

ECS 3361: Social Issues and Ethics in ECS

Lecture 6 Intellectual Property Chapter 4

Credits:

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The Free Encyclopedia, <http://en.wikipedia.org>

YouTube

Today's Learning Objectives

- Sources of Laws in the US
- What is Intellectual Property?
- Intellectual property rights and Protection
- Fair use and restrictions on use
- Creative Commons licenses
- Protections for software
- Open-source software
- Homework 6

Sources of Laws in the US

- **US constitution**: Supreme law of the United States
- **State constitution**: Each state has its own constitution
- **Statutory law**: Written down by legislature
 - Federal laws for environment, taxation, immigration...
 - State laws for property, corporate, criminal code, health/safety regulations
- **Common law**: Developed by judges (case law)
 - Emphasizes judicial precedence
 - Negligence cases
 - **IP cases**

What Is Intellectual Property?

- Intellectual property: **any unique product of the human mind that has commercial value**
 - Books, songs, movies, Paintings, drawings
 - Processes, designs, chemical formulas, computer programs
- Value of intellectual properties much greater than value of media
 - **Creating original copy is costly**
 - Creating copies cost only the physical medium
 - Digital technology enables making **perfect copies of CD, DVD**
- Illegal copying is easy
 - Internet allows copies to spread quickly and widely
- Right to physical property is recognized
 - **Should it be extended to IP?**

Property Rights

- Locke (English philosopher in 1600's): *The Second Treatise of Government*
 - People **have a right**...
 - to property in their own person
 - to their own labor
 - to things which they remove from Nature through their labor
 - **As long as**...
 - nobody claims more property than they can use
 - after someone removes something from common state, there is plenty left over

Intellectual Property

Is there a difference between physical property and IP?
Analogy: Writing a play (IP) versus making a belt buckle

Belt buckle

Mine metal
Smelt it down
Cast it

Writing a play

“Mine” words from English
“Smelt” them into prose
“Cast” them into a play (script)

Differences:

- Belt buckles can be owned by different makers
- If someone takes your buckle, you cannot use it anymore.
- Play is one of a kind product. Cannot be owned exclusively by different writers.
- Owner can still use it if someone steals a copy of it.

Intellectual Property Protection

- IP right is a prudential right recognized in the US Constitution
- Congress gave authors and inventors ownership rights for a limited time.
 - Reward innovation and creativity.
 - Benefit society when inventions become public domain (prices fall)
- Types of IP protection:
 - Trade Secrets, Patents for protecting ideas
 - Trademarks and Copyrights for branding a product or service and control of content.

Patent

- Patent
 - A public document that provides detailed description of an invention
 - Provides owner with **exclusive property right to the invention**
 - Owner can prevent others from making, using, or selling invention for some time.
 - Brand name versus generic drugs
 - You may view issued patents at www.pat2pdf.org or <http://patft.uspto.gov>

Types of patents

- **Utility (most patents)**

- New and useful process, machine, manufacture, composition of matter or improvement thereof.
- Protected for 20 years from filing date or 17 years from issue date, whichever is longer. Need to pay maintenance fee.

- **Design**

- New, original, and ornamental design embodied in or applied to an article of manufacture (ornamental features)
- Protected for 14 years from issue date. No maintenance fee

Trade Secrets and Trademarks

- Trademark, Service Mark
 - Word, picture or sound that identifies a company or a product
 - Trademark: Identifies goods and Service mark: Identifies services
 - Company advertise to establish a “brand name” (DLP™ Technology)
 - Does not expire, but it may be lost if brand name becomes common noun (yo-yo, Xerox, Aspirin...)
 - Companies protect trademarks by suing those who “misuse” them
 - Registered ® trademark is legally protected.
- Trade Secret
 - Confidential piece of intellectual property that gives company a competitive advantage (formula for coke, a process step in manufacturing, customer list)
 - Never expires but can be discovered by reverse engineering.
 - May be compromised when employees leave firm (NDA's, Uniform Trade Secrets Act, NC agreement)

Non-Competitive Agreements

- What is a non-competitive agreement?
 - It is an employment contract designed to protect a company's rights to profit from its intellectual property and its hard work.
 - In Texas almost all companies require their employees to sign a NC contract stating that you must avoid working for a direct competitor for a period after you leave your company's employment.
 - Mostly courts will throw out cases if the severance of employment was one year before the new job began
 - They are almost non-existent in California.

Copyright ©

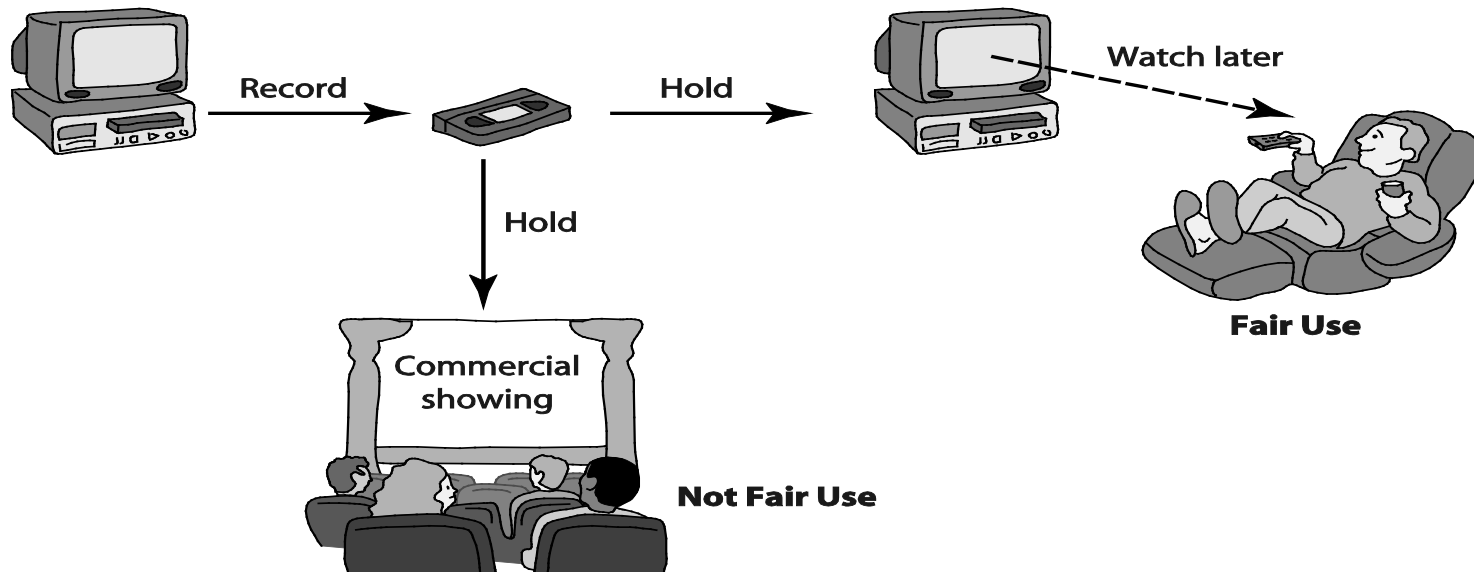
- Provides owner of an **original work** five rights
 - Reproduction, Distribution
 - Public display, Public performance
 - Production of derivative works
- Basic Books v. Kinko's Graphics Corporation
 - Kinko's made packets of information to sell to students based on inputs from professors.
 - Sued by book publishers

Concept of Fair Use

- Sometimes, it is legal to reproduce a copyrighted work without permission
- Courts consider four factors
 - Purpose and character of use (for education may be OK)
 - Nature of work (fiction vs. non-fiction)
 - Amount of work being copied (excerpts vs. entire work)
 - Affect on market value of work

Sony v. Universal City Studios

- Sony introduced Betamax VCR (1975)
- People started recording shows for viewing them later
- Movie studios sued Sony for copyright infringements
- U.S. Supreme Court rules (5-4) that **time shifting is fair use** (consistent with copyright law)



RIAA v. Diamond Multimedia Systems

- MP3 compression allows songs to be stored in 10% of the space, with little degradation
- Diamond introduced Rio MP3 player (1998)
- People started converting CD's to MP3 format to use on the go.
- RIAA (Recording Industry Association of America) took legal action against Diamond for violation of the Audio Home Recording Act
- U.S. Court of Appeals, 9th Circuit, **affirms that space shifting is fair use.**

Kelly v. Arriba Soft Corporation

- Kelly: Photographer maintaining Web site with copyrighted photos
- Arriba Soft: Created search engine that returned thumbnail images
- Kelly sues Arriba Soft for copyright infringement
- U.S. Court of Appeals, 9th Circuit, affirms that **use of thumbnail images is a fair use**

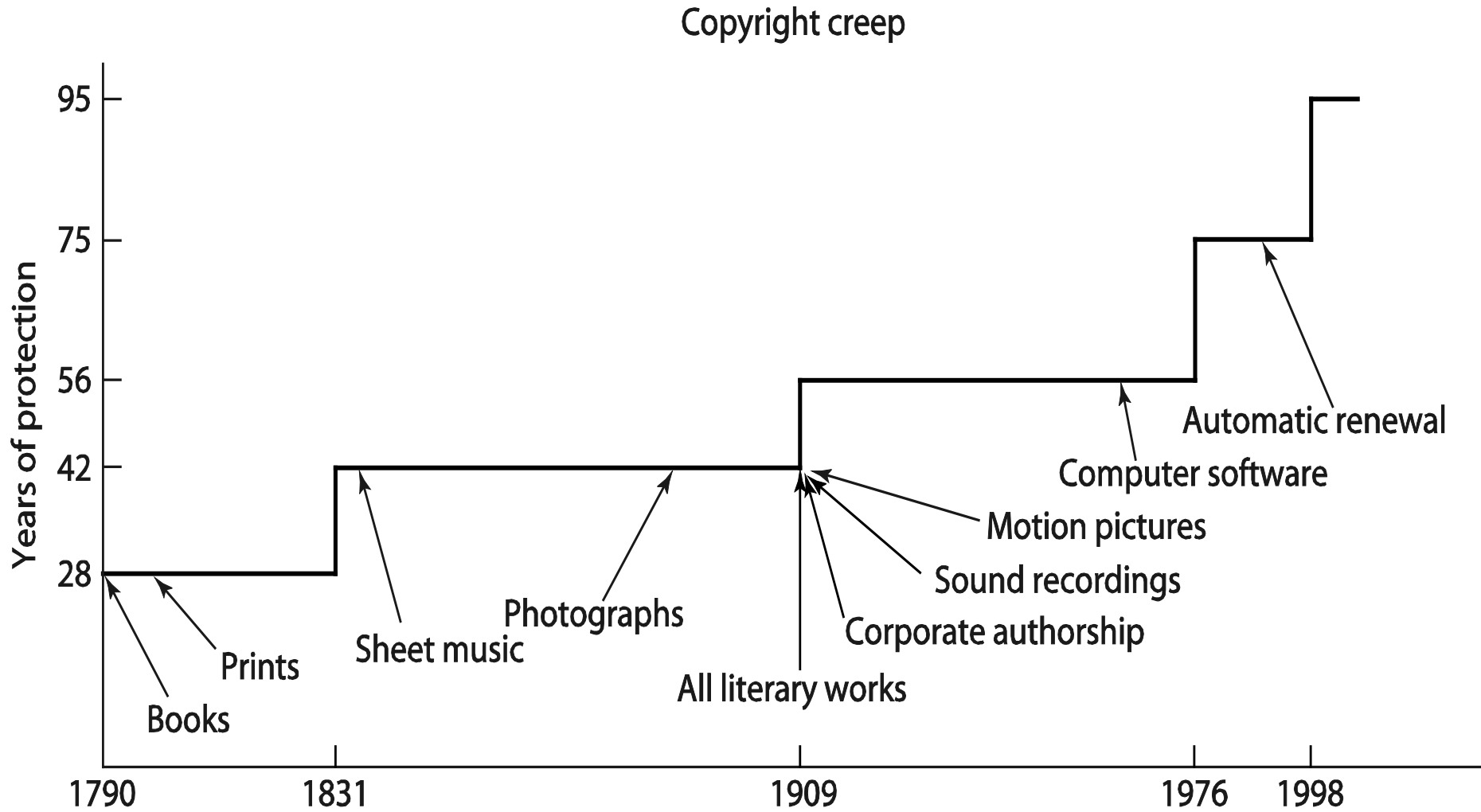
Google Books

- Google announced (2004) plan to scan millions of books held by several huge libraries, creating a searchable database of all words
 - If public domain book, system returns PDF
 - If under copyright, user can see a few sentences and the system provides links to libraries and online booksellers
- Authors Guild and publishers sued Google for copyright infringement and settled out of court.
- A U.S. District Court rejected proposed settlement due to the rights over orphaned works.

Digital Millennium Copyright Act (1998)

- First big revision of copyright law since 1976
- Brought U.S. into compliance with Europe
- Extended length of copyright (from 56 to 95 years for books)
- Made it **illegal for anyone** to
 - **Circumvent encryption schemes** placed on digital media
 - Circumvent copy controls, even for fair use purposes
- UTD may be held liable if you misuse its network
<http://policy.utdallas.edu/utdbp3096>
- **Digital Rights Management**
 - Actions that owners of intellectual property take to protect their rights (Encrypt digital content, Digital marking so devices can recognize content as copy-protected...)

Copyright Creep



Criticisms of Digital Rights Management

- When Apple's iTunes Music Store opened, all music was protected with a DRM scheme called FairPlay
 - FairPlay blocked users from freely exchanging purchased music
 - Songs couldn't be played on more than 5 different computers
 - Songs couldn't be copied onto CDs more than 7 times
 - Songs purchased from iTunes Store wouldn't play on non-Apple devices. Other DRM-protected music could not be played on iPod.
- Consumers complained about restrictions associated with DRM
 - European governments put pressure on Apple to license FairPlay or stop using DRM
 - Amazon reached an agreement with all four major music labels to sell DRM-free music. Apple followed suit in 2009

Encrypting DVDs

- Contents of DVDs are encrypted using **Content Scramble System (CSS)**
- Need decryption keys to view a DVD (included in players)
 - Jon Johansen wrote a decryption program for Linux
 - *2600 Magazine* published the code
 - Motion picture studios sued *2600 Magazine* and won
 - Johansen tried in Norway and found not guilty (has right to access content of DVD purchased)
- Hardware, software, and entertainment companies developed **Advanced Access Content System to encrypt HD-DVDs**
 - **Encryption key posted on Digg.com**
 - AACCS developers asked Digg.com to censor postings containing key.
 - Digg complied (example of self censorship)
 - Digg users fought back and reposted the key
 - AACCS “expired” the key and issued a new one
 - A month later, a Digg user posted the new key

File sharing - The Pirate Bay

- The Pirate Bay located in Stockholm, Sweden
- One of world's biggest file-sharing sites
- People download songs, movies, TV shows, etc.
 - After 2006 raid by police, popularity increased
- In 2008 the International Federation of the Phonographic Industry sued four individuals connected with site
 - Defendants said The Pirate Bay just a search engine
 - Found guilty; sentence to prison and fined \$6.5 million
- Meanwhile, The Pirate Bay is still operational

Creative Commons

- There is a need to have a system that tells us what we can use without permission.
- A Non-profit organization created in 2001 provides copyright licenses free of charge.
 - Free Creative Commons license indicates
 - Which kinds of copying are okay
 - Which rights are being retained
- Allows authors to decide the extent of protection
 - Free copy, modify and use but not for commercial use
 - Or free copy and personal use only, no modification
- Flickr is one site using Creative Commons licenses.
- Some Wikipedia pictures are protected by CC Licenses

Software Copyrights

- Copyright protection began in 1964 and re-affirmed in 1976
 - What gets copyrighted?
 - Expression of idea, not idea itself
 - Object program, not source program
 - Companies treat source code as a trade secret
- Case of Apple Computer v. Franklin Computer Group (1982)
 - Franklin ACE computer contained OS functions copied from Apple II ROM.
 - Apple sued and won.
 - First case establishing that object programs can be protected by copyright

Software Patents

- Before 1981, Patent Office refused to grant software patents
 - Programs are mathematical algorithms, not processes or machines
- Court rulings since 1981 led to patents being granted for wider range of software
- Software Patent examples
 - Data compression schemes: GIF, JPEG, MP3, RSA
 - Internet tools: pay-per-click ad....
 - User interfaces: progress-bar....

Software Patents

- Critics say too many patents have been issued
 - Patent Office doesn't know about prior art, so it issues duplicate software patents and obvious inventions
 - Companies with new products fear getting sued for patent infringement
 - Build stockpiles of patents as defense mechanism and source of revenue
 - Software patents used as legal weapons
- Secondary market for software patents
 - Patent trolls: Companies that specialize in buying patents and looking for companies to sue
 - Companies would rather settle out of court than spend time and money going to trial

Reverse engineering is used to avoid IP violation

- Companies use a “clean room” software development strategy
 - Team 1 analyzes competitor’s program and writes specification
 - Team 2 with no access to competitor program uses specification to develop software with same function

Key Differences between Software Copyrights and Software Patents

	<i>Software Copyright</i>	<i>Software Patent</i>
What is protected?	Object Program, screen displays	Software process with practical utility
Is getting protection expensive?	No	Yes
Is getting protection time consuming?	No	Yes
Is reverse engineering allowed?	Yes	No

Is IP Protection of Software legitimate?

- No matter what you think, society has granted copyright protection to owners of computer programs and **breaking the law is wrong unless there is a strong overriding moral obligation.**
- In US, **it is illegal to**
 - Copy a program to **give or sell to someone else**
 - **Preload** a program onto the hard disk of a **computer being sold**
 - **Distribute a program over the Internet**

Open-Source Software

- No restrictions preventing others from selling, modifying or giving away software
- Source code included in distribution
- Same rights apply to everyone receiving redistributions of the software (copyleft)
- Examples:
 - Android operating system for smartphones
 - Firefox
 - OpenOffice.org
 - Linux and others

Open-Source Software

- **Benefits**

- Gives everyone opportunity to improve program
- New versions of programs appear more frequently
- Eliminates tension between obeying law and helping others
- Programs belong to entire community
- Shifts focus from manufacturing to service

<http://www.youtube.com/watch?v=4wp7tPKdICM> (4.5 min)

- **Criticisms**

- Without critical mass of developers, quality can be poor
- Without an “owner,” incompatible versions may arise
- Relatively weak graphical user interface
- Poor mechanism for stimulating innovation (no companies will spend billions on new programs)

Homework 6

- On e-learning as an assignment. Due after the break