association for Competitive Technology* (ACT) – are predominantly sponsored by US corporations. Ideologically, their arguments are founded on the utilitarian perspective that strong private property entitlements enhance technological progress and economical welfare. These arguments are disseminated by American and European think tanks like the *Progress & Freedom Foundation* or the *European Internet Foundation* (IEF), which serve as forums for lobbying and advocacy.

But all direct and indirect efforts to expand software patentability in the EU are severely challenged by both Free Software and Open Source organisations. The *Free Software Foundation Europe* benefits from its close relationship to the US American counterpart. Its founder and front man, R. Stallman, enthusiastically promotes his common good approach towards computer programs also in European countries. As the European branch of the FSF tends to address leftist issues like cultural variety and developing countries' needs, Green and left party leaders (e. g. the French presidential challenger Ségolène Royal) seize its suggestions. Representatives of the FSF Europe also are invited to speak at conferences of the *Trans Atlantic Consumer Dialogue* (TACD). Their rhetoric of software as a common good

⁵ *Microsoft*, *SAP* and *CompTIA* had charged the British lobbying firm *Campell Gentry* with organising a campaign for software patents. The initiative should suggest small and medium enterprises' approval of an expanded patent protection, but the camouflage was revealed by *Corporate Europe Observatory*, *LobbyControl* and *Spinwatch*.

will inevitably lead to enhanced cooperation with the nascent “Piracy Parties” throughout the European countries.

The *Foundation for a Free Information Infrastructure* (FFII), however, succeeds in presenting its opposition to software patents as a question of small and medium enterprises’ performance. By its Europe-wide campaign *The economic majority*, the FFII tries to gather support from small IT development firms. During the last years’ controversy about the CII directive, Open Source supporters like Florian Müller persuaded the chief executive officers of *MySQL* and other prominent European software firms to support his campaign *No softwarepatents.com*, which closely cooperated with the FFII. In general, the various Open Source and Free Software organisations within the European countries are closely connected. FSF Europe and FFII, for example, are formally associated. Due to an elaborated communication system of mailing lists and undisclosed forums for strategic discussions, they effectively exchange information and economise their rather spare resources by distributing the share of attendances to official meetings, lobbying costs etc. At the same time, they are responsive to a wide range of potential allies because of their diverging argumentation schemes. They literally address Scandinavian CEO and German geeks as well as Italian communists and British Nobel Laureates (Sir John Sulston).

Due to the balance of power between software patent supporters and opponents, the small and medium enterprises could turn the scale in the European debate. As yet, they tend to decline patent protection of their inventions because of the perceived dysfunctions in the US market and the high examination costs at the EPO. SME, whose business models rely on open source applications, generally disapprove of patenting software inventions (Blind/Edler 2003 : 93). The *Confédération Européenne des Associations de Petites et Moyenne Entreprises* (CEA-PME) has officially rejected the proposed CII directive. In a recent survey of the European Commission, most SME have confirmed this position, despite the fact that the Commission had tried to pre-select enterprises favourable to its propositions. Nevertheless, it would be wrong to take the SME resistance to software patents for granted. Firstly, SME are insufficiently organised at the EU level, so that a small minority sponsored by large corporations’ federations could overturn the sceptical views. Secondly, if the European Commission succeeds in reducing the patent examination costs at the EPO, even declared opponents among the SME could change fronts.

To conclude, the essential differences between the European and the American actors’ constellation affect the relative weakness of large ICT corporations and the strength of Open

Source / Free Software organisations in Europe. The potency of software patent opponents in the EU derives from the close cooperation between pragmatists and ideological adversaries. Moreover, the common good approach to computer programs corresponds with traditional values within many European countries, whereas in the US, it is rather perceived as an outsider position. On the other hand, the anti-piracy rhetoric of nearly all intellectual property owners in the US suits both the common estimation of private property and the predominant issue of US competitiveness.

5 Institutional opportunity structures

Comparing the US to the EU, the question of software patentability is treated within diverging institutional frameworks. In the US, the executive agency and the courts have become more or less independent from the legislative oversight, whereas the multi-level governance patterns in the EU endorse multiple blocking positions to software patents. The diverging institutional opportunity structures shall be addressed in the following section.

5.1 Institutional paralysis in the US

As regards the US, the judicial branch has played the role of an agenda-setter in patenting algorithms. In 1982, Congress installed the Court of Appeals for the Federal Circuit (CAFC) as a specialised court for patent trials in order to invigorate intellectual property assets vis-à-vis the perceived Japanese and European competition (Jaffe/Lerner 2004: 4). Since its installation, the CAFC has rigorously defended patent holders' rights, which had often been defeated in previous trials among the regular federal circuits. In consequence, patent applications have experienced a sharp rise since the mid-1980s. Moreover, the CAFC has interpreted the Supreme Court's ambiguous decision on software patents (Diamond vs. Diehr, 1981) as a unilateral justification for expanding the subject matter of patentability (Jaffe/Lerner 2004: 9ff). Its decision in *State Street Bank and Trust Co. vs. Signature Financial Group* (1998) has finally opened the floodgates to patents on computer programs and business methods (Klemens 2006: 44f). The decisions of the CAFC are often explained by the organisational self-interest to expand the scope of its jurisdiction. Another reason may be seen in the recruitment strategies of the court, which lead to the selection of declared pro-patent lawyers as judges (Klemens 2006: 69). Additionally, as a courts' acceptance of amicus curiae briefs depends on informal and formal acquaintances of experts within its field of jurisdiction (De Figureideo/de Figueiredo jr. 2002; Hansford 2004), it seems probable that the

judges of the CAFC at least partially lose sight of the further consequences of their jurisdiction. In any case, fundamental sceptics of software patents are clearly disadvantaged in a court that takes a tough stance to protect intellectual property rights.

The jurisdiction of the CAFC has a clear impact on district and jury courts' decisions. As for the district courts, they try to anticipate a potential appeal and therefore are inclined to plead for strong property protections. In jury courts, laymen often are incapable to understand the complicated technical details of patent claims. Generally, they rely on the "presumption of validity" prescribed by the CAFC to ascertain patentees' rights, especially if the defendant is a foreigner (Jaffe/Lerner 2004: 104ff). The notion of strong property rights in the American society in combination with the jurisdiction of the CAFC leads to a bias towards patent protection even in contested cases. Both effects are multiplied in states like Texas, where property rights are perceived as fundamental to the social order. In sum, the litigation procedures in the US clearly favour the perpetuation of private property protection for software innovations.

Besides the judicative, the configuration of executive authorities increases the probability that patent protection will be granted for software innovations. The USPTO is a self-financing agency, whose surpluses partially are handed over to Congress. Consequently, applicants are rather perceived as clients, so that the examination procedures tend to favour their requests (Jaffe/Lerner 2004: 129ff) Due to relatively low wages in the US public service, the USPTO suffers from severe recruitment problems for qualified examiners, and the remuneration scheme sets an incentive for granting patents (Jaffe/Lerner 2004: 12f). Moreover, archived documentation of software innovations is very sparse. Despite its enhanced administrative discretion (Laub 2006), the USPTO is badly equipped for the examination of software patent applications (Jaffe/Lerner 2004: 145ff). Furthermore, both the appellate and the advisory board of the USPTO are predominantly staffed by patent lawyers, which generally approve of a broad scope of patent protection. Recent efforts of the USPTO commissioners' board to improve the quality of the examination process by restricting the applicants' rights (e.g. reducing continuations, cf. Dudas 2006) have met harsh resistance from patent lawyers both inside and outside the administration. Finally, the USPTO is subordinated to the Department of Commerce. Therefore, it is involved with several anti-piracy initiatives (e.g. STOP), and the examination of patent applications is directly linked to the protection of exporting corporations' intellectual assets. All these circumstances clearly facilitate the broadening of patent scope and foreclose a critical view on its potential disadvantages.

As it seems improbable that either the CAFC or the USPTO change policy on their own accord, only legislative initiatives could readjust the US patent system. However, the congressional electoral system and the organisation of the legislative chambers impede fundamental reforms. Both Representatives and Senators generally have to finance their election campaigns by fundraising. Hence, they are very responsive to pressure groups and Political Action Committees (PAC), which are able to organise substantial contributions and a longstanding financial engagement (King 1997). Data from the *Center for Responsive Politics* show that the sponsor of the current patent reform bill in the House, Rep. Lamar S. Smith (R-Tex), has received more than US\$ 130,000 from ICT corporations, life sciences industries and law firms for his election campaign. That is not to say that pressure groups are able to “buy politics” (Hall/Deardorff 2006). A simple correlation between donations and policies is particularly improbable, if diverging financially strong interests are at stake. Nevertheless, interest groups without sufficient resources are unlikely to be heard, unless they form a majority or at least a powerful minority within a Representative’s constituency. In consequence, the geographical distribution of adversaries to software patents across the federal territory reduces their political weight within the US first-past-the-post system related to single electoral districts.

As for Senators, it is even more unlikely to sponsor bills which could harm their domestic industry. Although the extended terms of office reduce their short-term dependence on donors, they are obliged to respond to their homeland’s overall economic welfare. In a recent hearing, S. Edward M. Kennedy (D-MA) clearly stated: „I represent a state that prides itself in innovation and creativity, not only in the sciences but also in the arts. Patents are enormously important” (Kennedy 2006). Even if narrowing the patentable subject matter benefited general welfare, short-term disadvantages for both ICT and pharmaceutical industry within the single states would outweigh. Consequently, neither Representatives nor Senators are inclined to take up a sceptical view on a broad patent protection.

Due to the specialisation in congressional law-making (Skocpol 2004: 8) on the one hand and Congress members’ dependence on their constituency on the other hand (Kloth 2005), both Senators and Representatives rely on external expertise for their decision-making in Congress. They are in need of detailed knowledge, arguments and strategic support for the management of a bill throughout the legislative process. (Hall/Deardorff 2006: 71ff) Large corporations and business federations dispose of sufficient resources to finance an armada of lobbyists, which provide members of congress with useful expertise. From 1998 to 2004, *BIO* and *PhRMA* have spent more than US\$ 30,000,000 for lobbying activities, and *Microsoft* alone

has invested about US\$ 25,000,000 in the same time. The only public interest group lobbying in the sector of intellectual property – Ralph Nader’s *Public Citizen Inc.* – ranks 236th in the *Center for Public Integrity’s* list of the top 250 lobbyists. R. Stallman’s *Free Software Foundation* is not even mentioned. Hence, the legislators’ perspective on software patents is strongly biased towards the law firms’ as well as to the pharmaceutical and ICT industry’s interests.

Members of Congress usually attend to inter-parliamentarian caucuses in order to coordinate policies across the two chambers and their committees. As regards software patents, the *House Republican High-Tech Working Group* (HTWG), the *Congressional International Anti-Piracy Caucus*, and the *Congressional Caucus on Intellectual Property Promotion and Piracy Prevention* expound the problems of patent reform and anti-piracy considerations at the same time. The issue-linkage implies the maintenance or even the upgrading of intellectual property rights vis-à-vis foreign counterfeiters and tends to eclipse domestic problems of an overbroad patent protection.

To conclude, the US administration (USPTO) uses its discretion to broaden the scope of patentability towards software applications and business methods. Its practice is sanctioned by the jurisdiction of the CAFC. Both the executive and the judicative branch are unable to encounter the negative impacts of their decisions, because they act within an environment of patent community interests. Correction attempts by the legislative fail, because members of Congress depend on the same interest groups’ support and expertise. Furthermore, the all-encompassing aim of protecting intellectual property assets in US export markets restrains the ambitions of an institutional redesign.

5.2 Institutional counterweights in the EU

Compared to the USPTO, the European Patent Office’s discretion is significantly narrower, because it is bound to the wording of the European Patent Convention (Art. 52 EPC), which precludes patents on “software as such” (Sedelmaier/Gigerich 2004: 11). Nevertheless, mainly US corporations have achieved patent protection for computer programmes due to the ambivalent wording of the EPC. Previous attempts to broaden the patentable subject matter via an amendment of the EPC have been doomed to failure because of the Euro-Linux groups’ protests and some signature states’ non-ratification of the amendment (Borràs 2003: 87f; Müller 2006: 31). An indirect venue to redefine the conditions under which software may be patented would be to issue a directive under the co-decision procedure.

Within the EU, the Commission initiates legislative proposals. The Commissioner of the DG Internal Market, C. McCreevy as well as his predecessor F. Bolkestein, strongly favour a redefinition of the patentable subject matter. They point at potential disadvantages for European enterprises, which could arise from US competitors' attempts to achieve patent protection in the EU (Bodoni 2005). Actually, McCreevy tries to legitimise software patents by incorporating the EPO's case law into the European Patent Litigation Agreement (EPLA). Although the DG Internal Market is in charge of the intellectual property regulation, it encounters subliminal objections by the DG Information Society and Media, which promotes the utilisation of open source software in public administrations (ZDNet UK 2005; Grassmuck 2004: 318f). As yet, DG InfoSoc favours the solidarity within the college over its own resort interests, but it cannot be excluded that the DG switches its preferences and follows the routinely adapted resort considerations (Egeberg 2006). Rivalries between different DG would be nothing out of the ordinary for the Commission (van Schendelen 2002: 65).

Compared to national or even local administrations, the European Commission is poorly staffed. As regards economical regulation, it usually gathers information from European business federations and large corporations (van Schendelen 2002: 63f; Bouwen 2002: 379ff). Moreover, the Commission organises hearings and conducts surveys in order to acquire both "preference" and "expert knowledge" (Broscheid/Coen 2003: 170). Nevertheless, its' pre-selective modifications of the study concerning the European Patent Litigation Agreement (EPLA) illustrates that the Commission does not simply act as a neutral arbiter.⁶ Rather, it is tempted to legitimise its own ambitions by societal consent. However, the recent survey shows the risks of such a strategy. Effective NGOs like the FFII can unveil the distortions and use them as a means against the Commissions' goals (heise news 2006a).

The Commission's proposals are handed over to the European Parliament's committees, which play an important, but not a decisive role within the legislative process. Committees' rapporteurs, who manage a proposal's handling within the committee, are in close contact with Commission officers and the diplomats of the Council (Fouilleux et al. 2005: 618). They are interested in gathering relevant information in order to overcome the competitive edge of both COREPER and Commission (Benedetto 2005: 70). At the same time, their behaviour is scrutinized by "shadow rapporteurs", i.e. committee members of rivalling party families who

⁶ In addition to an official survey open to all stakeholders, the Commission addressed about 600 small and medium enterprises using patent protection for their software applications. Their replies were incorporated into the final presentation without declaring the methodological modifications. Furthermore, the official hearing related to the survey was delayed in order to include the pre-selected replies. (heise news 2006a)

are interested in the same issue. Therefore, both the rapporteur and his rivals are accessible to all relevant actors' within the policy field. During the debates about the CII directive, the FFII has benefited from this constellation and successfully lobbied the rapporteur and his competitors within the EP Legal Affairs committee (JURI) (Müller 2006: 209f).

Not only the committees' organisation, but also the electoral system of the European Parliament is favourable to software patent opponents. Due to the party-list proportional representation, MEPs are very responsive to issues of public interest, at least if their decisions risk to be scandalised by the domestic media. Unlike their colleagues in US congress, they have to convince voters within a nationwide constituency (Rittberger 2006). Furthermore, they rely on their national party's support for a second candidature (Whitaker 2005: 25). Thus, NGOs like the FFII or the FSF Europe can organise demonstrations in order to catch the attention of parliamentarians and to initiate negotiations. This tactic generally has proved successful for weaker interest groups (Sloof/van Winden 2000). A MEP simply cannot afford to ignore protests which are likely to be mirrored in its constituency's press (Michalowitz 2004: 11).

On the other hand, members of the EP are bound to their party family's preferences, because influential and prestigious offices (e.g. rapporteurs, committee chairmen) are assigned by its leadership (McElroy 2006: 26; Benedetto 2005: 81). Thus, MEP "behave as trustees with a free mandate" (van Schendelen 2002: 69) balancing their national constituency's interests, their European party's position and their own positions and career opportunities. They do not depend on the financial support or the expertise of business federations, although they carefully listen to their needs in order to determinate the European interest (Bouwen 2002: 380ff). Hence, MEPs are open to both NGO and business representatives. As each single MEP has the right to suggest amendments to a proposed legislative act, FFII lobbyists were able to serve their personal aspirations supporting them with detail knowledge during the controversy about the proposed CII directive. The strategy led to numerous amendments coming out of the plenary, which aimed at diluting the Commission's ambitions (expert interview).

Although the EP Group of the Greens and the majority of the Socialist Group sympathise with the common good approach (Müller 2006: 276), software patent opponents have to convince liberal and conservative members of parliament. At least in a proposal's second reading, an absolute majority of the parliamentarians (instead of the vote cast's majority) is needed to encounter a Council's common proposition (Benedetto 2005: 71). That's why party families

within the EP try to reach a sustainable compromise based on shared priorities. As for discussions within the committees, Open Source supporters try to persuade specialised politicians irrespective of their party affiliation. If conservative parliamentarians, e.g. from the Committee on Industry, Research and Energy (ITRE), support open source issues (e.g. Vera 2006), they are likely to convince party members who usually are not involved with these questions. But MEPs deliberate not only in committees, but also in intergroups, whose sessions are open to business federations and NGOs (van Schendelen 2002: 70). The SME-Intergroup reanimated in 2005 serves as a forum in which both Open Source protagonists and their adversaries try to persuade parliamentarians. In these discussions, Open Source lobbyists are in advantage over their adversaries. Because of their “common good” rhetoric, they can rely on the Greens’ and leftist parties’ support, and at the same time, their arguments related to SME performance open the door to conservative and liberal MEPs.

As regards the Council, national governments within the EU are divided upon the question of software patentability. Belgium, Austria, Italy, Spain and Poland were sceptical or opposed to the proposed CII directive (Bodoni 2004; Müller 2006: 42f). Despite the qualified majority voting procedure, Council members usually explore the opportunities for a consensual position (Heisenberg 2005: 65ff). Hence, the repudiation of the CII directive by a considerable minority seriously weakened the Council’s position. Some diplomats even handed over confidential information to open source lobbyists in order to reinforce protests outside the Council (expert Interview).

The mere fact that most ministers finally supported a common position on the CII directive obscures passionate debates between governments and national parliaments in most of the member states. In Denmark, Germany and the Netherlands, the minister’s approval was strongly contested by nearly all national parliamentary parties (Müller 2006: 42f, 68 et pass.). Open Source lobbyists have already used the national parliaments’ notorious distrust of their governments’ behaviour at the Council (Benz 2004) in order to retard the debate on the CII directive (Müller 2006: 68). As regards the ongoing discussions about the EPLA, they recommend mobilising national parliamentarians to scrutinize their governments’ positions in Council (lwn.net 2006).

The member states’ and Council’s disunity benefits mainly Open Source lobbyists. It can be assumed that some national governments’ resistance to software patents will even increase. The current EPLA proposal of the Commission entails a limitation of the languages in which patent claims are to be translated. Portugal, Spain, Italy, Greece and Poland, however, insist

on a multilingual approach (European Commission 2006: 12). During the 1980s and 1990s, conflicts about the translation requirements had already frustrated attempts to create a community patent (Derby 1998; Cruz 1998). It seems improbable that the opposing member states will give in this time, particularly as many opposing countries have already demurred to software patents. Rather, the abolition of translation requirement and the indirect acceptance of software patents within the proposed EPLA will spur their resistance.

To conclude, the institutional framework in Europe strongly favours the opponents of software patents, whereas in the US, sceptics of an overbroad protection are virtually excluded from the decision-making process. Contrary to the USPTO, the EPO cannot change policy by itself, and it is not backed by a pro-patent jurisdiction. Legalising software patents would require a legislative act under the co-decision procedure. Although the DG Internal Market within the European Commission promotes the patentability of software, it has to confront the sceptical views of DG InfoSoc. Due to its public procurement considerations, the latter rather tends to a common good approach, which is reinforced by the electoral system of the EP as well as by its organisation and the political position of many MEP. Finally, member states' representatives in Council are divided upon software patentability, and potential log-rolling compromises are impeded by their domestic parliaments. Contrary to the EU institutional configuration, the electoral system of the US Congress and its organisation rather reflect the existing balance of power in the American economy (Moe 2005). As major US interest groups strongly favour the patent protection of computer programmes, critical voices are unlikely to be heard. Furthermore, software patentability is institutionally linked to anti-piracy policies in the US, whereas in the EU, the Commission as well as the EP are mandated to balance private and public interests. As long as there is no evidence that European SME would profit from software patents, their advocates will meet considerable resistance within the European institutional configuration.

6 Conclusion and outlook

As it has been illustrated in the previous sections, the US software regulation is based on the notion of individual property rights. Powerful actors within and outside the ICT industry implicitly refer to the natural right assumption in order to defend broad entitlements. As intellectual property is perceived as a natural right, deviant perceptions and practices are vilified as “piracy”. Utilitarian critics, who point at the negative impacts of software patents, are marginalised by the scenario of other countries' theft of American ingenious inventions,

and fundamental critics propagating a “common good” approach towards software programmes are generally ignored. Free Software supporters’ unwillingness to accept a compromise (e.g. strengthening the examination process) separates them from Open Source protagonists.

As the executive agency (USPTO) and the judicial control (CAFC) are configured to combat piracy, economically strong advocates of software patentability can capture these institutions (Jaffe/Lerner 2004: 160f). A legislative oversight is doomed to failure, because the congressional electoral system and organisation sets an incentive for Congress members not to interfere with the right holders’ interests. Even if parts of the ICT industry suffer from an overbroad protection, the coalition of the pharmaceutical industry and lawyers’ associations dispose of sufficient resources to encounter substantial readjustments of the patent system. Thus, the only way for US ICT corporations to escape from the regulatory dysfunctions of the American social system of innovation and production (SSIP) is to increase their export shares. Therefore, they have to lobby foreign regulatory institutions to provide patent regimes favourable to their business models.

Genuine European supporters of software patents are in a minority position, although they are backed by US corporations and business federations. Their opponents in the EU can refer to an ambiguous notion of property in the civil law tradition, which comprises both public and private pretensions. As both Open Source and Free Software supporters strive for the same goal, they cooperate despite of a latent ideological conflict. Moreover, Open Source argumentations based on the economic performance of SME may even persuade conservative and liberal politicians in the EU. The institutional design of the EU rather benefits the opponents of a mere private property approach. DG Internal Market’s ambition to spur software patents are watered down by DG InfoSoc’s public procurement considerations. The party-list proportional representation of the EP induces its openness to public interests, which are reinforced by some member states’ preferences for an enlarged public domain. Nevertheless, the strength of fundamental opposition to an amendment of software regulation in the EU can lead to antipodal effects. As yet, the only loophole for software patents may be seen in the EPO’s case law. If the Commission, the EP and the Council find no way to foreclose its abuse, US corporations may subvert the existing regulation and transfer domestic dysfunctions into an already diffuse European public system of innovation (Amable/Petit 2001).

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