Intellectual Property

• Property rights
  • Extending the right to intellectual property
• What is intellectual property?
• Benefits of intellectual property protection
• Limits to intellectual property protection
Property Rights

• Locke: *The Second Treatise of Government*

• People have a right…
  • to property in their own person
  • to benefits from their own labor
  • to things which they remove from Nature through their labor
Property Rights

- As long as...
  - no person claims more property than he or she can use
  - after someone removes something from commons, there is plenty left over
Property Rights

• Property rights to control, use, and dispose of physical property as one wants

• Private property helps produce a general, and powerful, prosperity.

• A system for ordering economic relations that benefits all (many) members of society.

• No other system better orders economic relations.
Property Rights

• Property rights are never absolute.

• There is no property that does not have to yield at some point to the interests of the state.

• Your land may be taken to build a highway, your driveway crossed by the postman, your house inspected by health inspectors.

• A limited right that balances exclusive control by the individual with certain common needs.
Property Rights

- Information as property
- Rights to control of information
  - intellectual property (ip)? What is it?
  - contrast ip to privacy.
Intellectual Property

- Intellectual property: any unique product of the human intellect that has commercial value
  - Books, songs, movies
  - Paintings, drawings, product designs
  - Inventions, manufacturing processes, chemical formulas, computer programs

- Intellectual property ≠ physical manifestation
Intellectual Property

- A popular dress
  - steal physical dress from someone
  - steal intellectual property in dress
  - how?
Expanding Property Right to Intellectual Property

- Extracting from nature and adding value by labor
- How is writing a play akin to making a belt buckle?

- Belt buckle
  - Mine ore, Smelt it down, Cast it into shape
Expanding the Right to Intellectual Property

- Writing a play
  - “Mine” words from English language
  - “Smelt” them into sentences, prose
  - “Cast” them into a complete play

- How is intellectual property different from physical property?
Analogy Is Imperfect

• If two people design the same dress, both cannot own the design — intellectual property is one-of-a-kind

• If one person copies another’s dress, both have the design — copying an item of intellectual property is different from stealing a physical object
Intellectual Property

- Should we recognize intellectual property rights?

- Utilitarian Analysis
  - stakeholders
  - benefits
  - costs
Benefits of Intellectual Property Protection

• Some creative people are altruistic; some are not
• Money can be an incentive for speculative work
• Authors of U.S. Constitution recognized benefits to *limited* intellectual property protection
• “to promote progress of Science and useful Arts”
Costs of Intellectual Property Protection

• Loss of free use or access
• Impediment to derivative developments
• Stifle evolution/combination of ideas
Limits to Intellectual Property Right

- Giving creators rights to their inventions stimulates creativity
- Society benefits most when inventions are in public domain (free access and use)
- So, a balance is sought in regulation
How to Regulate Information Age IP

- Law
- Architecture .. basic code .. new code
- Market .. cheaper to copy
- Norms .. stealing?
Legal Protections for Intellectual Property

• Trade secrets
• Trademarks
• Patents
• Copyrights
Trade Secret

- Confidential piece of intellectual property that gives company a competitive advantage
- Never expires
- Reverse engineering allowed
- May be compromised when employees leave firm
  - restrictions on future work
Trademark, Service Mark

- Trademark: Identifies source of goods
- Company can establish a “brand name”, logo
- Does not expire
- If brand name becomes common noun, trademark may be lost (xeroxing, googling)
- What is a cyberspace trademark?
Cybersquatting

• Domain Name as a trademark
  • copying or using a valuable domain name
• Has been found in most cases to be intellectual property... Anti-Cybersquatting Piracy Act (ACPA).
• typosquatting is prevalent
Patent

- A public document that provides detailed description of an invention how to perform/create it

- Provides owner with exclusive right to the invention

- Owner controls the making, using, or selling invention for 20 years

- Owner can transfer rights to others for production
### Patent Requirements

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvements thereof, may obtain a patent, subject to the conditions and requirements of this title.

For an invention to be patentable it must:

1. be a statutory mechanism
2. be new, novel
3. be useful
4. be non-obvious
A statutory "machine" is an apparatus that performs some function. Inventions that are machines are also referred to as apparatus, devices or systems. Examples of machines now include a general-purpose computer programmed to perform a certain operation.

An algorithm is mathematics.. not patentable.. software must be phrased as a machine following computational steps to be patentable
Software Patent

• Prior to 1980’s, software deemed no eligible

• State Street Bank case

  • decided business processes implemented as software in a computer were patentable
Software Patent

• phrase algorithm as process in a system
• “machine or transformation” eligibility test
  • can information be transformed, perhaps
• patent office overwhelmed with number and diversity of applications
• must be more than new, must be non-obvious
Software Patents

• Too many awarded.. obvious, though seemed novel
  • Amazon.. one-click shopping
• text processing
  • fat line for highlighting
• text color for depth of nesting
• page up, page down button on text display
Copyright

- Works of Creative Art/Authorship
  - literary works
  - music
  - movies/videos
  - software ... machine code
- Copyright-related industries represent over 5% of U.S. gross domestic product
Copyright

• Provides owner of an original work five rights
  • control over
    • Reproduction, Distribution
    • Public display, Public performance
    • Production of derivative works
Copyright

• What
  • independently created/requiring creativity
  • involve human authorship
  • fixed in a tangible medium
    • musical score .. improvization
    • short story .. idea for a story/movie
Copyright Creep

- kinds of material covered and terms of protection have consistently expanded

- CTEA (1998) Disney push to continue protections for classic movie characters, Sonny Bono extension ... life + 70 years 95 years for work for hire

- Adelphi Charter (2004) .. notes threat to creativity of copyright expansions
Copyright

- Where is the balance
  - terms keep getting longer

- Fair Use
Fair Use

- Limit on rights granted to authors
- *Sony v. Universal City Studios*
- Digital Technology and Fair Use
Fair Use Concept

• Sometimes legal to reproduce a copyrighted work without permission or payment

• Courts consider four factors in analyses
  • Purpose and character of use..commercial
  • Nature of work.. fiction
  • Amount of work being copied.. all
  • Affect on market for original work.. yes
Sony vs. Universal City Studios

- Sony introduces Betamax VCR (1975)
- People start “time shifting” TV shows
- Movie studios sue Sony for copyright infringements
- U.S. Supreme Court rules (5-4) that time shifting is fair use
RIAA v. Diamond Multimedia Systems

- Diamond introduces Rio media player (1998)
- People start “space shifting” their music to MP3 players
- RIAA takes legal action against Diamond for violation of the Audio Home Recording Act
- U.S. Court of Appeals, 9th Circuit, affirms that “space shifting” is consistent with copyright law
Cases and Legislation

- Davey Jones’ Locker
  - subscription software bulletin board
  - not legal, as for commercial (re)use
- David LaMacchia and No Electronic Theft Act (1997)
  - free software bulletin board.. not illegal
- Napster, KaZaA, music sharing networks
A popular artist creates a song that includes a 4-bar percussion sample from a famous rock-and-roll song without permission. The group overlays the track with over 30 tracks of original music in creating the new hit song.

Is this fair use of the borrowed music?

consider 4 dimensions..
Mashups

- computer-based blending of pre-existing media tracks to create new art... music, video...
- Is this legal (ie, fair-use)
- When could it be legal?
- Is it ethical?
Fair Use

• Dimensions

  • commercial .... non-commercial
    (personal, educational)

  • creative .... non-creative

  • entire work .... small piece of work

  • destroys market .... little or no market impact
Fair Use

• Analog technology
  • Vinyl record to cassette degraded quality
  • Music publishers focused on big-time "bootleggers"

• Digital technology
  • CD to CD results in perfect copy
  • CD to MP3 results in a very good, compact copy
  • Internet + high-speed connections → sharing
DRM and Fair Use

• Digital Millennium Copyright Act (DMCA)
• Digital Rights Management (DRM)
• Secure Digital Music Initiative
DMCA (1998)

- First big revision of copyright law since 1976
- Brought U.S. into compliance with WIPO
  - Extends copyright protection to music broadcast/distributed over Internet
  - Makes it illegal for anyone to circumvent copy controls (code), even for fair use purposes
Digital Rights Management

- Actions that owners of intellectual property take digitally (code) to protect their rights

- Initial Approaches
  - Encrypt digital content
  - Digital marking so devices can recognize content as copy-protected
SONY/BMG

- created CDs with Extended Copy Protection
- secretly installed a rootkit on PCs that would not allow ripping of CDs to MP3s
- was discovered and company had to provide patch to remove and pay customers having it on their computers
Encrypting DVDs

• Contents of DVDs encrypted using Content Scramble System (CSS)

• Jon Johansen wrote a decryption program for Linux

• 2600 Magazine published the code

• Movie studios sued 2600 Magazine and won

• Johansen was tried in Norway and found not guilty

Tuesday, May 8, 2012
Secure Digital Music Initiative

- Goals
  - Create copy-protected CDs
  - Secure digital music downloads
  - Consortium of 200 companies developed “digital watermarking” scheme

- Failed
  - successful “Hack SDMI” challenge
  - Internet copying became huge before SDMI ready
Digital Rights Management

- code.. architecture .. to protect copyright interests on Internet connected devices
- simulate copyright in physical world

• Issues?
Criticisms of Digital Rights Management

- Any technological “fix” is bound to fail
- DRM undermines fair use
- DRM could reduce competition
- Some schemes make anonymous access impossible
Arguments for DRM

- Stefik...Trusted Systems
- could be made to mimic fair use
- could provide automated information services
- Apple iTunes attempts some of these features
DRM De-escalation

• Over recent years, industry seems to be backing off the DRM approach

• Apple iTunes changes to no DRM

• new business models searched for..
  • sharing networks
  • Internet radio
  • clouds
Peer-to-Peer Networks

- Napster
- BitTorrent
- RIAA lawsuits
- MP3 spoofing
  - *MGM v. Grokster*
- Legal music services on the Internet
Napster

- Peer-to-peer music exchange network
- Began operation in 1999
- Sued by RIAA for copyright violations
- Courts ruled in favor of RIAA
- Went off-line in July 2001
- Re-emerged in 2003 as subscription music service
BitTorrent

- BitTorrent speeds downloading
- Index and files broken into pieces
- Different pieces downloaded from different computers
- Used for sharing, downloading large files
- Television shows, Movies
MP3 Spoofing

- Companies support efforts to post bad MP3 files on peer-to-peer networks
- Goals: make downloading of MP3 files unreliable
- Peer-to-peer software makers responded by adding user ratings
University of California, Riverside researchers (2007), in a paper titled "P2P: Is Big Brother Watching You?," show that about 20 percent of users on file-sharing networks are on the networks to look for illegal file-sharing for the recording industry or the government.
Legal Music Services on the Internet

- Subscription services for legal downloading
- Some based on monthly fee
- Consumers pay for each download
- radio... Pandora, iTunes
SOPA

- Legal Approach
- What motivated its introduction
- Why did it run into trouble... from whom
Google Books

- Trying to find an ethical means for distribution of copyrighted materials
- Library Project
- aspects of proposal
- legal situation