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# 5. Intellectual property

1. Purpose and limitations
2. Issues raised by IT
3. Software as intellectual property
4. Technical and legal solutions

*Reading: Baase, Chapter 4*

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## Inquiry

- Does the direct sharing of information and culture enabled by information technology outpace efforts to enforce intellectual-property rights?
- Is current law supporting takedown notices sufficient to protect legitimate intellectual-property rights?

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### Objectives

- 5a. Explain intellectual-property law and its motivations and exceptions
- 5b. Give reasons and ways to support intellectual property rights, and to broaden access to information and entertainment, in the information society
- 9d. Support opinions by evidence
- 9e. Acknowledge alternative points of view

### 1. Purpose and limitations

#### Property

- A relationship among people, a *claim right* (positive freedom) because is protected by civil statute
- *Tangible* property is *exclusionary* in that only one person can use it; *scarcity* applies to tangible property
- Lockean labor theory of property: possession of rights comes from labor invested
- Hegelian personality theory: our intellectual creations are part of us

### Intellectual artifacts

- are results of creative mental effort
- persist over time, rather than dissipate
- can be used by an unlimited number of persons at a time
- are built on the previous work of others, to a greater degree than are physical artifacts
- have value
- are intangible

### Intellectual property rights

- *Types:*
  - *Copyright:* protects expression
  - *Patent:* protects use of design
  - *Trademark:* protects symbol
  - *Trade secret:* protects information
- *Rights* consist of limited monopolies for creators
- Aim is to benefit the public
- Not a “natural” right [See lec for legal claim]
- To encourage innovation by reward

### U.S. Constitution

- “The congress shall have the power to ... promote the progress of science and useful arts, by securing for limited times to authors and inventors the exclusive right to their respective writings and discoveries...” (Art. I, Sec. 8)
- First U.S. copyright law, 1790, protected works for fourteen years

### Exclusive rights by copyright

- Copyright protects *expression*, not *ideas*
- Restrictions on
  - Making copies
  - Distributing copies
  - Performing works
  - Displaying works
  - Producing *derivative works*
- Congress has extended the period more than twelve times, from 14 years (1790) to current period of 75 years

### Limitations on intellectual property

- *Fair use*: copying for purposes of criticism, comment, news reporting, teaching, scholarship, research
- Time limitation
- *Not copyrightable*: facts, ideas, processes, modes of operation
- A *public domain* of common intellectual property is desired as well (like the natural environment)

### Fair use

- Recognized by 1976 law
- Criticism, comment, news reporting, teaching, scholarship, research
- *Factors*:
  - Purpose of use (commercial or not)
  - Nature of work (use of fiction less likely to be fair use)
  - Size of material copied
  - Effect on market value
- Copying video for later viewing is fair use (Sony case, 1984)

### Two views of privacy and intellectual property

- Consumer advocates (*A*) vs. entrepreneurial and business advocates (*B*)
- *Privacy*: *A* are for more restriction on collection and sharing of data, *B* favors less restriction
- *Intellectual property*: *A* support less restriction, *B* more restriction

## 2. Issues raised by IT

- Information is considered as *information* (*homologous*) regardless of its medium (silicon, DNA, bits, demographic data, gene maps)
- Hence “the medium is not the message; the medium is *irrelevant*”
- Microsoft owns code in PCs; patents exist for some genes of humans
- Intellectual property rights have been legally expanded in copyright and then patent form

### Technical factors

- Before printing, intellectual property was not an issue because it was almost as hard to copy a book as to write one
- Before IT, only publishers could publish
- With IT, copying is easier (speed, accuracy, storage capacity, connectivity)
- Medium is a decreasing part of cost
- Production costs may be recovered by access control, technical assistance, advertising
- Malleability enables derivative works

### Electronic publishing and intellectual property

- Electronic publishing reduces costs and risk of publication
- “Access to an overwhelming number of elements of daily life is now controlled by intellectual property law.” (S. Warwick)
- “Copyright in the United States is becoming more a tool for securing property interests than a mode of encouraging new works.” (Warwick)

### Issues raised by 1996 White Paper on intellectual property

- Issued by Clinton administration, not adopted
- *Purpose*: Consider level of protection of intellectual property needed in cyberspace
- *Case*: software distribution by MIT student
- *Repackaging database information*: ProCD CDROM
- *Reverse engineering*: studying design of a system for which one is developing software
- *Copying in transmission*: copy of email attachment stays on mail server

### Peer-to-peer technology

- P2P is distinguished from communications with central server
- Napster software enabled P2P exchange of files listed in a directory on a central server
- Courts shut down Napster for enabling copyright violations
- KaZaA: true P2P application
- After courts refused to shut down similar Grokster and Morpheus sites, RIAA sued 261 users, Fall 03

### **Stop Online Piracy Act (SOPA)**

- A 2011 proposal in the U.S. Congress intended to counter online violations of copyright law
- “Includes barring advertising networks and payment facilities from conducting business with allegedly infringing websites, barring search engines from linking to the sites, and requiring Internet service providers (ISP) to block access to the sites”
- “would criminalize the streaming of such content, with a maximum penalty of five years in prison”

### **File sharing**

- MP3 file format enables 10x compression
- Napster service opened, 1999, to enable sharing of MP3 files among users using central lists of users and files
- One survey found 75% of college students sampled used Napster more than once a month
- Gnutella and other services used a decentralized listing concept

### Response to file sharing by industry and courts

- Music industry obtained injunction against Napster users
- 18 record companies sued Napster to stop listing copyrighted songs without permission, winning in court
- Supreme Court okayed lawsuits against Gnutella-based decentralized system as encouraging infringement

### 3. Software as intellectual property

- Software is not *purchased* by a user, but *licensed*; may not be copied except under license rules
- *Copyright* law protects expression
- *Patent* law protects design and ideas
- Even the “look and feel” of software has been claimed in court as the right of the original designer

### Software patents

- Patents protect inventions and devices, give inventor monopoly for a time period
- Invention must not be obvious or in wide use
- Is software an invention or a writing?
- Supreme Court, 1981: software is not patentable because it is abstract; later, patents were issued with Federal court approval
- *Examples:* Amazon.com obtained a patent on one-click shopping, IBM on online catalogs

### Software copyright

- Recognized by Congress, 1976
- Reverse engineering of video-game machine software for research purposes (to produce games) is fair use
- Lawsuits debated “look and feel” of applications

### Example: Copying software for friends

*Is it morally justifiable to copy copyrighted software for one's friend?*

- Is the law just or unjust?
- Is the enforcement just?
- Do ethics let us make exceptions for our friends and ourselves?
- What about software makes this case different from stealing microchips?

*Note: Morality is said to be **public** and requiring **impartiality** (B. Gert)*

### Considerations in software copying

- What if the friend uses the software only once?
- ... to test the software for possible purchase?
- Is this case like speed limits?
- Is the cost of unauthorized copying factored into the price of software?

### Free software

- “Free software” movement contends that copyright bloats profits rather than protecting legitimate intellectual property
- *Core concept*: Free flow and exchange of ideas and code
- *Founder*: Richard Stallman, Free Software Foundation, 1985
- *FSF project*: GNU; GNU Manifesto, 1987

## 4. Technical and legal solutions

### Industry enforcement efforts

- CD recorders delayed long past technical introduction, 1988
- Industry delayed introduction of DVD players by threatening suits
- Recording Industry Association of America sued to stop shipping of an MP3 player; lost
- Industry pushed for laws to require copy-protection be built into playing devices

### Content scrambling

- Content Scramble System (CSS) enabled DVD producers to limit playing of disks to CSS-equipped players
- DeCSS software, produced by a young person in Norway, enabled unscrambling on Linux machines, allowing viewing of legally purchased DVDs on non-CSS players
- Film industry sued to prevent free distribution of DeCSS, obtaining injunctions against posting code or linking to code; upheld on appeal

### Controlling use of devices

- *Digital Rights Management* (DRM) allows restricted use, e.g., the Ipod system
- *Secure Digital Music Initiative* (SDMI) enabled industry copy protection by digital watermarking
- *Digital Millennium Copyright Act* (DMCA, 1998) enables lawsuits against devices that circumvent copy protection, even if no infringement occurs
- DMCA was used to threaten suit causing cancellation of presentation of research about flaws in SDMI

### Legal solutions

- Sonny Bono Term Extension Act, 1998: increased term of copyright by 20 years to life-of-author plus 70 years
- No Electronic Theft (NET) act, 1997: criminalized circumvention of copyright protection, even for fair use
- Before NET, copyright had been a civil-law issue

### Criminalization of copyright infringement

- 1982, Congress made high-volume copying of music and video a felony
- 1992, copying for private gain became a 5-year felony
- 1997, No Electronic Theft Act following D. LaMacchia software-distribution case that lacked private gain
- Digital Millennium Copyright Act criminalized circumvention of copy-protection systems
- 2005, recording film in a theater became a felony

### Safe harbor and takedown notices

- The legal doctrine of *safe harbor* protects web site from copyright lawsuits if site managers remove material when asked to do so by copyright owners
- DMCA permits copyright owners to demand takedown of unauthorized postings
- Competitors of sites often submit such takedown notices
- *Concern:* If takedown notices are invalid (e.g., contravening fair use), then takedown may have a chilling effect on valid postings

### Case: plagiarism

- In the August, 2010, article, “Plagiarism lines blur for students in digital age,” the author describes “a disconnect that is growing” between students and professors about plagiarism.
- Do you agree or disagree?

## Concepts

Content Scramble System	malleability of information
copy protection	MP3
copying in transmission	No Electronic Theft Act
copyright	patent
decentralized listing	peer-to-peer file sharing
derivative work	personality theory of property
Digital Millenium Copyright Act	public domain
digital rights management	reverse engineering
fair use	safe harbor
file sharing	software patent
free software	takedown notice
intellectual artifact	trade secret
labor theory of property	trademark

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