Innovation and Technical Change

Intellectual property basics
Prof. Bronwyn H. Hall
UC Berkeley

Outline (Sept 28 and 30)

- What is intellectual property?
- Overview of IP protection mechanisms
  - Patent
  - Copyright
  - Trade secret
  - Sui generis
  - Trademark
- How does the patent system work in practice?
- Current policy problems

What is intellectual property?

- Ordinary property
  - something that can be owned
  - owner can exclude others from using it
  - ownership can be transferred to another
  - both rival and excludable
- By analogy, intellectual property is a knowledge or information good that has been given the attributes of property via the creation of legal protection mechanisms
Intellectual property rights

- Legal mechanisms in the current US system
  - Patents
  - Copyrights
  - Trademarks
  - Sui generis, e.g., semiconductor mask protection
  - Trade secrets
- Some goods can be protected by more than one of these instruments

Patent

- Type of property: new & useful process, machine, composition of matter; improvement patent, plant, design
- Discloses the invention
- Can be licensed or transferred to another
- Patent holder can sue to enforce; infringer can counter by challenging validity. Appeals heard by a specialized Court of Appeals for the Federal Circuit Court (post 1982)
- Length of term: 20 years from date of filing; +5 for FDA approval; changed from 17 years from date of issue in 1995
- Non-renewable (although can be allowed to lapse earlier if interim renewal fees are not paid)

(Very) brief history of patenting

- Originally a monopoly grant from the crown or government
- Early tech patents: Florence (1421), Venice (1474 statute)
- 1793 – US law follows England’s 1623 law, designed to reduce abuse by the crown
  - Registration system
- 1836 – US establishes PTO to screen patents
  - Examination system
- 1883 – Paris convention (national treatment)
- 1970 - patent cooperation treaty (PCT)
- 1994 – TRIPS agreement
Brunelleschi’s patent on Il Badalone (1)

The Magnificent and Powerful Lords, Lords Magistrate, and Standard Bearer of Justice:

Considering that the admirable Filippo Brunelleschi, a man of the most perspicacious intellect, industry, and invention, citizen of Florence, has invented some machine or kind of ship, by means of which he thinks he can easily, at any time, bring in any merchandise and load on the river Arno and on any other river or water, for less money than usual, and with several other benefits to merchants and others, and that he refuses to make such machine available to the public, in order that the fruit of his genius and skill may not be reaped by another without his will and consent; and that, if he enjoyed some prerogative concerning this, he would open up what he is hiding and would disclose it to all;

And desiring that this matter, so withheld and hidden without fruit, shall be brought to light to be of profit to both said Filippo and our whole country and others, and that some privilege be created for said Filippo…, so that he may be animated more fervently to even higher pursuits and stimulated to more subtle investigations, they deliberated on 19 June 1421;

Brunelleschi’s patent (2)

That no person alive, wherever born and of whatever status, dignity, quality, and grade, shall dare or presume, within three years next following from the day when the present provision has been approved in the Council of Florence, to commit any of the following acts on the river Arno, any other river, stagnant water, swamp, or water running or existing in the territory of Florence: to have, hold, or use in any manner, be it newly invented or made new in form, a machine or ship or other instrument as they may have used until now for similar operations, or to ship or transport, or to have shipped or transported, any merchandise or goods on ships, machines, or instruments for water transport other than such as were familiar and usual until now, and further that any such new or newly shaped machine, etc. shall be burned;

Provided however that the foregoing shall not be held to cover, and shall not apply to, any newly invented of newly shaped machine, etc. designed to ship, transport or travel on water, which may be made by Filippo Brunelleschi or with his will and consent; also, than any merchandise, things, or goods which may be shipped with such newly invented ships, within three years next following, shall be free from imposition, requirement, or levy of any new tax not previously imposed.
US patent law

- "the right to exclude others from making, using, offering for sale, or selling" the invention in the United States or "importing" the invention into the United States.

- Subject matter
  - Utility patent - any new and useful process, machine, article of manufacture, or compositions of matters, or any new useful improvement thereof
  - Design patent - new, original, and ornamental designs for articles of manufacture. (look of an athletic shoe, bicycle helmet, the Star Wars characters)
  - Plant patent - invented or discovered asexually (not from seed) reproduced plant varieties. (Hybrid tea roses, Silver Queen corn, Better Boy tomatoes)

United States Patent 5,960,411

**Issued September 28, 1999**

A method and system for placing an order to purchase an item via the Internet. The order is placed by a purchaser at a client system and received by a server system. The server system receives purchaser information including identification of the purchaser, payment information, and shipment information from the client system. The server system then assigns a client identifier to the client system and associates the assigned client identifier with the received purchaser information. The server system sends to the client system the assigned client identifier and an HTML document identifying the item and including an order button. The client system receives and stores the assigned client identifier and receives and displays the HTML document. In response to the selection of the order button, the client system sends to the server system a request to purchase the identified item. The server system receives the request and combines the purchaser information associated with the client identifier of the client system to generate an order to purchase the item in accordance with the billing and shipment information whereby the purchaser effects the ordering of the product by selection of the order button.
First 4 claims for US 5,960,411

1. A method of placing an order for an item comprising: under control of a client system, displaying information identifying the item; and in response to only a single action being performed, sending a request to order the item along with an identifier of a purchaser of the item to a server system; under control of a single-action ordering component of the server system, receiving the request; retrieving additional information previously stored for the purchaser identified by the identifier in the received request; and generating an order to purchase the requested item for the purchaser identified by the identifier in the received request using the retrieved additional information; and fulfilling the generated order to complete purchase of the item whereby the item is ordered without using a shopping cart ordering model.

2. The method of claim 1 wherein the displaying of information includes displaying information indicating the single action.

3. The method of claim 1 wherein the single action is clicking a button.

4. The method of claim 1 wherein the single action is speaking of a sound.

Some patent jargon

- Claim
- Subject matter
- Prior art
- Enablement
- Nonobvious
- Breadth
- Scope
- Doctrine of equivalents
Recent changes in the U.S. patent system

- 1980 patentability of artificially engineered genetic organisms
  - Diamond v. Chakrabarty
- 1980 increased university patenting
  - Bayh-Dole Act
- 1981 patentability of software
  - Diamond v. Diehr
- 1982 creation of CAFCA court
  - Patent validity more likely to be upheld
- 1985/6 TI suits several Japanese semiconductor firms
- 1986 Kodak-Polaroid decision on instant cameras
  - $1B judgment; preliminary injunction
- 1994 TRIPS agreement leads to change in term but not "first to file" or elimination of grace period
- 1998 patentability of business methods
  - State Street and ATT vs Excel

Copyright (c) or ©

- Type of property: original work of authorship fixed in tangible form (book, artwork, print, photo, film, recording, software, database, etc.)
  - No novelty standard, but minimal creativity
- Right to reproduce the work; produce derivative work, exclusive right to perform, display, etc.
  - Allows parody and fair use, including copying for teaching
- Disclosure essential (except for software)
- Registration not required (register before litigation)
- Length of term: life +70 years (+50 years until 1998)
- Not renewable
  - Can sue to enforce; injunctions and/or damages (criminal & treble damages if willful).

Brief history of copyright

- 1710 - English copyright law
  - Prior to this, publication rights granted by crown (censorship, but also protection for author)
- 1790 - US law (14 years + 14)
- 1886 - Berne convention (national treatment, not joined by US until 1988)
- 1976 – major US revision to law (lifetime+50 years)
- 1998 – DCMA
- 1998 – copyright life extension act
Digital Millenium Copyright Act

- implemented the WIPO Internet Treaties
- safe harbors for online service providers
- allows temporary copies of programs during computer maintenance
- miscellaneous amendments to the Copyright Act, including amendments which facilitated Internet broadcasting
- created sui generis protection for boat hull designs
- controversy over Section 1201
  - prohibits gaining unauthorized access to a work by circumventing a technological protection measure put in place by the copyright owner where such protection measure otherwise effectively controls access to a copyrighted work

[database protection omitted by a House-Senate Conference]

Semiconductor mask protection

- Type of property: mask work (blue print for chip)
- right to import or distribute a semiconductor chip product containing the mask
- Disclosed (can be reverse engineered)
- Can be licensed or transferred to another within 2 years
- usual litigation possibilities; reverse engineering allowed as a defense if mask even slightly improved.
- Length of term: 10 years
- Not renewable

Trademark (R) or ® or ™

- Type of property: protect words, names, symbols, sounds, or colors that distinguish goods and services
  - The roar of the MGM lion; the pink of Owens-Corning insulation; the shape of a Coca-Cola bottle
- Disclosed
- exclusive use of mark; can be licensed to others
- Can challenge others' use by proving confusion likely in marketplace, injunctions and/or damages; US Customs can stop entry of goods that violate U.S. trademarks
- Renewable indefinitely
- Registered
- Origin is consumer protection, rather than property protection
Trade Secret

- Type of property: business information transmitted by firms, including formulas, that have economic value and where there is an attempt to keep secret
  - Formula for coca-cola; customer lists; software source code where not patented
- Length of term: indefinite
- Not disclosed (NDA possible)
- Usual litigation possibilities
- Generally regulated by state rather than federal law
- No protection against independent invention or reverse engineering

Trade secrets vs. patents

- Trade secret law supplements the patent system
- Inventors choose trade secret protection when
  - Patent protection is too costly relative to the invention value
  - because it is not patentable
  - there is no patent system
  - the patent term is insufficient
- Possible consequence of a stronger patent system:
  - increases the publication of codified knowledge
  - may simultaneously increase use of trade secret protection to prevent release of the tacit knowledge necessary to make full use of the codified knowledge
  - Some informal evidence that patent applications are written to conceal some of the essential information necessary to produce the good