Innovations as a Competition Parameter

Printed version of the lecture *Innovations as a Competition Parameter* from 16th December 2009

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0.1

Contents

Contents

1 Intellectual Property

1.1 (Intellectual) Property Rights

(Intellectual) Property rights

Property rights:
The owner has

- the right to control the use of the property,
  letting
- the right to the proceeds of the property,
  rent, leasing fees, profits from mineral/oil discovery etc.
- the right to sell or transfer the property ,
  give away
- the right to exclude others from using the property.

1.1

(Intellectual) Property rights

Intellectual property
In modern societies, intellectual property (IP) has similar protection for a limited time, i.e.

- others can be excluded from using the IP,
- one has the right to use, sell, lease, transfer, exchange the IP,
- one has the right to the proceeds of the IP
  license fees

1.2

1.2 Types of Intellectual Property Rights

Types of Intellectual Property Rights

Types

- (Trade Secrets)
- (Geographical Indications)
- Copyrights
- Trademarks
- Industrial Designs
- Patents

see TRIPs

1.3

1.2.1 Copyrights

Types of Intellectual Property Rights

Copyrights

- *Theory:* Protection (Monopoly) to foster literary and artistic works
  Movies
- *Subject matter:* Literary works, music, incl. software
  books, software
- *Limits:* No protection for facts; only expressions not ideas are protected
- *Requirements:* Originality, authorship, on a tangible medium
- *Steps:* Automatically, registration is optional
- *Scope:* against all literary/artistic works that are to similar in expression (not idea)

1.4

Types of Intellectual Property Rights

- *Duration:* TRIPs: $\geq$ 50 y from creation;
  USA: life of author + 70 y;
  for "works for hire" 95 y from publication or 120 y from creation
- *Extension:* none

1.5

1.2.2 Trademarks

Types of Intellectual Property Rights

Trademarks

- *Theory:* Protection of investment, protection from unfair competition
- *Subject matter:* Signs or combination of signs (incl. words) that are "capable of distinguishing the goods and services of one undertaking from those of another undertaking"
- *Limits:* Common words and descriptions; in many countries: use within 3 years
- *Requirements:* Originality, distinctiveness from other trademarks
- *Steps:* Application

1.6

Types of Intellectual Property Rights

- *Scope:* Applies for certain areas; others cannot use similar (combinations) of signs in those areas
  Oscar (Academy Award): Spielfilme und bespielte Videobänder; Druckschriften; Dienstleistungen auf dem Gebiet der Unterhaltung, nämlich Förderung der Filmindustrie auf dem Gebiet der Unterhaltungsfilme, durch Verleihung von Preisen, Prämien und Prädikaten, innerhalb der Spielfilmbranche, Filmvorführungen
- *Duration:* $\geq$ 7 y.
- *Extension:* unlimited

1.7

RESULT LIST: 5 RESULTS (DOWNLOAD RESULT LIST)

No.	Data file	File number/Register number▲	Reproduction of the trade mark	Type of mark	Classes	Status of file	Applicant/Proprietor
1	DE	1067586	OSCAR	Word mark	**9**, 16, 41	Trade mark registered	ACADEMY OF MOTION P Staates Kalifornien), Bev
2	DE	1067587		Figurative mark	**9**, 16, 41	Trade mark registered	ACADEMY OF MOTION P Staates Kalifornien), Bev
3	DE	2909310	ACADEMY AWARDS	Word mark	**41**, 9	Trade mark registered	ACADEMY OF MOTION P Staates Kalifornien), Bev
4	DE	DD653567		Figurative mark	**16**, 41	Trade mark registered	Academy of Motion Pictu US

Types of Intellectual Property Rights

1.8

Types of Intellectual Property Rights

550	Type of mark	MF	Word mark
220	Application date	AT	Feb 10, 1982
442	Date of publication under former trade mark law	BT	May 15, 1984
151	Date of entry into the register	ET	Aug 31, 1984
156	Extension of protection	VBD	Feb 11, 2002
730	Proprietor	INH	ACADEMY OF MOTION PICTURE ARTS AND SCIENCES, (n.d.Ges.d. Staates Kalifornien), Beverly Hills Calif., US
740	Representative	VTR	Lovells LLP, 20095 Hamburg, DE
750	address for service	ZAN	Lovells LLP, Alstertor 21, 20095 Hamburg
511	Classes	KL	**9**, 16, 41
510	List of goods and services	WDV	Spielfilme und bespielte Videobänder; Druckschriften; Dienstleistungen auf dem Gebiet der Unterhaltung, nämlich Förderung der Filmindustrie auf dem Gebiet der Unterhaltungsfilme, durch Verleihung von Preisen, Prämien und Prädikaten, innerhalb der Spielfilmbranche, Filmvorführungen
	Status of file	AST	Trade mark registered
180	Date of expiry of term of protection	VED	Feb 29, 2012
450	Date of publication of the registration	VT	Sep 29, 1984

1.9

1.2.3 Industrial Designs

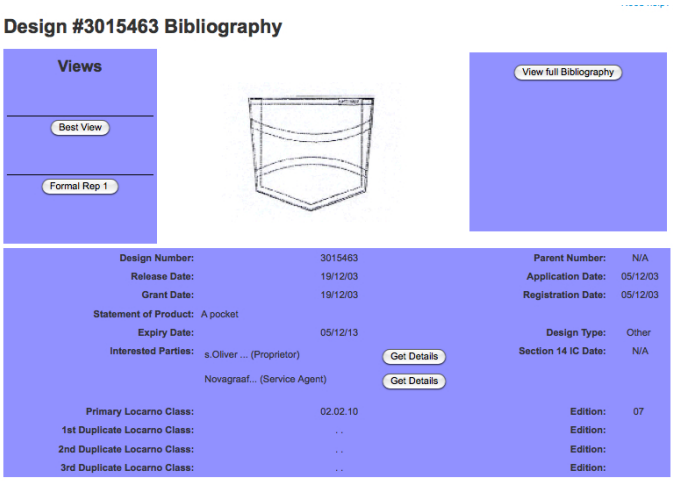
Types of Intellectual Property Rights

Industrial Designs:

- *Theory:* Protection of investment, protection from unfair competition
- *Subject matter:* Industrial designs
- *Limits:* If mainly dictated by technical or functional considerations
- *Requirements:* New, original, distinctive
- *Steps:* Application
- *Scope:* Against products that are similar in design
  example: lawsuit over GStar Jeans design
- *Duration:* $>$ 10 y, usually around 25, maintenance fees
- *Extension:* (no)

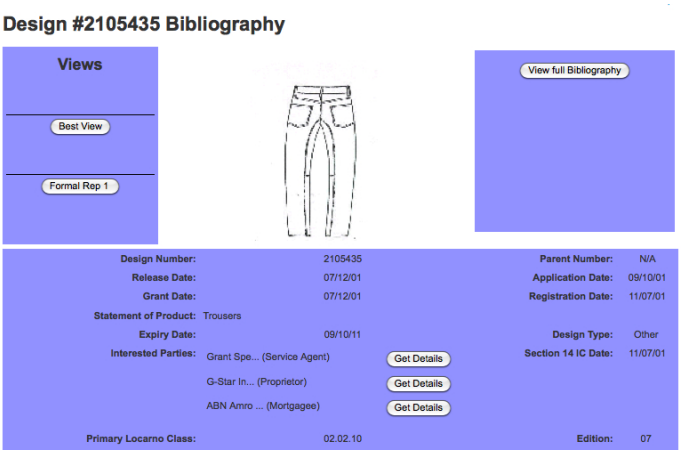
1.10

Types of Intellectual Property Rights



1.11

Types of Intellectual Property Rights



1.12

1.2.4 Patents

Types of Intellectual Property Rights

Patents

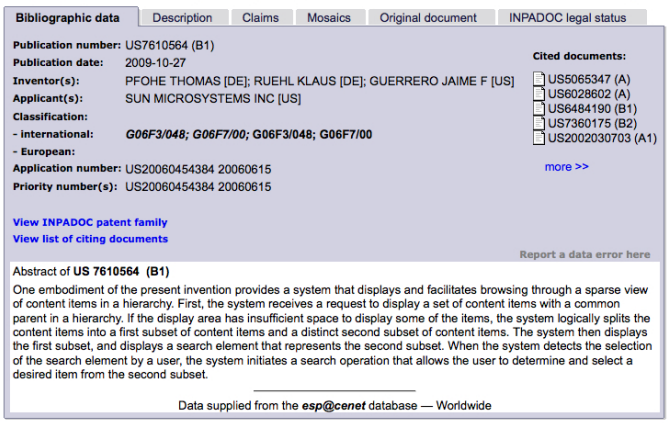
- *Theory:* To foster innovation, technological progress
- *Subject matter:* Inventions in "technical fields", list of subject matters is expanding *Software, Nanotechnology, Biotechnology, Business Methods*
- *Limits:* Natural law exception, naturally occurring substances,
- *Requirements:* Novelty, utility, non–obviousness, description and enablement
- *Steps:* Application

1.13

Types of Intellectual Property Rights

- *Scope:* Defined by claims (rather broadly formulated) $\Rightarrow$ broad protection against products and technologies that infringe (all) claims
- *Duration:* $>$ 20 y from application, usually exactly those 20 years, maintenance fees
- *Extension:* (no)

Types of Intellectual Property Rights



Bibliographic data | Description | Claims | Mosaics | Original document | INPADOC legal status

Publication number: US7610564 (B1)
Publication date: 2009-10-27
Inventor(s): PFOHE THOMAS [DE]; RUEHL KLAUS [DE]; GUERRERO JAIME F [US]
Applicant(s): SUN MICROSYSTEMS INC [US]
Classification:
- international: *G06F3/048; G06F7/00;* G06F3/048; G06F7/00
- European:
Application number: US20060454384 20060615
Priority number(s): US20060454384 20060615

Cited documents:
US5065347 (A)
US6028602 (A)
US6484190 (B1)
US7360175 (B2)
US2002030703 (A1)
more >>

View INPADOC patent family
View list of citing documents
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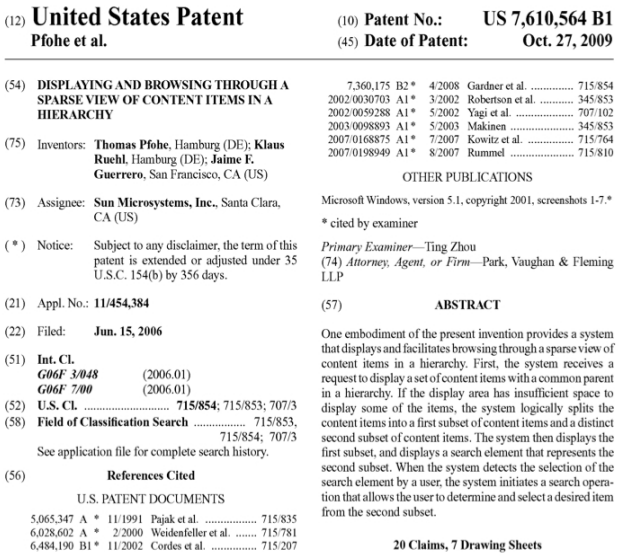
Abstract of **US 7610564 (B1)**

One embodiment of the present invention provides a system that displays and facilitates browsing through a sparse view of content items in a hierarchy. First, the system receives a request to display a set of content items with a common parent in a hierarchy. If the display area has insufficient space to display some of the items, the system logically splits the content items into a first subset of content items and a distinct second subset of content items. The system then displays the first subset, and displays a search element that represents the second subset. When the system detects the selection of the search element by a user, the system initiates a search operation that allows the user to determine and select a desired item from the second subset.

Data supplied from the *esp@cenet* database — Worldwide

Types of Intellectual Property Rights



(12) **United States Patent**
Pfohe et al.

(10) **Patent No.: US 7,610,564 B1**
(45) **Date of Patent: Oct. 27, 2009**

(54) **DISPLAYING AND BROWSING THROUGH A SPARSE VIEW OF CONTENT ITEMS IN A HIERARCHY**

(75) Inventors: **Thomas Pfohe**, Hamburg (DE); **Klaus Ruehl**, Hamburg (DE); **Jaime F. Guerrero**, San Francisco, CA (US)

(73) Assignee: **Sun Microsystems, Inc.**, Santa Clara, CA (US)

(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 356 days.

(21) Appl. No.: **11/454,384**

(22) Filed: **Jun. 15, 2006**

(51) **Int. Cl.**
G06F 3/048 (2006.01)
G06F 7/00 (2006.01)
(52) **U.S. Cl.** **715/854**; 715/853; 707/3
(58) **Field of Classification Search** 715/853, 715/854; 707/3
See application file for complete search history.

(56) **References Cited**

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2007/0198949	A1 *	8/2007	Rummel	715/810

OTHER PUBLICATIONS

Microsoft Windows, version 5.1, copyright 2001, screenshots 1-7.*

* cited by examiner

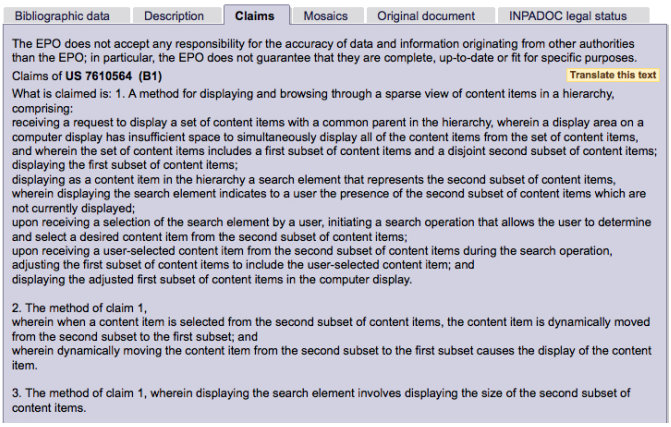
Primary Examiner—Ting Zhou
(74) *Attorney, Agent, or Firm*—Park, Vaughan & Fleming LLP

(57) **ABSTRACT**

One embodiment of the present invention provides a system that displays and facilitates browsing through a sparse view of content items in a hierarchy. First, the system receives a request to display a set of content items with a common parent in a hierarchy. If the display area has insufficient space to display some of the items, the system logically splits the content items into a first subset of content items and a distinct second subset of content items. The system then displays the first subset, and displays a search element that represents the second subset. When the system detects the selection of the search element by a user, the system initiates a search operation that allows the user to determine and select a desired item from the second subset.

20 Claims, 7 Drawing Sheets

Types of Intellectual Property Rights


Bibliographic data | Description | **Claims** | Mosaics | Original document | INPADOC legal status

The EPO does not accept any responsibility for the accuracy of data and information originating from other authorities than the EPO; in particular, the EPO does not guarantee that they are complete, up-to-date or fit for specific purposes.

Claims of **US 7610564 (B1)** Translate this text

What is claimed is: 1. A method for displaying and browsing through a sparse view of content items in a hierarchy, comprising:
receiving a request to display a set of content items with a common parent in the hierarchy, wherein a display area on a computer display has insufficient space to simultaneously display all of the content items from the set of content items, and wherein the set of content items includes a first subset of content items and a disjoint second subset of content items;
displaying the first subset of content items;
displaying as a content item in the hierarchy a search element that represents the second subset of content items, wherein displaying the search element indicates to a user the presence of the second subset of content items which are not currently displayed;
upon receiving a selection of the search element by a user, initiating a search operation that allows the user to determine and select a desired content item from the second subset of content items;
upon receiving a user-selected content item from the second subset of content items during the search operation, adjusting the first subset of content items to include the user-selected content item; and
displaying the adjusted first subset of content items in the computer display.

2. The method of claim 1,
wherein when a content item is selected from the second subset of content items, the content item is dynamically moved from the second subset to the first subset; and
wherein dynamically moving the content item from the second subset to the first subset causes the display of the content item.

3. The method of claim 1, wherein displaying the search element involves displaying the size of the second subset of content items.

1.17

1.2.5 Comparison

Types of Intellectual Property Rights

Comparison

- Each IPR protects something different
- Possible overlaps:
  - Software: Expression automatically protected by Copyright; also patentable
  - Industrial designs and Copyright
- Relative Strength: could be measured by
  - “Entry barrier” (requirements)
  - Scope and duration
- Requirements, scope and length are chosen to balance overall result

1.18

Types of Intellectual Property Rights

Comparison

	Copy-rights	**Trade-marks**	**Industrial Designs**	**Patents**
Requ.	low	low	medium	high
Scope	narrow	narrow	medium	broad
Length	long	(long)	long	short

1.19

2 History of (the US) Patent System

2.1 Objectives

Objectives

Objectives

- There were/are alternative protection mechanism
  - Prizes, Awards
- Patent Systems have been flexible
- Patent Systems have adapted to "new" challenges

2.1

2.2 The Beginnings

2.2.1 The Idea of a Patent

The Beginnings

The idea of a patent system

- Hippodamus of Miletus (498 BC–408 BC) discussed a reward system
- Aristotle (384 BC– 322 BC) criticised the idea
- Earlier form of patent systems re–emerge only during the late Middle Ages again *Why?*

2.2

The Beginnings

The nature of a patent

- Patents are documents that confer rights that give the owner an option to earn above–normal profits
- Patents are part of the institutional framework
  - Institutions don't adjust frictionless
  - Institutions have an inherent inertia
- Guilds of the late Middle Ages brought about the reward system

2.3

2.2.2 The Guilds in the Middle Ages

The Beginnings

The Guilds

- Very strong all over Europe
- Important, innovative institution (at the beginning)

- Guaranteed “quality standards” (for products and services)
- Elaborate dispute settlement (performed many functions of modern legal systems)
- Society in the Middle Ages has rigid class structure
  - Position in class hierarchy defines a person
  - Rights and obligations are defined by the position in the hierarchy
- Inventions were a “common” good for members of a guild as a exchange for the protection of the guild
- Insufficient incentives to innovate

2.4

2.2.3 The Privilege System

The Beginnings

The Privilege System

- Introduced to counterbalance the adverse effects of the Guilds (originally)
- First “letter of patent” in 1311
  1280s: first eyeglasses (North Italy);
  1338: Hundred Years War began
  - Not only for “real” inventions
  - For introducing a “new trade”
    Glass makers from Italy
  - Provided for foreigners; but they had to settle in the country (“working the patent”)
- No (enforceable) right to a “letter of patents”
- No formal patent requirements

2.5

2.2.4 The Venetian Senate's Act

The Beginnings

The Venetian Senate’s 1474 Act

“Be it enacted that, by the authority of this Council, every person who shall build any new and ingenious device in this City, not previously made in this Commonwealth, shall give notice of it to the office of our General Welfare Board when it has been reduced to perfection so that it can be used and operated. It being forbidden to every other person in any of our territories and towns to make any further device conforming with and similar to said one, without the consent and license of the author, for the term of 10 years. And if anybody builds it in violation hereof, the aforesaid author and inventor shall be entitled to have him summoned before any Magistrate of this City, by which Magistrate the said infringer shall be constrained to pay him one hundred ducats; and the device shall be destroyed at once.”

2.6

The Beginnings

The Venetian Senate's 1474 Act

- First recorded administered patent system in a "modern" form
- Dated 1474
  1450s: Gutenberg's movable type print;
  1492: Columbus discovered America
- Elements of the (modern) patent system:
  - Clear definition of the rights conferred: exclusive rights for 10 years
  - Patent requirements: device, novelty, reduced to perfection
  - Patent prosecution: registration at General Welfare Board
  - Patent enforcement: call the Magistrate
  - Remedies: 100 ducats; device destroyed

2.2.5 Alternative Systems

The Beginnings

Alternative systems
Prizes and awards , where 'inventors' are directly rewarded (a certain amount of money)

Comparison

- Prizes are a direct reward system
- Patents give the inventor the option to exercise the limited monopoly (supra–normal profits) $\Rightarrow$ indirect system
- Prizes probably older than "letter of patents"
- Later awards: works like a tender ('Ausschreibung')
- Awards also direct rewards

2.3 Developments in England

2.3.1 The Decline

Developments in England

The Monopoly System

- Early reign of Queen Elizabeth I (1533 – 1603): "letters of patent" as a mercantilistic instrument, i.e. to import technological knowledge
- End or the reign of Queen Elizabeth I: "letters of patent" given to courtiers; to raise money

$\Rightarrow$ Monopoly system

- Conducting business became difficult

2.3.2 Consolidation

Developments in England

1623 Statute of Monopolies

- Outlawed all monopolies except for "real" inventions
  1609: Microsope
  1642: Reign of Louis XIV

Properties of the Patent System

- Novelty, utility became acknowledged requirements
- Written description not necessary
- Often functionality had to be demonstrated

2.3.3 The Raise

Developments in England

Industrial Revolution

- Driven by inventions
- Steam engine only the "tip of the iceberg"; large number of "less important" inventions
- Put a strain on the system
- Conception of the patent system changed
  Contract between society and inventor in exchange for information
- Written description was introduced

2.4 Developments in the US

2.4.1 The 1790 Patent Statute

Developments in the US

The British Colonies in North America

- Power to shape laws lay with each colony
- Patent system was not unified
- Several patentees for the same subject matter
- Problems for inter–colony trade

1790 Patent Statute

- Patent law became federal law "with" the independence
- IPRs are guaranteed by the Constitution (only country)
- Patent requirements: novelty, utility, written description
- Registry–based system (no patent examination)

2.4.2 19th century – today

Developments in the US

19th century

- Registry–based system was exchanged for a modern application system with patent examinations
- Non–obviousness as patent requirement was developed and used, codified in the 1952 revision

Early 20th century

- Firms created large research departments
- Industrialisation of inventions/innovations
- 1920s – 1930s: anti–trust movement; hardly any patents sustained in court

2.13

Developments in the US

After WWII

- Patent law was reinstalled (1952 Patent Act)
- Anti–patent sentiments still strong
- 1960s – 1970s: probability that patents were upheld in court were small
- Diverging rulings of district courts
  New Court of Appeals for the Federal Circuit was formed
- Immediately harmonised rulings pro–patent
- Signing of the TRIPs Agreement made further changes necessary

2.14

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3 International Treaties

3.1 Objectives

Objectives

Objectives

- TRIPs Agreement is the best known international treaty
- Idea was quite old
- Institutional innovations (treaties) arise out of necessity

3.1

3.2 The Paris Convention

3.2.1 The Problem

The 1883 Paris Convention

The Problem

- International Exhibition in Vienna 1873
- Austrian patent law: novelty is destroyed by exhibiting prototypes
- Consequence: participating inventors could not apply for a patent after the Exhibition
- US delegation declined to participate unless Austria changed its law (didn't succeed)

Ambitions

- After International Exhibition of 1873, first conference
- Mostly German speaking participants
- Aim: "true" international patent (too ambitious)

3.2

3.2.2 Achievements

The 1883 Paris Convention

Achievements Among the most important achievements are:

- National treatment of foreigners
  - Foreigners treated as citizens
  - even though reciprocity is violated
- Priority
  - Usually 1 year to apply in other countries
  - Retain the "prior" application date (no one else can apply)
  - Foreign patent applications (exhibitions) cannot destroy novelty
- Independence of patents
  - If a patent in one country is invalidated, others remain in force

Important breakthrough

3.3

3.2.3 Administration

The 1883 Paris Convention

Administration

- WIPO in Geneva
- 173 members (2009)

Essence

- PC does not harmonise patent law
- PC provides minimum procedural standards
- Patent law remains national law
- National applications

3.4

3.3 The TRIPs Agreement

3.3.1 The Problem

The TRIPs Agreement

The Problem

- By 1980s Pfizer Inc. had invested heavily in foreign countries
- In many developing countries, (therapeutic) substances were not patentable
  Only the processes to produce them
- Large generics industry in India, Brazil
- Pfizer wanted to capture "all profits" from their inventions
- Within the WIPO (Paris Convention) developing countries had become stronger
- No effective enforcement mechanism
- Pfizer lobbied to get IPRs on the GATT round in Uruguay

3.5

3.3.2 Achievements

The TRIPs Agreement

Achievements

- TRIPs is a minimum standard of patent protection
  Not harmonisation
- Virtually all countries had to adapt patent law, DCs more so but gradually
- Whats new:
  - Patents for *all fields of technology*
    Opened the way for Nanotechnology, Business Methods;
    Ends the problem with India's generics industry
  - Patents rights now extends to imported goods
    Provision that protection can be revoked if patent is not worked in the country is unlawful
  - Process patents protect also the immediate result of the process (i.e. the product produced)
    Double protection for really new substances

3.6

The TRIPs Agreement

- Whats new:
  - Disputes are settled according to the GATT's harsh settlement rules
  - Heavy import duties can be imposed
  - US has brought Brazil, India and Pakistan before the settlement court (product patents for therapeutic substances)

3.7

3.4 The Patent Cooperation Treaty

3.4.1 The Problem

The PCT

The Problem

- Important inventions are protected in all important countries
- Every country had different (formal) application requirements
- Patent search and examination takes place in every country
- Patent offices chronically overworked
- Expensive both for government and applicants

⇒ Why not a simplified international application procedure

3.8

3.4.2 A PCT Application

The PCT

The PCT Application

- Filing application at a local patent office
- International phase:
  - Formally national procedures for the designated countries are opened
  - National procedures are halted for at least 20 months
  - International search is conducted
  - Search report for the inventor and all designated patent offices
  - Optional: international preliminary examination
  - National applications suspended for 5 months
- National phase:
  - Results forwarded to the patent offices
  - Translations required

3.9

3.4.3 Administration

The PCT Application

Administration

- WIPO, Geneva
- 141 contracting states (2009)

3.10

3.5 The European Patent Convention

3.5.1 Mission and Members

The EPC

Preamble
The Contracting States,

- DESIRING to strengthen co–operation between the States of Europe in respect of the protection of inventions,
- DESIRING that such protection may be obtained in those States by a **single procedure** for the grant of patents and by the establishment of certain standard rules governing patents so granted,
- DESIRING [...] to conclude a Convention which establishes a European Patent Organisation [...]

Enforced in 1973; latest revision from 2007.

The EPC

Members

- EU members
- Switzerland, Norway, Iceland, Liechtenstein, Monaco, Croatia, Former Yugoslave Rep. of Macedonia, Turkey

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3.5.2 Nature and Developments

The EPC

Nature

- EPC is a regional patent agreement
- EPO issues patents on behalf of the member states
- Not a community patent
  - Until recently: invalidation in one country didn't automatically invalidate patents in other countries
  - Maintenance fees payable in every country

The EPC

Recent developments

- Art 65 (Translations):
  - London Agreement (optional) entered into force 1.5.2008 in many countries (http://www.epo.org)

  - Makes multiple applications less expensive
- European Patent Litigation Agreement (EPLA)
  - Formed in 1999 (latest draft: 2004 discontinued)
  - Goal: optional protocol so that signatory states commit to a integrated judicial system
- Community patent and patent litigation
  - Commenced in 2000
  - Latest revised Proposal dated 30.10.2009 (not adopted yet)
  - Installation of a European Paten Court
  - "True" patent, invalidated by the EuPatCourt means invalidated in all countries

3.14

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4 Natural Rights & Utilitarianism

4.1 Natural Rights Theory

Natural Rights and Utilitarianism

Justification for patent systems

- Many patent theories
- Natural rights theory (popular amongst lawyers)
- Utilitarianism (economist)

4.1

Natural Rights and Utilitarianism

Natural Rights Theory

- Dates back to Locke (1632 – 1704)
- Belief: there are (natural) rights derived from the state of nature
- These rights precede any positive law made by man
- Positive law that violates natural rights is invalid and does not have to be observed
- Natural rights:
  (a) To preserve one's life, liberty and estates
  (b) To prevent others from violating natural rights

4.2

Natural Rights and Utilitarianism

Property rights

- Every person must be given the means to achieve (a) and (b)

- What a person does with her/is hands (unowned resources) is his own
  Definition of property and ownership
- Government/King has the moral obligation to protect these rights
- In modern context: applies to IP as well since all kinds of property should be treated equally

4.3

Natural Rights and Utilitarianism

Note

- Natural rights theory needs no justification for IPRs (different from Utilitarianism)
- Societies have the obligation to protect them
- Provisions for IPRs follow immediately (duration, scope etc)
- In actual law little evidence

4.4

4.2 Utilitarianism

Utilitarianism

Jeremy Bentham (1748 – 1832)

- Criticised natural rights theory
  - All law is positive, made by man
  - Offers no guidance as to which measures are to be taken
- Introduced the concept of general utility
- Egalitarian concept
  Everyone counts as one and one only

General utility as a yardstick

1. Is intervention necessary to strengthen IP
2. Which set of rules should be applied
3. How should the rules be designed

4.5

4.2.1 Intervention necessary?

Utilitarianism

Is intervention necessary

- Intervention justified with market failure
- Many theories/hypothesis
  - Inventions are information
    Have public goods properties (non–rival), i.e. *under–provision inventions*

  - Competition over innovations, but only one patent
    over–provision of effort
    Race for a new medicine for high blood pressure
  - Information as an input factor
    Without patents, trade secrecy is used
    under–provision of information
- Intervention justified in these cases, for different reasons

Patents are not necessarily the best instrument

4.6

4.2.2 Which reward system?

Utilitarianism

Which reward system

- Patent, rewards, prizes
- Prizes:
  - Ex–post reward
  - Inventor receives reward in exchange for the invention
  - No monopoly power, no market distortions
  - Potential duplication of effort
- Awards:
  - Ex–post reward
  - Tender
  - If an invention satisfies the specifications the award is granted in exchange for the invention
  - No monopoly power, no market distortion
  - Depending on the design, minimal duplication of effort

4.7

Utilitarianism

- Patents
  - Inevitably create market power, market distortions
  - Lower welfare than prizes, awards
  - Information requirements much lower
  - Works in an uncertain environment
  - Although inferior under many circumstances, its the dominant reward system now

How to design a patent system

- Such as to maximise welfare, especially
- Encourage the dissemination of knowledge
- Making rewards proportional to the “true” value of the invention
- Minimise social costs by limiting the exclusive rights
- Maximise social benefits also by fostering inventions

4.8

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5 Patent Law

5.1 Patent Application to Patent Grant

Patent Law

Application to Grant

- Patent application at the local patent office
- Parts of an application
  - Bibliographic data
  - Body
  - Claims

Bibliographic data
Information on

- Application date, inventors, assignees (applicants)
- Local and international classification numbers
- Cited references (inserted by the examiners)
- Abstract, (informative title)

5.1

Patent Law

Body

- Description of the invention
- Made clear where the invention builds upon previous inventions (citations)
- Description how to make and use the invention
- After application no new material can be inserted

Claims

- Describe in a short, formalised manner what the invention is
- Must correspond to the description in the body

5.2

Examiner
After application filing

- Examiner conducts a prior arts search
- Conducts a formal examination
  - To assess whether invention is new, useful and non–obvious
- Examiner informs the applicant about the results
- Enters into a "negotiation" with the applicant
  - To re–phrase the claims
  - Usually to narrow the scope
- Makes her/is decision (the second is final)
- Decisions can be appealed

5.2 Patent Law

5.2.1 Patent Fees

Different fees have to be paid

- Application fees, search and examination fees, fees for having more than 16 claims (EU), grant fees
- After issuance, yearly maintenance fees are due
  in EU: payable with the local patent offices for each country for which is has been granted

Economics of Fees

- Entry barrier
- Inventions for which must have a minimum value
- Administrative fees (app. 3000 EURO) are low as compared to fees for patent attorneys and translation fees
- Low value inventions (probably rejected anyway) do not apply
- Makes patent offices more efficient

5.2.2 Patentable Subject Matter

- Broad technology classes for which patents are in principle available

TRIPs Art. 27 (1)

[...] patents shall be available for any inventions, whether products or processes, in all *fields of technology*, provided that they are new, involve an *inventive step* and are *capable of industrial application*. [...] patents shall be available and patent rights enjoyable without discrimination as to the place of invention, the field of technology and whether products are imported or locally produced.

- Limits:
  - Must relate to technology
    No artistic works, no facts
  - Must contain an act of creativity (inventive step)
    No naturally occurring substances
  - Must be capable of industrial application
    No abstract ideas or laws of nature for which no practical use is known (Einstein's relativity theory), no algorithms
- However: the application of laws of nature to practical use is patentable!
- Initially narrowly construed
  Software, nanotechnology, business methods not patentable
- Has been extended to new fields

Economic consequences

- *Expanding patentable subject matter to biotech*
- Inventions even without patent protection
  University research, use of trade secrecy
- Under–provision of knowledge by using trade secrecy
- With extension: faster dissemination of knowledge
- Knowledge remains not scattered
- Resources are not wasted by duplication
- Inventions arrive on average sooner
- Higher economic growth
- Industrial policy: works like a subsidy without actually spending the money
- With extension: research money is redirected towards new fields; higher growth rates

5.5

5.2.3 Utility Requirement

Utility Requirement

- Explicitly mentioned in Art. 27 (1), §101 USC 35
- Patents only for inventions that increase social welfare
  Partly measured by utility
- Originally to exclude immoral and dangerous inventions

Today three tests:

- Practical utility
- Beneficial utility
- Operability

Operability test

- Is the invention capable of what it claims to do
- Excludes fantastic claims (perpeduum mobile) and accidental mistakes

Beneficial utility test

- Is the invention generally desirable for society
- Harmful and immoral inventions can be excluded

Practical utility test

- Invention must have a use
- Standard is rather low
- Most important for pharmaceutical, biotechnological inventions and new materials

Economic Consequences

- Utility requirement comparably easy to satisfied
- Minimal benefit for society
- In principle/officially, usefulness is not the same as commercial success for patent examiners
- Commercial success as secondary factor in court cases
- More and more the sole factor to be used to determine usefulness
- Discourages inventors to apply too early (discover the use first!)
- Even commercially unsuccessful inventions may be useful: starting point for further investigations

5.6

5.2.4 Novelty and Statutory Bars

Novelty and Statutory Bars

- Explicitly mentioned in Art. 27 (1), §101 and §102 USC 35

A person shall be entitled to a patent unless
(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country before the invention thereof by the applicant for patent [...]

Problems:

- How to measure novelty
- To which point in time the measure should be applied

When has it to be satisfied

- Two concepts:
  - Novelty at the invention data (only US)
  - Novelty at the application date (all others)

Who is the inventor

- Two concepts
  - Who invented the subject matter first
    First–to–invent method (US)
  - Who applied for the subject matter first
    First–to–file method (all others)

Economic consequences

- US: rewarding true inventor
- All other countries: rewarding the first applicant
- Not necessarily the same person
- All other countries: incentives to patent early
- Only a few disputes about the inventorship in the US
- These court cases are enormously complex and therefore expensive
- First–to–file method seems to be a good compromise

When is an invention new?

- "How much of an invention can be described in a printed publication"
- Concept of anticipation:
  - A single publication must describe each and every part/aspect of the invention
  - Then, invention is not new
- If claims 1 – 5 are described in publication A and 6 – 7 in publication B, then the invention does satisfy the novelty requirement
- Combination of known aspects is a creative act, creates something new

Economic consequences

- Assume that an invention B is based on a publication A
- Assume that there is no patent corresponding to A
  - B receives profits it doesn't deserve
  - Consumers suffer since prices are increase
  - Deadweight loss higher
- Assume that there is a (foreign) patent corresponding to A
  - Same as above
  - A suffers as it is barred from the domestic market

Statutory bars (US)

- §102 (b–d) USC 35
- Concerned with events prior to application
- Destroy novelty (mainly)
  - Subject matter has already been patented (abroad)
  - Subject matter has been described or published (anticipation standard) at least ***one year prior to application***
  - "Older" patent application has been abandoned

Economic consequences

- Encourage an early application
- Disseminate knowledge faster
- Increase economic growth

5.7

5.2.5 Non–obviousness Requirement

Non–Obviousness Standard

§103 USC 35:
A patent may not be obtained [...] if the difference between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which the subject matter pertains.

Non–obviousness standard (NOS)

- Non–obviousness as a measure of technical quality improvement
- Mere combination of known elements is not patentable
- Rules out trivial inventions
- *"Person skilled in the art"* is a hypothetical construct

Economic consequences

- Weak NOS:
  - *A process patent for a new therapeutical substance*
  - Slight improvement is patentable (subservient patent)
  - First inventor produces himself
    - First inventor has to license the second patent to reduce production costs
    - Total reward for the patent is limited
    - Value of the first patent decreases
    - This may affect the ability to lend money etc.
    - Second inventor's reward isn't proportional to social benefit
    - Increases the incentive to pursue sub–optimally small inventions
    - Might trigger a waiting game (Clark, 1927)

Economic consequences

- Weak NOS:
  - First inventor ***does not*** produce himself
    - License fees have to be reduced, or
    - Number of licenses are reduced
    - Total license revenue decreases
    - Value of the patent decreases
    - Incentives as above

Economic consequences

- Strong NOS:
  - *A product patent for a new therapeutical substance*
  - Even moderate or high improvements are not patentable (subservient patent)
    - Use of trade secrecy
    - Insufficient dissemination of knowledge
    - Incentives to pursue too large (basic) inventions; too few applications

5.8

5.2.6 Disclosure and Enablement

Disclosure and Enablement

§112 USC 35

The specification shall contain a *written description* of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to *enable* any person skilled in the art to which it pertains, or with the which it is most nearly connected, to make and use the same, and shall set forth the *best mode* contemplated by the inventor of carrying out his invention.

Elements

1. Definiteness of claims
2. Written description
3. Enablement
4. Best mode

Definiteness of claims

- Claims have to be written in such a way that the boundaries of the legal rights can be easily understood by a person skilled in the art
- Claims cannot be broader than the description
- "Described what claimed and claimed what described"

Economic consequences

- Increase certainty as to the patent scope and breadth
- Reduce (social) costs of litigation
- Reward for what has been invented, not more
- Proportionality between invention's social value and reward

Written description

- Invention has to be fully described
- Relations to other inventions (publications) have to be made clear
- No disparity between description and claims

Economic consequences

- Dissemination of knowledge
- The usual welfare and growth consequences

Enablement

- Description of how to make and use the invention
- Important for process patents where the "use" is patented
- *New use of a known therapeutical substance is patentable*

Economic consequences

- Inventor is not allowed to withhold information that enables him alone to use the patent
- Dissemination of all the information
- The usual welfare and growth consequences
- Reduction of unnecessary experimentation (increases welfare)

Best mode

- Often several materials (different pressure levels etc) can be used
- The configuration yielding the best results have to be described
- See patent: US 200.827.680.8

Economic consequences

- Reduction of unnecessary information
- Usual welfare consequences of lower social costs and better dissemination of knowledge

5.9

5.2.7 Infringement

Infringement

§271 USC 35

[...] whoever without authority makes, uses, offers to sell, or sells any patented invention, within the United States, or imports into the United States any patented invention during the term of the patent therefore, infringes the patent.

Infringement

- Claims define the scope of the patent
- Claims are literally construed (at first)
- Every element of at least one claim has to be violated
- Literal infringement is rare
- Simple alterations would “protect the infringer”
- Two concepts are used
  - Doctrine of Equivalents
  - Reverse Doctrine of Equivalents

Doctrine of Equivalents

- Triple Identity Test
  “if the same functions are used in the same way to produce the same result” the (element of the) process or product is the same as in the patented invention
- Has to be established for each and every element of the patent
- Broadens the literal scope of the claims
- Protects the patentee

Reverse Doctrine of Equivalents

- Triple Identity Test
  “if the same functions are used in a fundamentally different way to produce the same result” the (element of the) process or product is not the same as in the patented invention
- Narrows the scope of a patent
- Protects the accused infringer

Economic consequences

- Protection of patentees’ rights
- Whole patent system is ineffective if the judicial system is ineffective or inefficient
- DoE too liberal:
  - Follow–on research may be halted
  - Even large improvements would infringe
- RDoE too broad:
  - Not sufficient protection for original patentee
  - Slowing down of technological progress and growth

5.10

5.2.8 Remedies

Remedies

Remedies

- (Full) Compensation for the injury of infringement
- Only relevant when patent is *valid and infringed*

- Principle tools
  - Injunction relief
  - Reasonable royalty damage
  - Lost profits damage
  - Wilful infringement

Injunction relief

- After patent has been found infringed, infringer has to stop his wrongdoing
- Permanent injunction relief is common practise
- Preliminary injunction relief
  - Sought by the injured party at the beginning of the proceedings
  - Formerly very rare, now more often
  - Injured party has to credibly show that infringement is very probably
  - Accused party is entitled to compensation if the patent is not infringed

Economic consequences

- "Punishment" makes the system effective
- After an injunction relief, license negotiations may start
- Preliminary injunction relief is a powerful tool
- Used to threaten opponent as a whole business can be destroyed even before the trial has taken place

Reasonable Royalty/Lost Profit Damage

- Both determine the monetary compensation
- Patentee has the burden of proof
- Standards of proof are high to protect infringer
- Lost profit damage
  - Compensation should match the true profit loss
  - Also indirect injuries can be included
  - *Price reductions for unpatented "older versions" of a product due to the forced price reduction for the patented good*
  - Hard to have solid proofs
- Reasonable royalty damage
  - On the basis of a hypothetical license contract
  - Usually used when "Lost profit damage" cannot be applied

Wilful infringement

- If the infringer was aware of the existence of the patent
- Infringer liable to treble damage

Economic consequences

- Remedies ensure that infringer do not profit from violating the law
- Effective and efficient systems encourage license agreements
- Treble damage due to wilful infringement is pure punishment
- Effectively does inhibit the knowledge flow
- Inventors cannot read patents

5.11

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6 Patents & Competition

6.1 Innovation & Market Structure

Innovation & Market Structure

Relationship

- Both are interrelated
- Fierce competition motivates research (escape)
- (Patented) Innovations change market structure (limited monopoly)
  - *Process innovation: lower production costs; higher profits*
  - *Product innovation: lower/no competition for the new product*

6.1

6.2 Competition in Innovation

Competition in Innovation

The Nature of Inventions

- Inventions as ideas that have been "worked out"
- Two scenarios
  - Ideas drawn from *public* knowledge
    - Road for technological progress fairly known
    - Details have to be worked out
    - Many firms/inventors try to solve the problems
    - "Patent races"
  - Ideas drawn from *private* knowledge
    - Truly innovative solutions
    - Large inventions
    - Probably yielding a monopoly position

6.2

6.3 Patents & Anti–Competitive Behaviour

6.3.1 Anti–Competitive Behaviour

Anti–Competitive Behaviour

Multiple Parties involved

- Cartels (price or quantity coordination)
- Geographic coordination
  European vs Asian market
- Establishing entry barriers

One–sided Efforts

- Differential behaviour,
  e.g. *charging customers different prices/royalties (Microsoft)*
- Below average cost pricing to establish de facto standards
- Bundling to achieve the same effect
  Microsoft including Browser into the OS
- Raising entry barriers
- General bullying incl. slander etc.

6.3.2 Licensing Out

Licensing Out I

Example

Firm A holds a patent on an active ingredient to cure Alzheimer's disease. Firm B wants to produce and distribute it in Asia. A refuses; B sues A for anti–competitive behaviour.

Question 1

Is firm B right? Analyse the case carefully, i.e. under which circumstances could A's behaviour be anti–competitive?

Question 2

Would your verdict change if the patent was for a research tool necessary to find a cure for cancer or HIV/AIDS?

Licensing Out II

Cases

- Image Technical Services Inc. v. Kodak, 1997 (liable to anti–trust)
- In re Independent Service Organizations Antitrust Litigation, 2000 (not liable)

Licensing Out III

Things to remember

- Intellectual property rights are property rights
- Freedom to use them as the owner sees fit
- *Right to deny persons the entry to your home!*
- Firms have the freedom to choose their business partners
- Governments can impose compulsory licenses
- Have not been used since WWII

6.6

6.3.3 Grant–Backs

Grant–Backs

Example

Firm A licenses a patent to firm B. The license contract stipulates that firm B has to grant back (license/give back) any intellectual properties that result from the original patent.

Question

Does this constitute anti–competitive behaviour?

6.7

Grant–Backs

Things to remember

- A does not really pay for the IP of B
- B is not forced into a contract with A
- Grant–backs have been monitored closely
- So far courts ruled that grant–backs are not per sè anti–competitive

6.8

6.3.4 Patent Thickets

Patent Thickets

Patent Thickets

- Products have become more complex
- Production of a product typically requires licenses for more than one patent
- (Proprietary) Software frequently involves far more than 100 patents
- *Patent thicket: overlapping set of property rights, commercialisation requires licenses from multiple patentees*
- Problem:
  - Time–consuming, costly license negotiations required
  - If one patentee denies the license, product cannot be offered

  - development cost are sunk

- Hold–up Problem:
  - Firms are not always aware of all (pending) patents
  - Patentees are entitled to an injunction relief if patents are valid and infringed
  - Firms have to redesign products if that is at all possible without violating another patent
- Problems might slow technological progress down; obstruct the provision of useful products

6.9

6.3.5 Patent Pools

Patent Pools

Patent Pools

- Possibility to overcome patent thicket/hold–up problem
- Patents are collected in a pool and licensed out as a package
- *MPEG2, DVD-R, DVD+R*

Question *Is there concern for anti–competitive behaviour when firms (competitors) create a patent pool?*

6.10

Things to remember

- There are complementary and alternative (substitute) technologies
- Including substitute technologies is seen as price–fixing
- Not all patents are relevant for all products
- Refusing to license separately is seen as discriminating behaviour
- Price–fixing or quota–setting might be going on despite flawless patent pool agreements

6.11

6.3.6 Standard Setting I

Standard Setting

Standards

- Necessary to increase welfare when IP are fragmented
- Essential for network industries (telecommunication)
- Created by (independent) standard setting organisations (SSO)
  w3.org for html
- Standard setting wars occur
  Blueray vs HDDVD

6.12
