

How to protect firm's technological innovation ?

Valentina Chiariello

University of Naples "Parthenope" - DiSAE

Economics of innovation

Appropriability

The degree to which a firm can capture the rents from its innovation is termed **appropriability**.

The appropriability of an innovation is determined by how easily or quickly competitors can imitate the innovation.

The ease with which competitors can imitate the innovation is, in turn, a function of both the nature of the technology itself and the strength of the mechanisms used to protect the innovation.

Level of difficulty in Imitation

Some technological innovations are difficult for competitors to copy;
The knowledge underlying the technology may be rare and difficult to replicate.

A firm's unique prior experience or talent pool may give it a foundation of technical know-how that its competitors do not possess.

This knowledge base could be:

- **tacit:** it cannot be readily codified into documents or procedures;
- **socially complex:** it arises through complex interactions between people and competitors will typically find it very difficult to duplicate.
 - a firm that has a team of uniquely talented research scientists may have a **rare and difficult-to-imitate** knowledge base.

Level of difficulty in Imitation

- While some of the skill of the research scientists may be due to imitable training procedures,
 - ***talent*** typically implies that an individual (or group) has a natural endowment or ability that is very difficult, if not impossible, to replicate through training.
- Furthermore, if the unique capabilities of the research team arise in part from the nature of the interactions between the scientists, their performance will be socially complex.
- Interactions between individuals can significantly shape what each individual perceives, and thus what each individual—and the collective group—discovers or learns.

Level of difficulty in Imitation

Many innovations, however, are relatively easy for competitors to imitate.

Individuals and firms often employ legal mechanisms to attempt to protect their innovations.

Most countries offer legal protection for intellectual property in the form of:

- ❖ **Patent**
- ❖ **Trademark**
- ❖ **Copyright**
- ❖ **Trade secret laws**

PATENTS, TRADEMARKS, AND COPYRIGHTS

Patents, copyrights, and trademarks are all ways of protecting intellectual property, they are each designed to protect different things.

- A **patent** protects an invention;
- a **trademark** protects words or symbols intended to distinguish the source of a good;
- a **copyright** protects an original artistic or literary work.

Thus, a typical computer might have components whose designs are protected by patents, logos such as the Starbucks mermaid that are protected by trademark law, and software that is protected by copyright.

Patents

- In many countries, inventors can apply for patent protection for their inventions.
- An invention can be a product, such as a new type of battery, or a process, such as a new way to manufacture bagels.
- In the United States, patents are categorized into different types such as:
 - *utility* patent for a new and useful process, machine, manufactured item, or combination of materials;
 - *design* patent for an original and ornamental design for a manufactured item;
 - *plant* patent for the discovery and asexual reproduction of a distinct and new variety of plant.
- Each country has its own patent system with different requirements, and unless a patent is filed under a regional patent office or an international treaty, the rights it is granted are applicable only in the country in which the patent is filed.

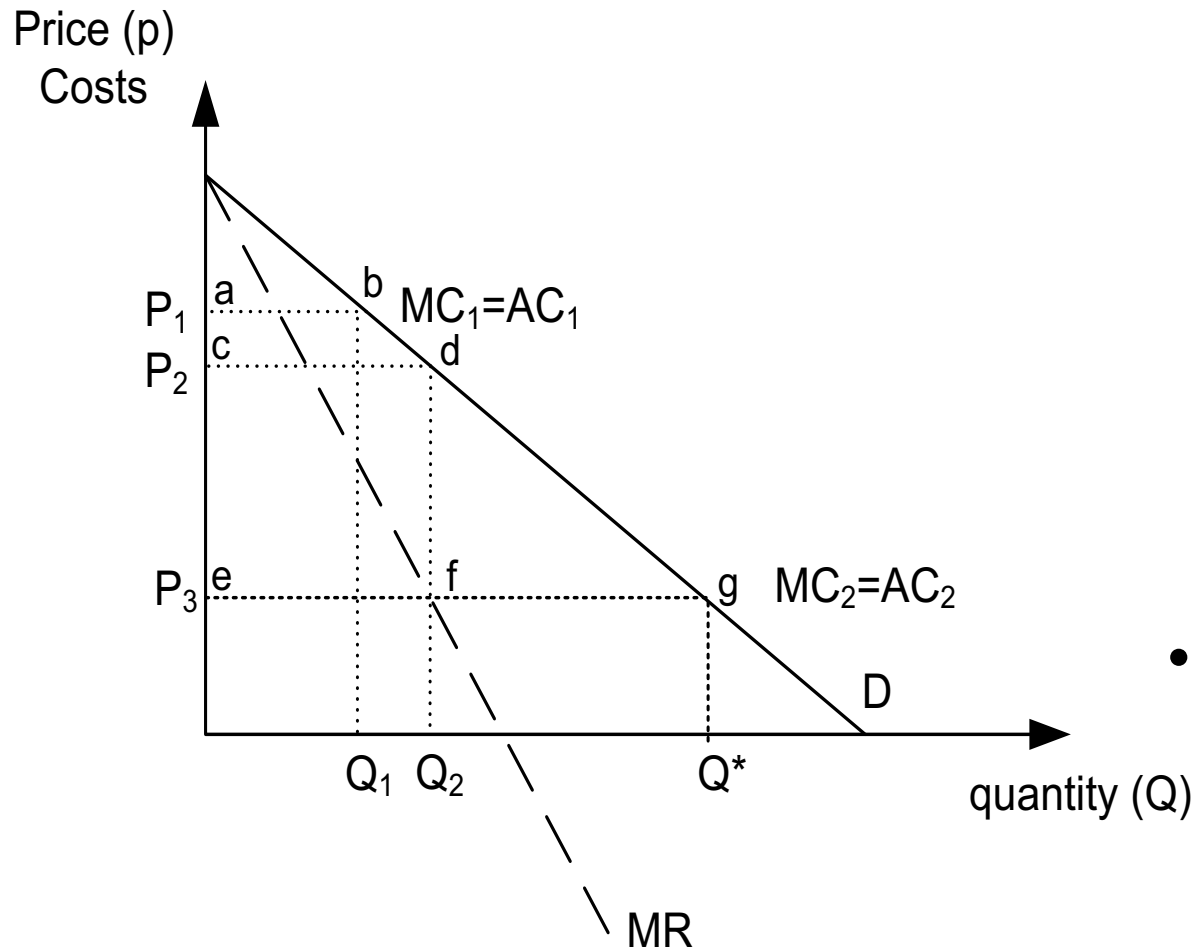
Why are patents awarded?

- Incentive to invest in innovation
 - Note: invention may occur without monetary incentives (due to human curiosity), but an innovation requires investment
- Without some guarantee of private ownership, innovators might not put resources into innovative activity, as their findings would rapidly be imitated, leaving them with little or no profit.
 - This happens as knowledge has the characteristics of a public good: it is nonrival, meaning it can be used by many without being used up; and it is nonexcludable, as it cannot be easily defended from imitators.
 - So IPRs assist the creators of a nonrival good (the innovative knowledge or design) to appropriate the returns of their innovation for themselves alone.

Illustrating the role of patents

- Since patents make a nonrival good excludable, they introduce inefficiency for the duration of the right.
- The patents gives the creator a monopoly right and this causes the price of the good to be above the marginal cost of its production.
- Consumers lose because a monopolist restricts output to raise prices: that is, they lose out because not enough of the innovative good is being sold.

Illustrating the role of patents



- Figure shows a drastic process innovation
 - Patent owner now has monopoly (sets high price compared to marginal cost, and restricts quantity)
 - BUT, price is lower than previous price (pre-innovation), hence society wants innovation.
 - Society would also like lower prices ($P=MC$), and this happens when patent protection expires (normally after 20 years)
- Note: the above logic applies for all product and process innovation, but easy to illustrate with drastic process innovation

Qualification for a Patent

To qualify for a patent, an invention must usually meet the following criteria:

1. It must be *useful* (i.e., it must produce a desirable result, solve a problem, improve on or propose a new use for an existing development or show potential of doing so).
2. It must be *novel* (i.e., it must not already be patented or described in public literature, or be in public use for more than a year).
3. It must *not be obvious* (i.e., a person with experience or skill in the particular art of the patent would not be expected to achieve the same invention with a normal amount of effort).

What cannot be patented

In most countries, the discovery of scientific principles that pertain to natural laws (e.g., gravity) cannot be patented because they are considered to have always existed. Additionally, the following are not typically patentable:

- Substituting one material for another (e.g., plastic for metal).
- Merely changing the size of an already existing device.
- Making something more portable.
- Substituting an element for an equivalent element.
- Altering an item's shape.

How to apply for a patent

To apply for a patent, the inventor must explain how to make and use the invention, and make claims about what it does that makes it a new invention.

Drawings of the new invention are also often required.

In the US, this application is reviewed by a patent examiner who may modify the scope of the claims made by the patent. The patent is then published for a time in which other inventors can challenge the patent grant (if, e.g., they believe that the patent infringes on previously granted patents). If the standards for patentability are met, the patent is then granted. The entire process from application to granting is lengthy.

Dimensions of patent

1. How long does a patent last if it is granted?

- The monopoly right to exploit a patented invention is assigned to the creator for up to twenty years, after which the property right expires and the right to exploitation is open to all without fee or further restriction. There are some exceptions.

2. How near to the original invention another party can get without being judged to have infringed the right of the patent holder?

- This is partly determined by what claims of originality are accepted by the patent examiner in their scrutiny of the application.

3. The patent property right is geographically limited to the area of the legal jurisdiction under which it is registered.

Major International Patent Treaties

- There is currently no “world patent”
- A patent granted in one country does not automatically provide protection in other countries.
- In some regions, however, there are regional patent offices that grant patents valid in all the member nations of that program.
 - the European Patent Office
 - the Africa Regional Intellectual Property Organization

Many inventors wish to patent their inventions in many countries simultaneously. To make that easier, several international treaties have been negotiated between countries that seek to harmonize the patent laws around the world.

Major International Patent Treaties

Two of the most significant treaties are:

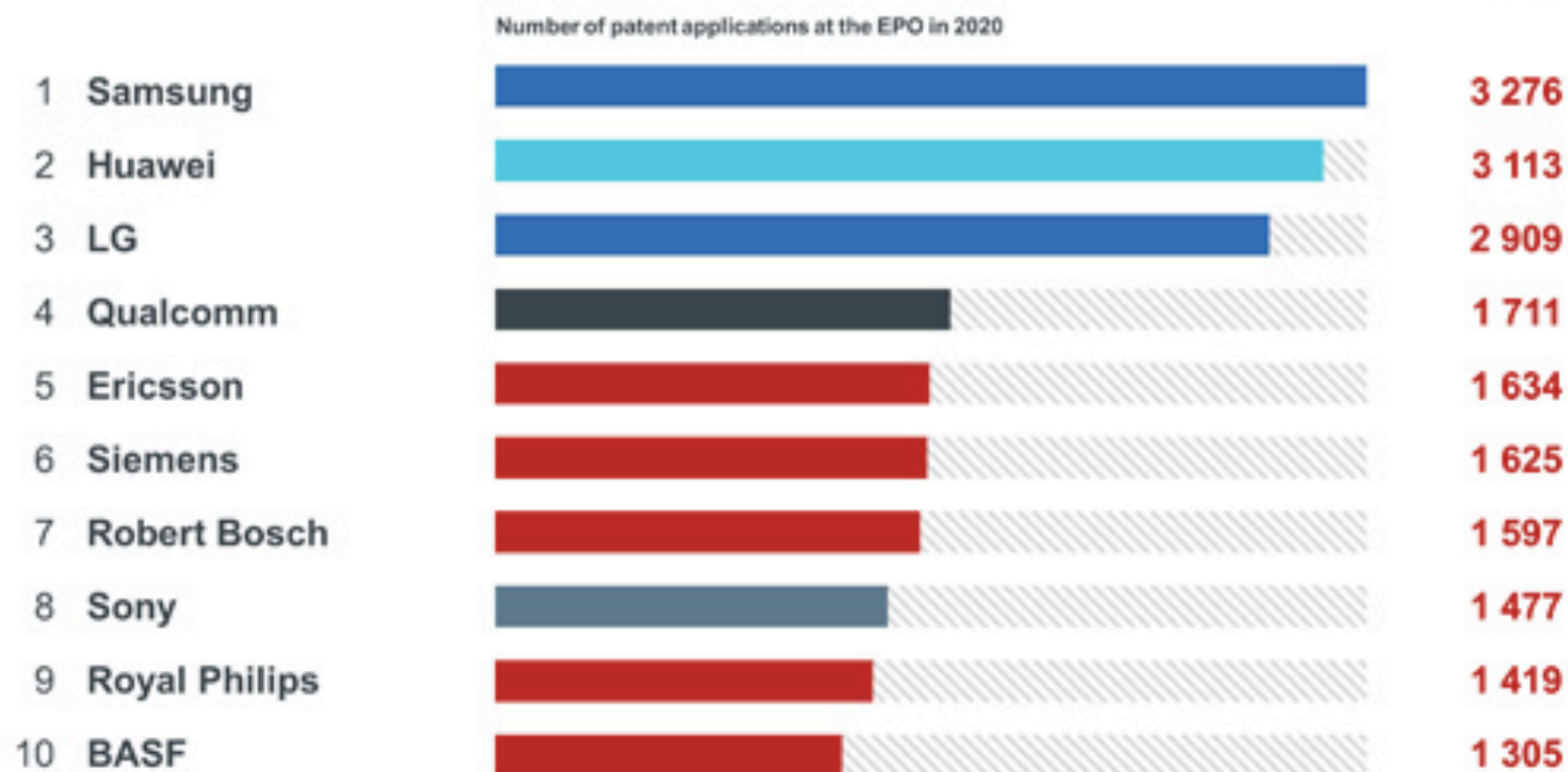
- The **Paris Convention for the Protection of Industrial Property**, signed in Paris, on 20 March 1883, adhered to by 177 countries was one of the first intellectual property treaties. It established a Union for the protection of industrial property. The Convention is currently still in force. The substantive provisions of the Convention fall into three main categories: national treatment, priority right and common rules. Under the Paris Convention, a citizen of any member country may patent an invention in any of the member countries and enjoy the same benefits of patent protection as if the inventor were a citizen of those countries.
- The **Patent Cooperation Treaty (PCT)** is an international patent law treaty, concluded in 1970. It provides a unified procedure for filing patent applications to protect inventions in 152 countries. A patent application filed under the PCT is called an **international application**, or **PCT application**.

A Market for Patent Rights?

- Once a patent is granted, the documentation about the ownership, content, and coverage of the IPR means that the right is saleable (if the owner wishes to take an immediate full private profit).
- Alternatively, the use of the technique, or other inventive step, can be licensed to others at the discretion of the patent holder, providing returns to an inventor who does not wish to pursue production.
- Firms can also engage in patent pooling with one or more other firms, offering their IPRs in exchange for access to other firms' IPRs; they can even make advance contracts for the interfirm exchanges of technology where they see large advantages in reducing uncertainty and time lags in contracting.
- All these features of patents mean that a market for property rights in knowledge can be established.

Top applicants for European patents 2020

TOP 10



● EPO states

● United States

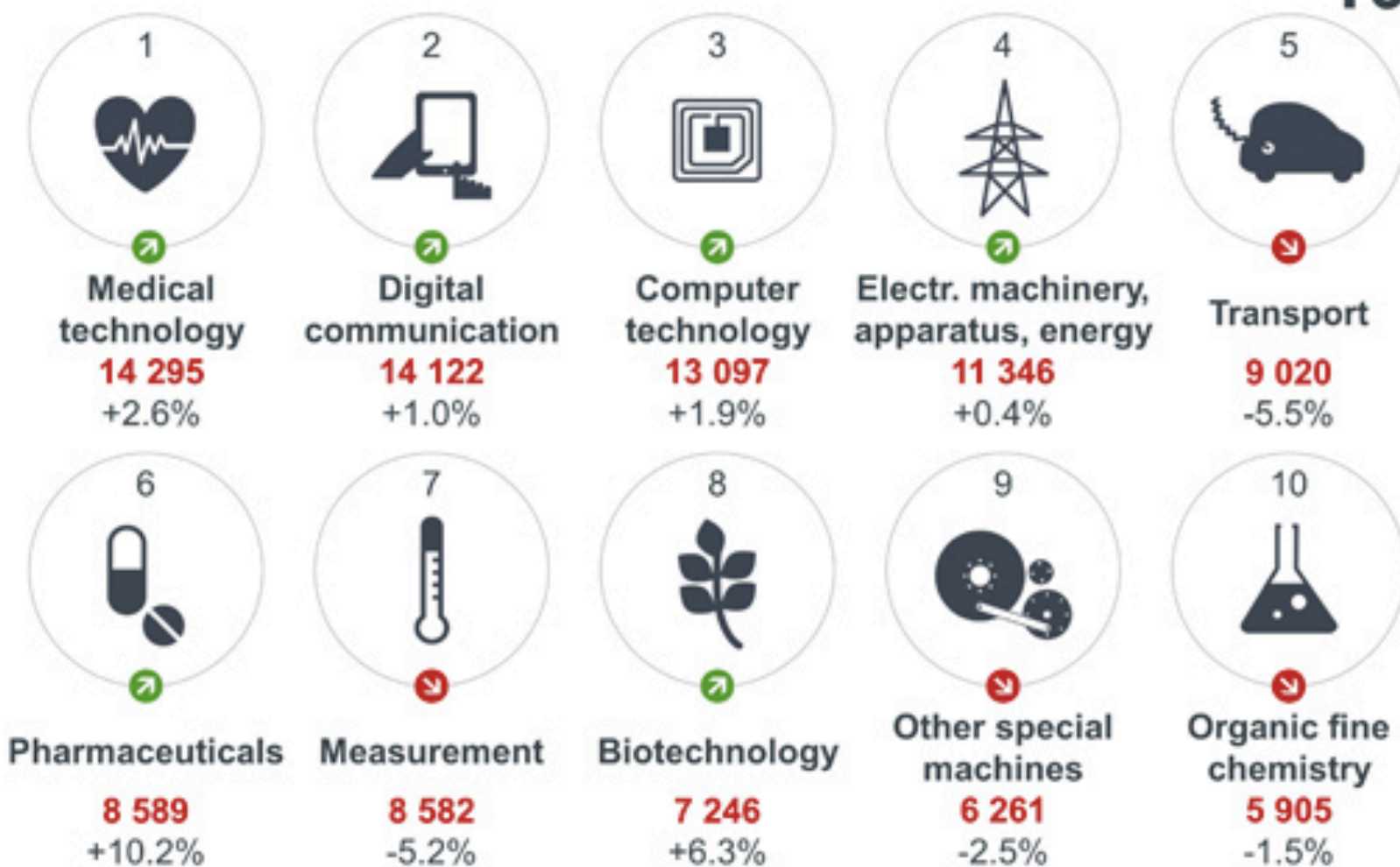
● R. Korea

● P.R. China

● Japan

Top technical fields for European patent applications 2020

TOP 10



Patent Strategies

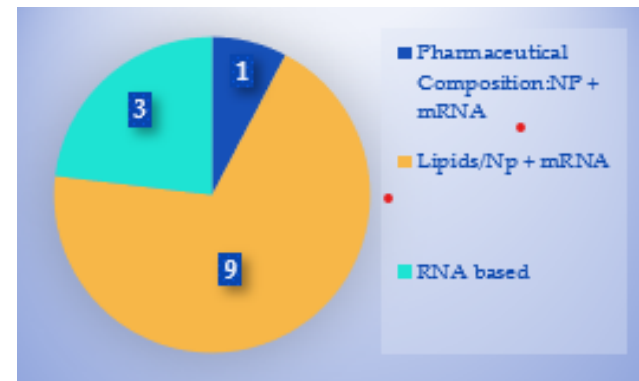
- In general inventors seek a patent because they desire to make and sell the invention themselves.
- However, inventors and firms may monetize patents in a range of different ways, including licensing the technology to others or selling the patent rights to another firm that can better utilize the technology.
- Furthermore, whereas the conventional wisdom is that most inventors prefer to keep the details of their invention secret before the patent is granted (to prevent rivals from having access to their proprietary knowledge), this turns out not to be the case.
- Firms may also seek patents just to limit the options of competitors or to earn revenues through aggressive patent lawsuits. These actions are sometimes referred to as “**patent trolling.**”
- In industries with complex technologies such as computers, software, and telecommunications, a dense web of overlapping patents known as “**patent thickets**” can make it very difficult for firms to compete without falling prey to patent suits by other firms in that technology domain.

An example of patent

Safe and effective vaccines are key to combating the Covid-19 pandemic; patents and other intellectual property claims directed at vaccine technologies create legal barriers for equitable access and fair allocation.

We identified several patents claimed by BioNTech relating to the pertinent vaccine technologies. We placed them in three groups based on their description and their primary independent claim:

- Patents directed at RNA non-exhaustive list.
- Patents directed at Lipids/NP + mRNA
- Patents specifically directed at pharmaceutical compositions involving lipid NP + mRNA



All patents and patent applications identified in this study were claimed by BioNTech indicating that they are the inventor of the relevant vaccine technology, while Pfizer is acting as the innovator and leading the large-scale manufacturing, development, and regulatory approval process.

Patent races

- A patent race is a competition between two or more inventors (usually firms) to discover an invention first in order to obtain patent protection for the invention and exclude competitors.
- In a typical patent race, each inventor or company makes an irrecoverable bid – notably, inventors make substantial research and development (R&D) investments - for the prize of obtaining the patent.
- In a race, the player that is prepared to pay the most to develop the invention first wins the prize (patent).
- One of the players in the race is usually an incumbent monopolist, currently supplying products with which the future invention would compete.
- If the incumbent's rivals do not obtain the patent first, then the monopoly persists, but if the challenger (new firm) wins the patent, the latter will enter the market and compete with the incumbent (Harris and Vickers, 1985).
- In research-intensive industries, such as pharmaceuticals and high-technology electronics, the constant introduction of new products and R&D investment to achieve product innovation are critical for the survival of a firm.

What is the relationship between patent races and innovation?

With regard to innovation, it is important to distinguish between two kinds of patent races:

- 1) standard races, in which the winning firm obtains the patent and the other firm loses its R&D expenditures;
- 2) asymmetrical races, where an incumbent firm tries to prevent a rival from filing a patent first and thereby avoid competition

What are the policy implications of patent races?

Since patent races lead to increased investment, they can also lead to quicker innovation. Therefore, it is important that the patent system be designed to encourage innovation, while carefully weighing the benefits of quick innovation against possible harmful costs generated by races.

Where this is the case, governments can promote research alliances in order to avoid over-investment and duplication of research efforts.

Wasteful patent races could also be eliminated by the early grant of the patent. Nonetheless, this approach has to be carefully designed in order to maintain the incentives that the patent system provides for innovators.

Further information on patents

- US: <http://www.uspto.gov>
 - http://www.uspto.gov/web/offices/ac/ahrpa/opa/kids/kidevents_press.html
- UK: <http://www.ipo.gov.uk>
 - <http://www.ipo.gov.uk/types/patent/p-about/p-funandgames/p-map.htm>
- European Patent Office: <http://www.epo.org/>
 - <http://www.epo.org/topics/ip-webguide.html>
- World IP Office: <http://www.wipo.int>
- Patent scoreboards (national offices and also)
http://bwnt.businessweek.com/interactive_reports/most_innovative/
- There are many on-line resources, including free patent searches (e.g.
<http://www.patents.com/>)

Trademarks

A trademark is a word, phrase, symbol, design, or other indicator that is used to distinguish the source of goods from one party from the goods of others.


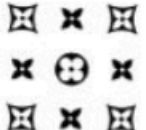









Trademark: the Louis Vuitton example

Louis Vuitton has used its Toile Monogram Design for over 120 years and has obtained nine trademark registrations which incorporate aspects of the design.

This case is interesting because Louis Vuitton is not asserting infringement of a single mark, but of nine separately registered marks. The complaint separates these asserted marks into three groups: the Toile Monogram Design Trademark, comprising four separate marks; the LV Design Trademark, comprising two separate marks, and the Flower Design Trademarks, comprising three separate marks.

Trademark: the Louis Vuitton example

Mark	Reg. No.	Reg. Date	Class & Goods
<i>The TOILE MONOGRAM Design Trademark</i>			
	4,192,541	08/21/2012	<i>Inter alia</i> , IC 025: Clothing, namely, underwear, shirts, tee-shirts, pullovers, skirts, dresses, trousers, coats, jackets, belts for clothing, scarves, sashes for wear, gloves, neckties, socks, bathing suits; footwear; headwear
	3,107,072	06/20/2006	<i>Inter alia</i> , IC 025: Clothing and undergarments, namely, belts, scarves, shawls, jackets, sashes for wear, bathing suits, shoes, boots
	2,399,161	10/31/2000	IC 025: Clothing and underwear, namely, shirts, polo shirts, t-shirts, waistcoats, raincoats, skirts, coats, trousers, dresses, jackets, shawls, stoles, scarves, neckties, gloves, ties, belts, bathing suits, shoes, boots and sandals, hats
	1,770,131	05/11/1993	IC 025: Clothing for men and women, namely, shawls, sashes, scarves; headgear

<i>The LV Design Trademark</i>			
	1,794,905	09/28/1993	<i>Inter alia</i> , IC 025: Clothing for men and women; namely belts, shawls, sashes, scarves; footwear headgear
	2,361,695	06/27/2000	IC 025: Clothing, namely, sweaters, shirts, sweatshirts, polo shirts, t-shirts, suits, waistcoats, raincoats, skirts, coats, pullovers, trousers, dresses, jackets, shawls, stoles, scarves, neckties, pocket squares, pocket handkerchief squares for wear, gloves, ties, belts, bathing suits, shoes, boots and sandals, hats
<i>The FLOWER Design Trademarks</i>			
	2,181,753	08/18/1998	<i>Inter alia</i> , IC 025: Clothing and underwear, namely, shirts, waistcoats, raincoats, skirts, coats, pullovers, trousers, dresses, jackets, shawls, stoles, scarves, neckties, pocket squares, belts, shoes, boots and sandals
	2,773,107	10/14/2003	<i>Inter alia</i> , IC 025: Clothing, namely, shirts, T-shirts, belts, scarves, neck ties, shawls, skirts, raincoats, overcoats, trousers, jeans, pullovers, frocks, high-heeled shoes, low-heeled shoes, boots, tennis shoes; hats
	2,177,828	08/04/1998	<i>Inter alia</i> , IC 025: Clothing and underwear, namely, shirts, waistcoats, raincoats, skirts, coats, pullovers, trousers, dresses, jackets, shawls, stoles, scarves, neckties, pocket squares, belts, shoes, boots and sandals

The service mark

A service mark is basically the same as a trademark, but distinguishes the provider of a service rather than a product. Often the term *trademark* is used to refer to both trademarks and service marks.

Some of the service marks owned by InterContinental Hotels Group, its subsidiaries or affiliates:



Trademarks and service marks

- Trademarks and service marks can be embodied in any indicator that can be perceived through one of the five senses.
- Most marks are embodied in visual indicators, such as words, pictures, and slogans.
- However, marks are also registered that use other senses such as sound (e.g., tones that are associated with a particular company or brand) or smells (as in fragrance).
- Trademark rights may be used to prevent others from using a mark that is similar enough to be confusing, but they may not be used to prevent others from producing or selling the same goods or services under a clearly different mark.

Major International Trademark Treaties

- Almost all countries offer forms of trademark registration and protection. National or regional offices maintain a Register of Trademarks that contains information on all trademark registrations and renewals. To eliminate the need to register separately in each country (or region), the World Intellectual Property Organization administers a System of International Registration of Marks governed by two treaties:
 - the Madrid Agreement Concerning the International Registration of Marks
 - the Madrid Protocol
- Countries that adhere to either the treaties are part of the Madrid Union. As of April 2014, there were 91 member countries of the Madrid Union.

Top trademarkers in the US and Europe

US Trademarks (registered)	2006	EC trademarks (registered)	2006
Mattel	639	Glaxo	154
Deutsche Telekom	429	L'Oreal	138
Novartis	134	Novartis	135
American Int'l AIG)	126	El Corte Ingles	127
Disney Enterprises	120	Barilla G. e R. Fratelli Società per Azioni	115
Proctor and Gamble	117	Bristol-Myers Squibb	106
Mars	101	Procter and Gamble	105
IGT	96	Viacom International	104
Beautybank	93	Lidl Siftung	87
Nedboy, Robin	90	Sony	76

Copyright

- Copyright is a form of protection granted to works of authorship.
- In the United States, the authors of original literary, dramatic, musical, artistic, and certain other intellectual works can obtain copyright protection.
- Like trademarks, the rights of copyright protection are established by legitimate use of the work. This protection is available whether or not the work is published and prevents others from producing or distributing that work.

Copyright

The owner of the copyright has the exclusive right to:

- Reproduce the work in copies or phonorecords.
- Prepare derivative works based upon the work.
- Distribute copies or phonorecords of the work to the public by sale or other transfer of ownership, or by rental, lease, or lending.
- Perform the work publicly, in the case of literary, musical, dramatic, and choreographic works, pantomimes, and motion pictures and other audiovisual works.
- Display the copyrighted work publicly, in the case of literary, musical, dramatic, and choreographic works, pantomimes, and pictorial, graphic, or sculptural works, including the individual images of a motion picture or other audiovisual work.
- Perform the work publicly by means of a digital audio transmission (in the case of sound recordings).

Copyright protection around the world

Copyright protection varies from country to country.

Most countries offer copyright protection to both domestic and foreign works, and there are international copyright treaties for simplifying the process of securing such protection.

- One of the most significant is the Berne Union for the Protection of Literary and Artistic Property
- Other treaties include the Universal Copyright Convention (UCC);
- the Rome Convention for the Protection of Performers, Producers of Phonograms and Broadcasting Organizations;
- the Brussels Convention Relating to the Distribution of Program-Carrying Signals Transmitted by Satellite;
- the World Intellectual Property Organization Copyright Treaty.

Trade secrets

- Rather than disclose detailed information about a proprietary product or process in exchange for the grant of a patent, inventors or firms often will choose to protect their intellectual property by holding it as a **trade secret**.
- A trade secret is information that belongs to a business that is generally unknown to others.
- Trade secrets need not meet many of the stringent requirements of patent law, enabling a broader class of assets and activities to be protectable.

Trade secrets

- Information is typically considered to be a trade secret only if it:
 - (a) offers a distinctive advantage to the company in the form of economic rents
 - (b) remains valuable only as long as the information remains private.
- Examples of trade secrets might include information about a firm's customers, its marketing strategies, or its manufacturing processes. Trade secret law protects such information from being wrongfully taken by another party

Trade secrets

- In the US, trade secret law is implemented at the state level, but the Uniform Trade Secret Act attempts to make these laws consistent from state to state.
- For information to qualify as a trade secret under the Uniform Trade Secret Act, the information must meet the following three criteria:
 - The information must not be generally known or readily ascertainable through legitimate means.
 - The information must have economic importance that is contingent upon its secrecy.
 - The trade secret holder must exercise reasonable measures to protect the secrecy of the information.

The Uniform Trade Secret Act

- The Uniform Trade Secret Act states that no individual or group can copy, use, or benefit from a trade secret without the owner's authorization if they meet *any* of the following conditions:
 - They are bound by a duty of confidentiality (e.g., employees, lawyers).
 - They have signed a nondisclosure agreement.
 - They acquire the secret through improper means such as theft or bribery.
 - They acquire the information from someone who did not have the right to disclose it.
 - They learn about the secret by mistake but have reason to know that the information was a protected trade secret.

The effectiveness and use of protection mechanisms

Between the different industries the methods used to protect innovation vary considerably.

E.g. in pharmaceuticals industry, mechanisms like patents are very effective.

E.g. in industries such as electronics, patents and copyright provide relatively little protection because other firms can often invent around the patent without infringing on it.

It is also difficult to enforce patents protecting industrial processes such as manufacturing techniques.

The effectiveness and use of protection mechanisms

- For some competitive situations, protecting a technology it is not as desirable as liberally diffusing it.
- In industries characterized by increasing returns, firms sometimes choose to liberally diffuse their technologies to increase their likelihood of rising to the position of dominant design.
- The more a technology is adopted, the more valuable it becomes. This dynamic can lead to winner-take-all markets that create natural monopolies.
- A firm that controls the standard can reap monopoly rents and can exert significant architectural control over both its own industry and related industries.

The effectiveness and use of protection mechanisms

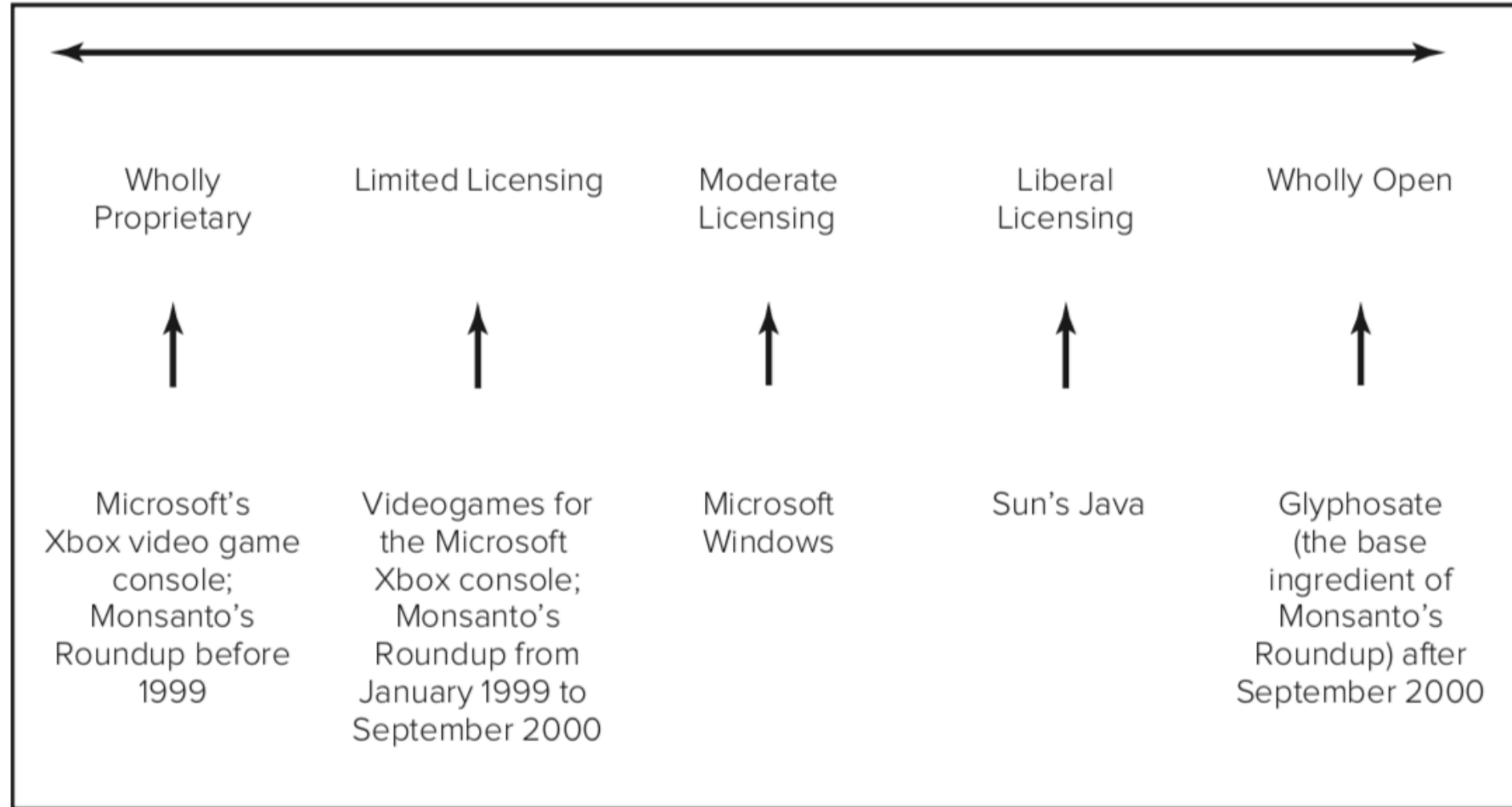
Dilemma:

- If a firm liberally diffuses the technology to would-be competitors, it relinquishes the opportunity to capture monopoly rents when and if the technology emerges as a dominant design.
- Once control of a technology is relinquished, it can be very hard to regain; thus, such diffusion may result in the firm losing all hope of controlling the technology. Finally, liberal diffusion of the technology can result in the fragmentation of the technology platform: As different producers add improvements to the technology that make it better fit their needs, the “standard” may be split into many non-standardized versions

Wholly Proprietary Systems vs Wholly Open Systems

Wholly proprietary systems	wholly open systems
<ul style="list-style-type: none">• Are based on technology that is company-owned and protected through patents, copyrights, secrecy, or other mechanisms.• Such technologies may be legally produced or augmented only by their developers.• Are often not compatible with the products offered by other manufacturers. Because their operation is based on protected technology, other manufacturers are often unable to develop components that may interact with the proprietary system.• Typically provide their developers with the opportunity to appropriate rents from the technology. However, they might also be less likely to be adopted readily by customers as a result of their higher costs and the inability to mix and match components.	<ul style="list-style-type: none">• The technology used in a product or process is not protected by secrecy or patents;• it may be based on available standards or it may be new technology that is openly diffused to other producers.• These technologies may be freely accessed, augmented, and distributed by anyone.• Such technologies are usually quickly commoditized and provide little appropriability of rents to their developers.

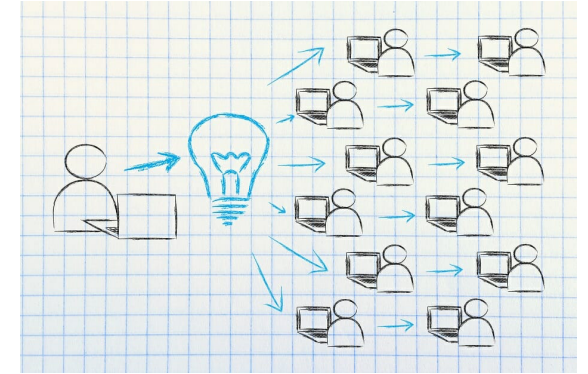
Examples on the Continuum from Wholly Proprietary to Wholly Open



Advantages of Protection

- Proprietary systems offer greater rent appropriability, and their developers often have more money and incentive to invest in technological development, promotion, and distribution.
- The profits from the technology may be directly reinvested in further improvements in the technology.
- The sponsor of a proprietary technology might also adopt a penetration pricing strategy to rapidly build its installed base, it may spend aggressively on advertising to increase awareness of the technology, and it may even subsidize the production of complementary goods to increase the desirability of its technology to customers.
- Protecting the technology also gives the developing firm architectural control over the technology.

Advantages of Diffusion



- Open technologies may accrue more rapid adoptions.
If multiple firms are producing, distributing, and promoting the technology, the technology's installed base may accumulate much more rapidly than if one firm alone is responsible for such activities.
- Competition among producers may drive the price of the technology down, making it more attractive to customers.
- Both customers and complementary goods providers may also perceive the technology as better if there are multiple companies backing the technology.
- Thus, a liberal diffusion strategy can stimulate the growth of the installed base and availability of complementary goods.

Production Capabilities, Marketing Capabilities, and Capital

- If the firm is unable to produce the technology at sufficient volume or quality levels (or market the technology with sufficient intensity), then protecting the technology so that the firm is its sole provider may significantly hinder its adoption.
- Similarly, if complementary goods influence the value of the technology to users, then the firm must:
 - (a) be able to produce the complements in sufficient range and quantity,
 - (b) sponsor their production by other firms,
 - (c) encourage collective production of the complements through a more open technology strategy.

Industry Opposition against Sole-Source Technology

Sometimes other industry members are able to exert strong pressure against the adoption of a technology that would give one (or a few) producer(s) undue control and power, causing a technology that is restricted to such production to be rejected or more hotly contested than a more open technology.

Resources for Internal Development

- If a firm does not have significant resources (capital, technological expertise) to invest in the technology's functionality, it may have difficulty producing a technology that has an initial performance level, and rate of improvement, that the market finds attractive.
- In such instances, it can be valuable to tap the external development efforts of other firms (or individuals) through utilizing a more open technology strategy.

Control over Fragmentation

For technologies in which standardization and compatibility are important, maintaining the integrity of the core product is absolutely essential, and external development can put it at risk.

- If the developing firm relinquishes all control over the development of the technology, the technology will have no shepherd with the ability and authority to direct its trajectory and ensure that a single standard remains intact. This suggests that the developer of any technology that requires standardization and compatibility should retain some degree of control over the technology, or find/establish another governing body with the authority to do so.

Incentives for Architectural Control

- Architectural control over the evolution of a technology is always valuable; however, it becomes particularly valuable if a firm is a significant producer of complements to the technology.
- A firm with architectural control can typically design the technology to be compatible with its own complements and incompatible with those of competitors.
- If the technology is chosen as the dominant design, this architectural control allows the firm to ensure that it reaps the lion's share of the rewards in complements production.
- Furthermore, by making the technology selectively compatible with some competitors and not others, the firm can exert great influence over the competitive field.