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**Stifling Innovation – the Case of Software Patents**

Lecture and presentation  
given to «Intellectual Property Rights Policy»,  
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## Stifling innovation – overview

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### *Drug patents before the firing squad*

The dark side of patents

### *The economic rationale of patents*

Patents are legally sanctioned restraints on trade

### *The digital dilemma*

Patents were instituted to strengthen national sovereignty -  
in the 19th century

### *Lessons for European Ip Policy*



## 1. Drug patents before the firing squad

The Technical University of Berlin announces...



...richly rewarded through patents

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«...richly rewarded through patents.»

With these words my university, the Technical University of Berlin, has announced its new patent policy last winter.

The Technical University proudly announces what is known as the common rationale of patents: The more patents the better for the institution, for the researchers, for the students, for the public good this institution is build for – education. Thus the best patent policy would be to enlarge the patent portfolio of any given institution. It is also a common conviction that patents will increase the market share in given markets. And of course firms do what they are build for: Maximize their profits. The conclusion is obvious: Patents need to be granted by the law, so that inventors can enjoy the fruits of their labor. And copycats should be punished.

However, there is a dark side of patents.

## The dark side of patents

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«Without intellectual property protections a modern economy could not function»

«Patents successfully generate inventions while inhibiting their use.»

Examples: Aids-generica for use in poor countries like South Africa, Brazil, India and China.

McMillan 2002, p 104, p 34.

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The prime examples are patents on pharmaceutical drugs, especially AIDS-drugs.<sup>1</sup> In India, the government decided not to grant patents in food and drugs, so many manufacturers sell copies of drugs patented by U.S or European firms. So the price per pill for a special drug against infections was 25 cents in India and 10 Dollar in the U.S.. South Africa passed a law in 1997 to make Aids drugs affordable through a compulsory license. The government estimated that this could reduce prices for Aids drugs by between 50 to 90 percents. (McMillan 2002, p 35, 36)

In 1997 39 drug companies brought a suit to overturn the South African law, but the pressure of a broad coalition of NGO's and public health experts finally succeeded in their opposition. «The suit turned into a

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<sup>1</sup> The European Commission has cleared a plan to boost developing countries' access to key medicines. It adopted a draft Council regulation enabling exporters to deliver essential medicines at reduced prices to poor countries, while making sure the goods are not diverted back to the EU. See Sharon Spiteri: Plans to boost medicine access in poorer countries. EU Observer, 31.10.2002, <http://www.euobserver.com>.

public relations disaster for the companies.» So it was dropped in 2001. Not to mention the political message of this struggle. To quote the economist John McMillan on his recent book on markets: «By withdrawing their court action, the drug companies could, for public health reasons, override patents.» (p 38)

The lesson from the South African case is easy to understand: In some cases it might even be the better economic solution not to grant patents. The question is whether and to what extent the experiences in the Aids case are transferable to the world of computers and software.

And do we speak about poor countries alone?

Remember the discussion on anthrax after September 11<sup>th</sup>. A German company was patent holder for anthrax drugs and near monopolist on the American market. It was too expensive a drug for the millions of fellow Americans which might be infected by anthrax. We need to have a compulsory license argued the American government. Given this argument as convincing which lesson can we learn from this case?

The latter case is just as easy to understand then the former: In some cases it might be better not to distinguish between rich and poor countries. Apparently the question is whether granting patents is a proper solution for mankind at a whole.

And the political lesson is: If a leading nation of thus many patent holders handles foreign patents pretty cool as it did one could learn that granting patents is also about political interests and political influence. That means: The rules of the game are not casted in stone. They can be changed.

I believe that this argument holds for computers and software markets as well. I hope to convince you but I have to go back a long way.

# The economic rationale of patents: Patents are restraints on trade

## Scope of Industrial Property

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Industrial property shall be understood in the broadest sense and shall apply not only to industry and commerce proper, but likewise to agricultural and extractive industries and to all manufactured or natural products, for example, wines, grain, tobacco leaf, fruit, cattle, minerals, mineral waters, beer, flowers, and flour

Art.1 Paris Convention for the Protection of Industrial Property as of March 20, 1883



In the end of the 19<sup>th</sup> century the then industrialized nations decided to establish a system of treaties covering all activities mankind is producing with their intellect. They established treaties for what we now call innovation. If one looks to the basic rules for industrial property from 1883 one can easily see that nearly everything of some value in the world is put under the umbrella of the basic treaty for patents.<sup>2</sup>

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<sup>2</sup>

### Article 1

[Establishment of the Union; Scope of Industrial Property]

(1) The countries to which this Convention applies constitute a Union for the protection of industrial property.

(2) The protection of industrial property has as its object patents, utility models, industrial designs, trademarks, service marks, trade names, indications of source or appellations of origin, and the repression of unfair competition.

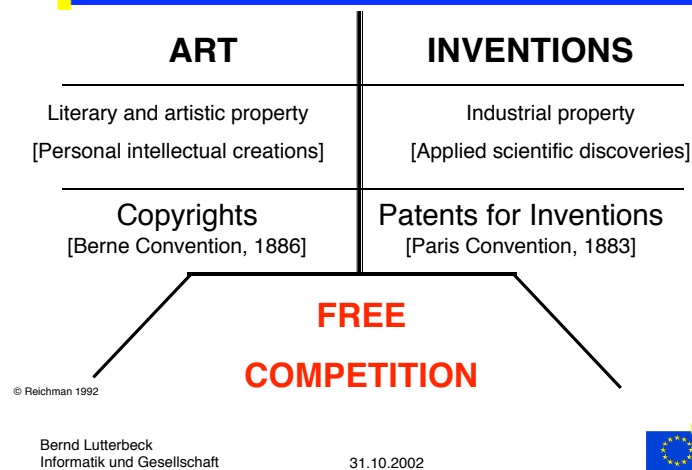
(3) Industrial property shall be understood in the broadest sense and shall apply not only to industry and commerce proper, but likewise to agricultural and extractive industries and to all manufactured or natural products, for example, wines, grain, tobacco leaf, fruit, cattle, minerals, mineral waters, beer, flowers, and flour.

(4) Patents shall include the various kinds of industrial patents recognized by the laws of the countries of the Union, such as patents of importation, patents of improvement, patents and certificates of addition, etc.

The world of innovation is not complete without mentioning the innovations coming out of books which were created by certain authors. A second treaty on literary property was concluded in 1886. One should mention that this second treaty was not too important for many nations, especially not for an emerging young nation on the other side of the Atlantic: the United States of America. The U.S. were then a net importer of literary and artistic works, mostly from England. In her recent study on «Intellectual property and economic development» Zorina Khan summarizes 19<sup>th</sup> century American politics:

«(The American) statutes explicitly authorized Americans to take free advantage of the cultural output of other countries. As a result, it was alleged that American publishers “indiscriminately reprinted books by foreign authors without even the pretense of acknowledgement.” The tendency to reprint foreign works was encouraged by the existence of tariffs on imported books that ranged as high as 25 percent. ...despite the lobbying of numerous authors and celebrities on both sides of the Atlantic, the American copyright statutes did not allow for copyright protection of foreign works for fully one century. As a result, the nineteenth century offers a colorful episode in the annals of intellectual property, as American publishers and producers freely pirated foreign literature, art, and drama.»  
(Khan 2002, p 39/40)

## The Bipolar Structure of the International Intellectual Property System



At any rate in 1883 and 1886 the bipolar structure of the intellectual property system came into existence, a system consisting of three elements:

- Industrial property for inventions
- Intellectual property for literary and artistic creations
- Free competition

Inside this system the nation states of the world enacted their specific statutes. By and large this structure is governing the way the world of today is handling its innovation. A handling in the logic of the 19<sup>th</sup> century: A thing is either in the scope of patents or in the world of copyrights. Tertium non datur!



## Modalities and premises of the dominant legal paradigm

	INVENTIONS	ART
Prerequisite	Inventive Step (nonobviousness)	Independent creation (originality)
Modality	Hard protection on hard conditions for short period of time	Soft protection on soft conditions for long period of time
Negative (economic) Premises	<ul style="list-style-type: none"><li>• Nonpatented innovations remain subject to price competition and are free to imitate if disclosed</li><li>• Undisclosed unpatentable innovations are free to reverse engineer but not to steal</li><li>• Unfair competition law may not repress product imitation in the absence of confusion</li></ul>	<ul style="list-style-type: none"><li>• Noncopyrightable productions remain subject to price competition</li><li>• Cultural policy not applicable to general products market</li><li>• Unfair competition law not to limit user's rights in the absence of confusion</li></ul>

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The relationship between the elements follow a clear principle of rule and exception:

The basic rule is free competition.

In market driven economies production of any kind is subject to free competition. Imitation is desired from a consumers point of view. For imitation leads to more products to lower prices. The one who is first on the market has competitive advantages, she can use the lead time in order to promote the best marketing strategies for the product. And she can set standards for the life cycle of the product. Certainly the best example for this principle is Microsoft: The firm leads its competitors because of standard setting.

Patents are an exception from the principle of competition: They give hard protection on hard conditions for a short period of time. Patents are state granted monopolies.

Copyrights themselves are an exception from patent law. They also limit competition and grant a monopoly. But this monopoly gives soft protection on soft conditions for a long period of time. [Reichman 1992]

*It is extremely important to understand the default rule of this structure:*

## **The forgotten default rule**

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### **Default rule**

Free trade and free competition are the default rules.  
Patents and copyrights are the exceptions.  
*You have to decide for the exception*

### **Burden of proof**

The burden of proof is generally on the state who awards the patent.  
The burden of proof is generally on the patent holder.  
*You are not allowed to decide for the exceptions if you cannot prove their economic efficiency*



To give you an example: Some browsers set cookies without user's decision. The decision for the browser is preinstalled. It is the default rule of the system. If you do not like to use cookies you must take a special action. Many users would not decide for this alternative, because they do not know the default rule. The privacy-friendly alternative is a browser with the opposite default rule. Then special action is needed to set cookies.

Therefore the decisive question is: Are software patents economically justified and thus legally legitimized?

Like many others at least from academia I have serious doubts to give an affirmative answer. But I would like to give a slightly more sophisticated thesis instead: The patent law comes under pressure from the direction of copyright law. One looks for solutions inside the patent law, if firms believe that copyright protection is not sufficient. And in the same moment one eyes up to the copyright law, if the patent procedures are too strict.

To give you a more concrete idea about what is going on in the world of intellectual property today imagine a bath tub or even a paddling pool: Our bipolar structure is swashing like the water in a bath tub. From one

side to the other. The water is permanently swashing, but the consistence stays alike. And people who are in the tub know each other from their youth, no problem to splash around.

After all the reason for swashing is obvious: Our structure is logically closed. There is no third position, at least in principle: Tertium non datur!

In reality the people in the tube mostly are a certain kind of lawyers. Jessica Litman, one of the leading experts in the U.S., calls them «a peculiarly myopic breed of human being» (2001, p 22). If myopia would be the problem we shall have a closer look to software.

## The digital dilemma

To foster innovation is the main challenge for today's policy makers.

The question is whether and how far software patents and copyrights on software contribute to innovations.

Software is certainly the core of the «knowledge societies». The ability to develop, distribute and sell software is the crucial moment of the competitiveness of whole economies and regions. However, this ability gives power to enterprises and states to structure all the societies innovation. It gives them – hard and soft – power to decide on content. Therefore we have to look for both: Economic incentives to develop the infrastructure and political incentives for legitimizing this sort of content regulation.

### The dual character of software

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- Programs are texts.
- Programs are machines which behave.
- The design process of software is incremental and cumulative.

Programs are virtual machines whose medium of construction is text.



However, even after some 10 years of discussion it is far from clear to define what software is like. Decision makers of all kind and every level are facing a principal dilemma: Whatever they decide it might be wrong.

(for the following Manifesto 1994, pp 2315)

Programs are texts, like traditional literary works and any other book.

Programs behave, like any other machine. Texts do not.

«Programs have a dual character because they are textual works created specifically to bring about some set of behaviors.»

You probably buy a book because of its artistic expression. You buy and use a software like MS Word to fulfill a task. You buy behavior. Like a car which brings you from one point to the other.

«Text and behavior are independent in the sense that a functionally indistinguishable imitation can be written by a programmer who has never seen the text of the original program.» (p 2315/6)

«The industrial designs embodied in programs are typically incremental in character.»

Software development is cumulative, is a mixture out of new and old elements. Computer scientists characterize this process as evolutionary.

All together are programs viewed as «virtual machines whose medium of construction is text». (p 2324)

The dilemma for the design of our legal order is obvious:

Software is a machine which behaves. That nature precludes copyright protection.

The innovation is incremental and cumulative. That nature precludes patent protection. Evolutionary software development and the criterion of novelty seems to be a contradiction.

Because software is an extremely valuable artifact for nearly everything national, regional and international legislators decided some twenty

years ago to establish a legal regime for software. They decided that software is a literary work under protection of copyright law and that software as such is not patentable.

Notwithstanding the wording, notwithstanding the opinion of at least the American academic community, courts in the U.S. and Europe have not hesitated to grant patents for software and so called business methods. American jurists call his situation «black letter law»: Principles of law which are generally accepted and not disputed at all.

1968 the New York Times summarized the state of the art in the U.S.: «Software is unpatentable.» (Jones 1968) The same newspaper summarized the state of the art in 2000 almost ironically: «Once a province of a nuts-and-bolts world, patents are now being applied to thoughts and ideas in cyberspace. It is a ridiculous phenomenon, and it will kill e-commerce.» (Gleick 2000)

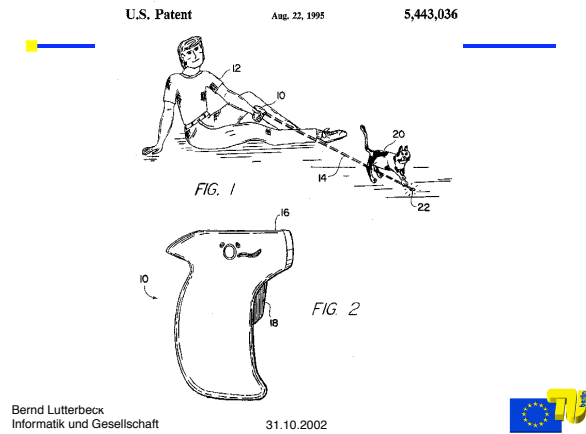
The New York Times illustrated its position with two patents, one fictional and one which was really granted.

Patently absurd

## Procedure for simultaneously walking and chewing gum

New York Times, March 12, 2000





What has happened since then? What has happened in the last 30 years?  
What kind of explanations can we give about the discrepancy of the law  
in the books and the law in action?

## The battle over the institutional eco system (J. Benkler)

### Patents - the economic rationale

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What mainstream-economists teach

- A patent is a legally sanctioned restraint on trade
  - Rechtlich gesprochen: Eine Wettbewerbsbeschränkung, die Wettbewerb herstellen soll.
- A patent is, literally, a license to overcharge
  - Weil der Schöpfer mehr verlangen kann, als der Markt hergeben würde, steigen seine Anreize für innovative Tätigkeiten – in der Theorie.

McMillan 2002, p 106



Firms must do what they are built for: Maximize their profits. They must and they will look for profits out of patents. A clear expression of the situation of firms is given in an advertisement of the Swiss patent attorneys: Patent protection is equals with market share.

Patent protection = market share?

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PATENTSCHUTZ =  
MARKTPPOSITION

Sichern Sie Ihrer Innovation die verdienten Wettbewerbsvorteile durch Patent-, Marken- und Designschutz. Sie profitieren von fundierter, praxisbezogener Beratung.

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Patentanwälte  
3000 Bern

VSP

Neue Zürcher Zeitung v. 27.12.2000

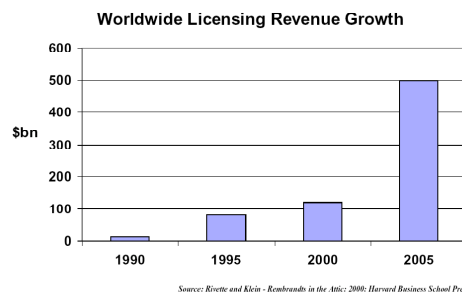




Managing of intellectual property is going to become the core strategic ability of companies. For example IBM as the greatest patent holder 1 Billion Dollar from Patent and license revenues alone. That is more then one ningth of the net profits. To qote two well-known American economists: Sometimes patents are the most efficient means to get protected market shares and to defend them. (Rivette/Klein 2000 according to Pfeiffer 2002

### ...ripe for growth and moneymaking

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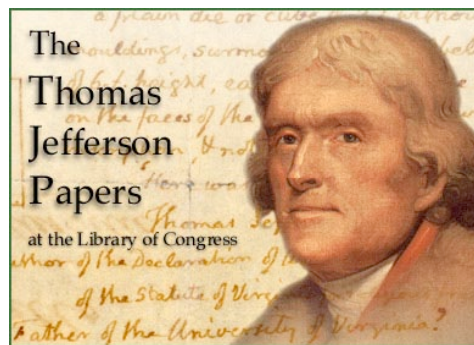
If you look at these figures it becomes clear that companies try to develop their intellectual setting into a strategic source for moneymaking. Even a German company like SAP, which strongly argues against the rationale of softwarepatents holds now some 20 software patents. Otherwise, they argue, they could not compete on the American market. I just gave you an insight into the world of individual actors. For them it is not doubtful at all: Our legal order must grant patents. The more patents the more innovation for the society. However, the insight of political economy is slightly different. Remember the default rule: The political economy must look for evidence that

software patents do increase the innovation of the society at a whole, they must justify a state monopoly.

Interestingly enough, the history of the last 200 years of property rights, especially patents shows that there never has existed a consent between the experts in this field. At no time we can find any proven evidence that patents are necessary. Even the founder of the modern patent law and the modern patent institutions, Thomas Jefferson, argues against patents.

### Thomas Jefferson was not only...

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### ... among the framers of the U.S. constitution.

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«The Congress shall have Power . . . to promote the Progress of Science and useful Arts, ...»

U. S. Constitution, art. I, § 8, cl. 8 von 1787.



## **TJ was also first commissioner of patents in the world**

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«TJ, the architect of the U.S. patent system, was at first doubtful about the whole idea of awarding patents. A strong supporter of free markets, he saw this government-sanctioned monopoly as a “public embarrassment” and resisted including it in the Constitution.

Ultimately he agreed (to) the patent **exception.**»

Pooley 2001



TJ was after all among the framers of the U.S. Constitution, he was among the creators of the first U.S. patent law and first president of the American patent office. And one should know that TJ was also a well known inventor.

«Thomas Jefferson might be surprised at what has become of his work (...) A strong supporter of free markets, he saw this government-sanctioned monopoly as a “public embarrassment” and resisted including it in the Constitution. Ultimately he agreed that the patent exception was worthwhile, but purely as an economic bargain with the government. The inventor would get a period of exclusivity (originally ten years), and in return the public would get disclosure of the most cutting edge technology. The invention would eventually enter the public domain and in the meantime would presumably inspire other useful advancements.»

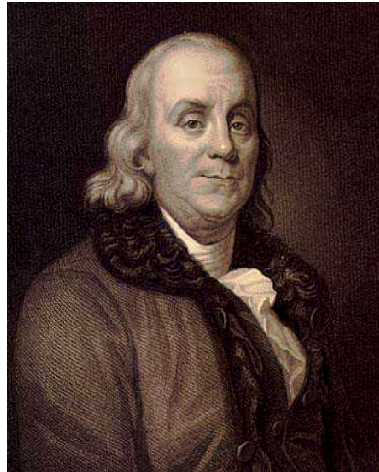
(Pooley 2001)

TJ was certainly not as important as one of the greatest inventors of American history: Benjamin Franklin.

He writes in his autobiography:

## The man who invented the lightning conductor...

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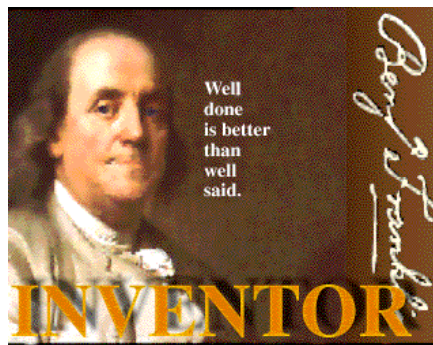
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## ...was not only a great inventor...

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**– but also a sceptic about patents!**

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**...«but I declin'd it from a principle which has ever weighed with me on such occasions, viz. That, as we enjoy great advantages from the inventions of others, we should be glad of an opportunity to serve others by any invention of ours; and this we should do freely and generously.»**

[Franklin 1793]



«I wrote and published a pamphlet, entitled "An Account of the new-invented Pennsylvania Fireplaces; wherein their Construction and Manner of Operation is particularly explained; their Advantages above every other Method of warming Rooms demonstrated. (...) This pamphlet had a good effect. Gov'r. Thomas was so pleas'd with the construction of this stove, as described in it, that he offered to give me a patent for the sole vending of them for a term of years; but I declin'd it from a principle which has ever weighed with me on such occasions, viz., That, as we enjoy great advantages from the inventions of others, we should be glad of an opportunity to serve others by any invention of ours; and this we should do freely and generously.» (Franklin 1793)

Some two hundred years later Fritz Machlup, an American-Austrian economist, gave a report on the history of patents to the U.S. Congress. (Machlup 1958) At this time Fritz Machlup was among the leading

economists of the world and, by the way, one of first theorists of the coming information society. Reading this report for me was an enlightenment, like falling «Manna» from the heaven. In the history of patents has never been a consent whether these monopolies are necessary and economically efficient. No «empirical evidence is available to decide (...) conflicts of (various) theories.» And that is not all. The majority of economists –Volkswirte– has rejected these monopolies as a proper solution for innovation: Patents are stifling. The congress of German economists argued in 1863 that patents stifle common welfare. Nearly every single argument pro and against patents has been raised already in the 19<sup>th</sup> century. Nothing new since the 1870 s. And even today there is no empirical evidence that patents foster innovation in the software market. Thus Machlup could sum up in his report:

### Patents as a means for nation-building

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«If we did not have a patent system, it would be irresponsible...to recommend instituting one.

But since we have had a patent system for a long time, it would be irresonsible, on the basis of our present knowledge, to recommend abolishing it.»

Machlup 1958



«If one does not know whether a system "as a whole" is good or bad, the safest "policy conclusion" is to "muddle through" .... If we did not have a patent system, it would be irresponsible... to recommend instituting one. But since we have had a patent system

for a long time, it would be irresponsible, on the basis of our present knowledge, to recommend abolishing it.»

No empirical evidence, no proven argument, no proven economic efficiency. Why then established the leading states of the 19<sup>th</sup> century this system of intellectual property.

### Patents as a means for nation-building

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Since 1873 the wind has changed.

«Finally it was «a victory of jurists and protectionists against economists»

Machlup 1958

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Since 1873, the wind has changed noticeably. It was not anymore political correct to ask economic questions. It was war time, Germany was constituting its nation state, it was a time of economic depression. The real parties of the game were not the populations of Germany and France, but the political interests who fought for and against free competition and free trade. Around 1873 the former succeeded: Patents as a means for nation-building. It was, as Machlup notes, a «victory of jurists and protectionists against economists». (Machlup 1958 sub D.) This victory was complete: It is ongoing in 2002.

## **Lessons for European Ip-Policy**

The legal system for patents has been established to promote nationalism. It was a means of nation-building in the 19<sup>th</sup> century. In this sense the rationale of patents was not the promotion of innovation.

European politicians should learn this lesson, if they want to alter the current legal system for patents. Especially they should have in mind the summary of Fritz Machlup in his report. We can change the whole system, may be we even should do it for economic reasons. But abandoning a certain system is extremely dangerous if we can not stand on alternative institutional arrangements.

Thus the best political solution would be to start principal changes of the whole system and change certain components who might improve the ability to innovation at the same time. Both, political visions and pragmatism are needed.

As an academic I would make two specific suggestions:

Future patent policy must strike an appropriate balance between patent law, copyright law and above all constitutional law. Overlooking this relationship endangers improper economic management of the core of the future information society.

«Source code privilege»:

The use of the source code of computer programs must be granted a privileged status under patent law. The creation, offering, marketing, possession, or introduction of the source code of a computer program in its various forms must be exempt from patent protection (source code privilege).



The openness of source code is a prerequisite for modern concepts of data protection as well. So patent policy today could be, astonishing enough, a newly emerging policy for the democratization of modern societies.

## Open Source Software and Data Protection

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### § 3 Documentation of Procedures

All procedures shall be documented.

### § 5 Description of procedures

Programs shall be documented in source code in principle.

Subordinate legislation towards «The Regularity of Automatic Processing of Personal Data as of April 2<sup>nd</sup>, 2001» in the Bundesland Schleswig-Holstein



I would like to quote Yochai Benkler, a legal scholar from New York University. He summarizes in his article on the «Battle over the institutional Ecosystem» what American politicians should have in mind. European and German politicians as well as I like to add:

«As economic policy, letting yesterday's winners dictate the terms of tomorrow's economic competition is disastrous. As social policy, missing an opportunity to enrich our freedom and enhance our justice while maintaining or even enhancing our productivity is unforgivable.»

(Benkler 2001, p 90)

## **Gouchoism is the answer!**

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**...«gouchoism(us)» might give the political answer for this crucial problem of softwarepatents.**

**...but tell me – what again was the question?**



Well then. We have learned that we are in the midst of a battle. Dear fellow Germans! Wasn't it unforgivable, to end this lecture with such military wording. Ending a lecture must be more humorous and must give us relief, must it not? Well done, Bernd. I have found in two new books on intellectual property this story on «Grouchismus». For this «myopic breed I mentioned before it would be certainly an interesting question whether the authors have stolen the idea from each other.

«In 1946, Groucho Marx received a letter from the legal department of Warner Brothers studios. The letter warned Marx that his next film project, A Night in Casablanca, might encroach on the Warners' rights to their 1942 film Casablanca. The letter prompted a reply from Marx that ridiculed many of the operational principles of rights protection in the film industry. «I had no idea that the city of Casablanca belonged exclusively to you. What about Warner Brothers? Professionally we were brothers long before you were.» Then Marx pondered how the filmgoing audience could possibly confuse the Marx brothers production with the widely successful Warner Brothers production. American filmgoers, Marx

argued, could probably distinguish between Casablanca star Ingrid Bergman and his blond brother Harpo Marx. «I don't know whether I could tell (the difference)“, Marx added, «but I certainly would like to try.» (Vaidhyathan 2001, p 1 , McMillan 2002, p 117)

Whilst we are fighting for the new institutional arrangement «grouchoismus» (McMillan 2002, p 117) might be helpful to go on to the bitter end of all these fights on intellectual property.

## References

Benkler 2001

Yochai Benkler: The Battle over the Institutional Ecosystem in the Digital Environment. In: Communications of the ACM February 2001/Vol. 44 No. 2, pp 84-90.

Bizer/Lutterbeck/Rieß 2002

Freundesgabe für Alfred Büllersbach. Johann Bizer, Bernd Lutterbeck, Jochen Rieß (Herausgeber), Stuttgart 2002. Onlineversion unter <http://www.alfred-buellesbach.de/PDF/Freundesgabe.pdf>.

Cole 2000

Julio H. Cole: Patents and Copyrights: Do the Benefits Exceed the Costs? Lecture given for the Mont Pèlerin Society, Santiago de Chile, Oktober 2000, [http://www.economia.ufm.edu.gt/Catedraticos/jhcole/Cole%20\\_MPS\\_.pdf](http://www.economia.ufm.edu.gt/Catedraticos/jhcole/Cole%20_MPS_.pdf), 29.3.2001.

Davis 2001

Randall Davis: The Digital Dilemma. In: Communications of the ACM, February 2001/Vol. 44 No. 2, pp77-83.

Franklin 1793

Benjamin Franklin: The Private Life of the Late Benjamin Franklin. Originally Written By Himself, and Now Translated From The French. Parsons: London 1793, Chapter X, <http://earlyamerica.com/lives/franklin/chapt10/index.html> , 29.3.2001.

Gleick 2000

James Gleick: Patently Absurd. New York Times Magazine v. 12.3.2000.

Heller/Eisenberg 1998

Michael A. Heller, Rebecca Eisenberg: Can Patents Deter Innovation? The Anticommons in Biomedical research. Science Vol. 280 as of 1 May 1998, pp 698.

Khan 2002

B. Zorina Khan (2002): Intellectual Property and Economic Development: Lessons from American and European History. Study Paper 1a. Commission on Intellectual Property Rights, London 2002.

Litman 2001

Jessica Litman: Digital Copyrights. Prometheus: Amherst, New York 2001.

Lutterbeck 2002 a

Bernd Lutterbeck: Revising the Policy of the European Union on Property Rights. Paper presented to the workshop «Frontiers of Ownership in the Global Economy». Institut français des relations internationales Paris. Paris, 11th to 12th June 2002, <http://ig.cs.tu-berlin.de/bl076/Lutterbeck2002-ParisPaper.pdf>.

Lutterbeck 2002 b

Bernd Lutterbeck: Die Wissensgesellschaft bauen! Erschienen in: Bizer/Lutterbeck/Rieß 2002, [http://www.alfred-buellesbach.de/PDF/05\\_Lutterbeck\\_Wissensg.pdf](http://www.alfred-buellesbach.de/PDF/05_Lutterbeck_Wissensg.pdf).

Lutterbeck/Gehring/Horns 2000

Sicherheit in der Informationstechnologie und Patentschutz für Softwareprodukte -- ein Widerspruch? (Dezember 2000) Gutachten im Auftrag des Bundesministeriums für Wirtschaft und Technologie, <http://www.sicherheit-im-internet.de/news/news.phtml?nnid=588> (English summary [http://ig.cs.tu-berlin.de/bl/056/LGH\\_Softwarepatents\\_EXECSUM.pdf](http://ig.cs.tu-berlin.de/bl/056/LGH_Softwarepatents_EXECSUM.pdf)).

Machlup 1958

Fritz Machlup: Die wirtschaftlichen Grundlagen des Patentrechts, available at <http://www.sffo.de/machlup1.htm> (English original partly available at [http://www.ipmall.fplc.edu/hosted\\_resources/jepson/unit1/aneconom.htm](http://www.ipmall.fplc.edu/hosted_resources/jepson/unit1/aneconom.htm), 20.10.02).

Manifesto 1994

Pamela Samuelson, Randall Davis, Mitchell D. Kapor, J.H. Reichman: A Manifesto Concerning the Legal Protection of Computer Programs. Symposium: Toward a third intellectual property paradigm. Columbia Law Review 94 (1994) no 8, p. 2308ff.

McMillan 2002

John Mcmillan: Reinventing the Bazaar. A natural History of markets. Norton: New York, London 2002.

Meier1991

Hugh A. Meier: Thomas Jefferson and a Democratic Technology, In: Technology in America: A History of Individuals and Ideas. Second Edition. Edited by Carroll W. Pursell Jr.. MIT Press: Cambridge, Mass, pp 17 - 33.

Pfeiffer 2002

Eric W. Pfeiffer: Mine Games, Forbes 06.24.02, [http://www.forbes.com/asap/2002/0624/060\\_print.html](http://www.forbes.com/asap/2002/0624/060_print.html), 20.10.02.

Pooley 2001

James Pooley: Changing Times for the U.S. Patent System. [published as] "Patents: The Wildcard of the New Economy" in Business Perspectives, Summer/Fall 2001, available at <http://bber.memphis.edu/PDF/Summer2001.pdf>.

Reichman 1992

Jerome H. Reichman: Legal Hybrids between the Patent and Copyright Paradigms. In: Altes/Dommering/Hugenholtz/Kabel 1992, p. 325ff.

Reichman 1994

Jerome H. Reichman: Legal Hybrids between the Patent and Copyright Paradigms. In: Columbia Law Review Vol. 94 (1994) No. 8, p. 2432ff.

Rivette/Kline 2000

Kevin G. Rivette, David Kline: Wie sich aus Patenten mehr herausholen lässt. In: HarvardBusiness manager 4/2000, S. 29ff.

Vaidhyathan 2001

Siva Vaidhyathan: Copyrights and Copywrongs. The Rise of Intellectual Property and How It Threatens Creativity. New York University Press: New York and London