

CS 4873: Computing, Society & Professionalism

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Week 7: Intellectual Property

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Slides adapted from Sauvik Das, Munmun de Choudhury, and Amy Bruckman

Property Rights

- John Locke (1632-1704): 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



Property Rights

- Property rights include the right to:
 - Control use
 - Benefit from
 - Mining
 - Rent
 - Transfer or sell
 - Exclude others from

What is Intellectual Property?

- Intellectual property: any unique product of the human intellect that has commercial value
 - Books, songs, movies
 - Paintings, drawings
 - Inventions, chemical formulas, computer programs
- Intellectual property ≠ physical manifestation
- Does right to own property extend to intellectual property?

Expanding Locke's Argument to IP

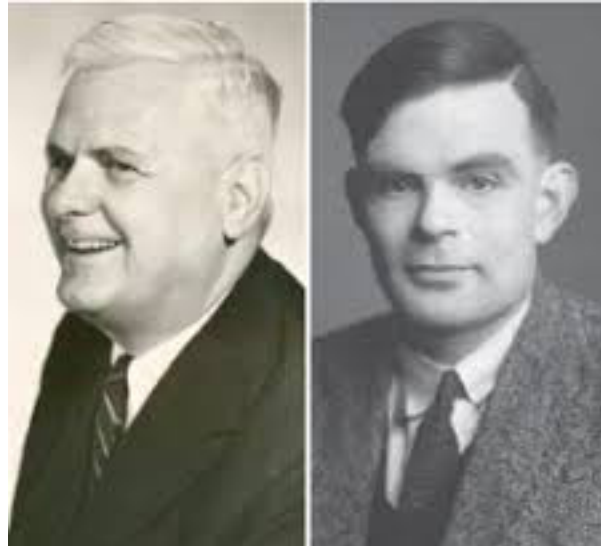
- Writing a play akin to making a belt buckle
- Belt buckle
 - Mine ore
 - Smelt it down
 - Cast it
- Writing a play
 - “Mine” words from English language
 - “Smelt” them into prose
 - “Cast” them into a complete play
- What's the problem?

Other real examples

- Newton vs. Leibniz on the invention of calculus.



- Church-Turing thesis (1936): independent arrival at same general hypothesis



Limits to Intellectual Property Protection

- Some people are altruistic; some are not
 - Giving creators rights to their inventions stimulates creativity
- Society benefits most when inventions in public domain
- Congress has struck compromise by giving authors and inventors rights for a limited time

US Constitution, Article 1, Section 8

- Gives Congress 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.”
- Trade off between
 - Encouraging creation by giving people benefits of their creations
 - Encouraging creations to be shared and of benefit to all

How Do Computers Change IP?

- Easy of copying
- Ease of storage
- Low cost of copying and storage
- A digital copy can be a “perfect” copy
- Ease of distributing copies online
- Peer-to-peer file sharing technology makes sharing possible without a centralized entity

Protecting Intellectual Property

Trade Secrets

“All forms and types of financial, business, scientific, technical, economic, or engineering information, whether tangible or intangible, and whether or how stored, compiled, or memorialized physically, electronically, graphically, photographically, or in writing if (A) the owner thereof has taken reasonable measures to keep such information secret; and (B) the information derives independent economic value, actual or potential, from not being generally known to, and not being readily ascertainable through proper means by the public.”

Trade Secret

- Confidential piece of intellectual property that gives company a competitive advantage
- Never expires
- Not appropriate for all intellectual properties
- Reverse engineering is legal
- Some companies make employees sign non-compete agreements to protect against divulgence of trade secrets
 - Can prevent employees from working in an area for a time

Example?

- Coke's very secret formula. Stored in secret somewhere in Atlanta.
- Non-open-source code.

Trademark, Service Mark

- Trademark: Identifies goods
- Service mark: Identifies services
- Company can establish a “brand name”
- Does not expire
- Can be registered, but trademark rights also accrue through common law usage

Trademark, Service Mark

- If brand name becomes common noun, trademark may be lost
- Examples?



If a trademark is misused it could come undone.

If you didn't know zipper was a trademark, don't worry, it's not. But it used to be. It was lost because people misused the name. And the same could happen to ours, Xerox. Please help us ensure it doesn't. Use Xerox only as an adjective to identify our products and services, such as Xerox copiers, not a verb, "to Xerox," or a noun, "Xeroxes." Something to keep in mind that will help us keep it together.

xerox.com

Ready For Real Business **xerox** 



Google



Adobe
Photoshop

Trademark, Service Mark

- Can use the same word if there is no potential confusion in the marketplace:
 - E.g., McDonald's auto repair is fine
- Applecorps lawsuit
 - Applecorps (The Beatles' publisher) created in 1967, 10 years before Apple computer
 - Apple Computer paid Applecorps to keep using the name, but agreed they wouldn't use it for music
 - After introduction of iPod and iTunes, Applecorps sued
 - Judge ruled in favor of Apple computer

Patents

- Inventions of new things or processes
- Give owner monopoly for limited period of time
 - Currently 20 years in the US
- Still holds even if someone else comes up with same idea independently
- Getting a patent involves disclosing the information

Patent Review Process is Different in the EU Versus US

- US

- Quick review
- Many patents overturned
 - First defense in a lawsuit is always that the patent is invalid

- EU

- Slow, careful review
- Rarely overturned

Licensing Patents

- Microsoft invented a software technology called ClearType that improves the clarity of text in LCD/LED monitors.
- It is protected by 10 patents.
- In 2003 Microsoft started to license it to other companies with a royalty.

Is software patentable?

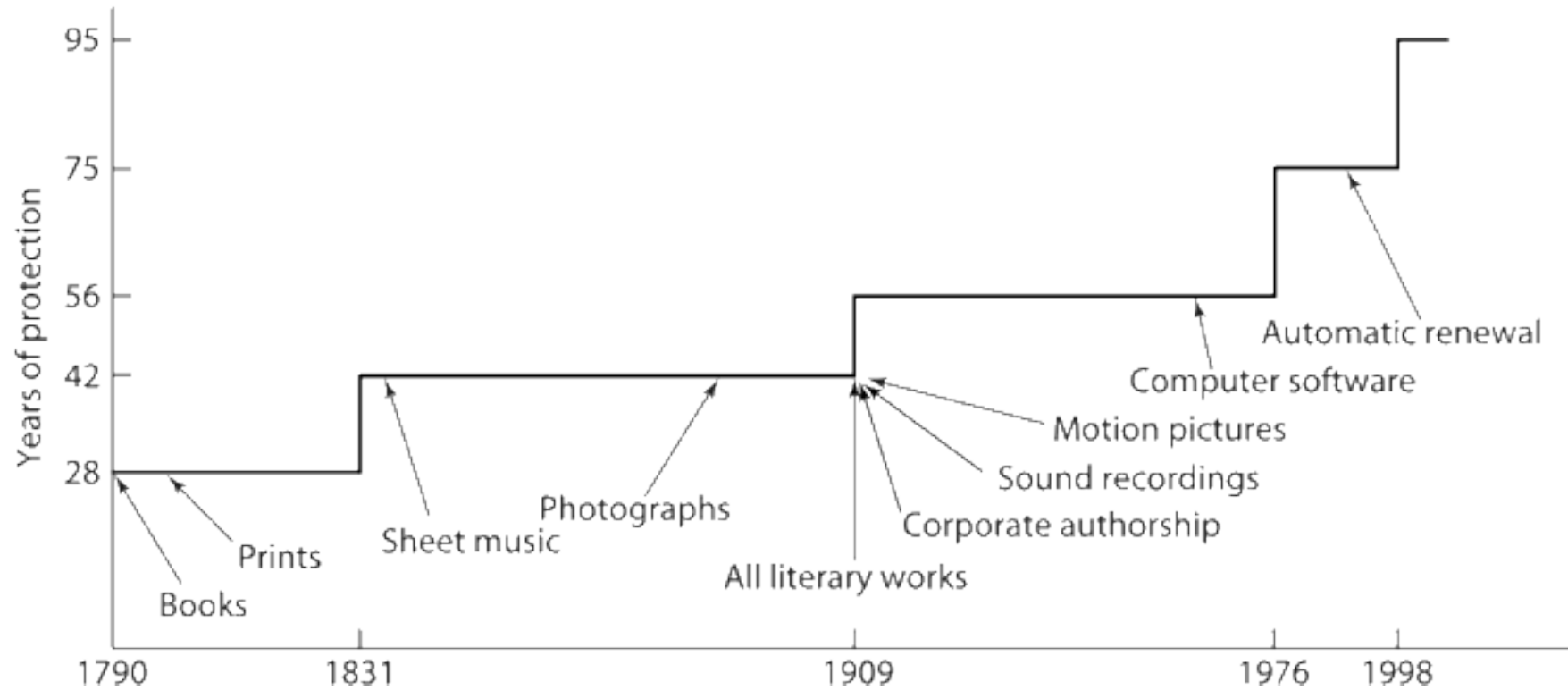
- Controversial
- Will discuss software as IP next class

Copyright

- Provides owner of an original work five rights
 - Reproduction
 - Distribution
 - Public display
 - Public performance
 - Production of derivative works
- Copyright-related industries represent 6% of U.S. gross domestic product (> \$900 billion/yr)
- Copyright protection has expanded greatly since 1790

Copyright Creep

Copyright creep



Copyright Creep

- Since 1790, protection for books extended from 28 years to 95 years or more
- Some say latest extension done to prevent Disney characters from becoming public domain
- Group of petitioners challenged the Copyright Term Extension Act of 1998, arguing Congress exceeded Constitutional power
- U.S. Supreme Court ruling
 - CTEA does not create perpetual copyrights
 - CTEA is constitutional

Fair Use or IP
and Theft of IP

Fair Use

- Sometimes legal to reproduce a copyrighted work without permission
- Courts consider four factors
 - Purpose and character of use
 - Profit, non-profit, educational
 - Nature of work
 - Factual / non-fiction less protection than creative
 - Amount of work being copied
 - Excerpts more permissible than all of it
 - Affect on market for work
 - Effect on potential market for the work

Gershwin v. Columbia Artists Management (CAMI)(1971)

- CAMI put on concert where copyrighted music was played
- CAMI argues that it's just setting up the venue-- Port Washington Community Concert Association is actually putting on the concert
- Court rules that CAMI is liable

No Electronic Theft Act (1997)

- Passed in response to David LaMacchia case
 - Ran BBS where people traded software
 - Case dropped because he charged nothing
- Makes it a criminal offense to copy \$1000 in software in 6 months

Sony v. Universal Studios (1984)

- Supreme Court ruled that copying a movie for later viewing is fair use
 - Even though it's the whole thing
- Studio received big fee for showing on tv
- Court ruled that the betamax machine has legit uses, so can't hold them responsible for some people using it to infringe copyright
- *A device that has both legal and illegal uses is legal*

Audio Home Recording Act of 1992

- Requires manufacturers of digital audio recorders to incorporate Serial Copyright Management System (SCMS)
 - Lets user make copy
 - Prevents copy of a copy
- Requires royalty be paid on digital audio recording devices and blank media
- Royalties are divided among songwriters, music publishers, musicians, recording companies
 - Based on popularity
 - But these royalties aren't a significant source of income

RIAA v. Diamond Multimedia Systems (1998)

- Rio MP3 portable player holds one hour of music
- Court determines that the MP3 player isn't subject to the Audio Home Recordings Act
- Affirms that *space shifting* is fair use

Digital Millenium Copyright Act (DMCA) (1998)

- Makes it a crime to circumvent anti-piracy measures built into most commercial software.
 - Up to 5 yrs in prison and \$500,000 for a first offense
- Outlaws the manufacture, sale, or distribution of code-cracking devices used to illegally copy software.
- Does permit the cracking of copyright protection devices
 - To conduct encryption research
 - To assess product interoperability
 - To test computer security systems

DMCA, continued

- Limits Internet service providers from copyright infringement liability for simply transmitting information over the Internet.
- Service providers, however, are expected to remove material from users' web sites that appears to constitute copyright infringement.
- Provides mechanisms for copyright holder to complain to site
- Content must be removed from the site within 14 days

DMCA Take Down Notices

- Asymmetrical obligations
 - No penalty for sending a false takedown
 - Possible legal penalties for refusing a takedown
- Chilling effect on free speech
 - Difficult for big sites like Twitch and Youtube to manage fairly

Kelly v. Arriba Soft (2003)

- Leslie Kelly has photographs on the web
- Arriba Soft creates thumbnails of photos for search engine use
- Court rules this is fair use
 - Character and purpose of use is *transformative*
 - Doesn't harm market for original work

Google Books

- Created in 2004
- Google provides copies of books online
- Many are out-of-print
- Four modes:
 - Full view
 - For books in the public domain
 - Preview
 - With permission of copyright holder
 - Snippet view
 - Without permission
 - Often can't find author
 - No preview

Court Rules that Google Books is Fair Use (2013)

- Is this copyright infringement?
- Lawsuit filed in 2005 by Authors Guild
 - Long, complicated legal battle
- Court rules (2013):
 - Is transformative
 - Mostly nonfiction
 - Only a portion of the work used
 - No impact on sales

DeCSS

- DVDs use the Content Scrambling System (CSS)
- 16-yr-old Norwegian Jon Johansen wrote DeCSS so he could watch DVDs on Linux
- Code published in the magazine 2600
- 2600 was sued successfully for violating DMCA
- Johansen was acquitted in Norwegian court
- Court ruled he had a right to access DVD he had purchased
- Code had both legal and illegal uses

Digital Rights Management (DRM)

- Pros:
 - Protects rights of content creators?
- Criticisms:
 - Prevents Fair Use
 - Never expires (copyright expires eventually)
 - Prevents reformatting for people with disabilities
 - May prevent anonymous use
 - Windows Media Player has an embedded globally unique identifier (GUID)
 - Can report what you watch to Microsoft
 - Sony BMG Rootkit
 - DRM on audio CDs also hid files on your hard drive (rootkit), and reported back to Sony about your listening habits

Online Music Stores Employed Digital Rights Management

- When 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
- DRM-protected music purchased from other online retailers couldn't be played on iPod

Microsoft Xbox One

- Microsoft announced cloud-based gaming experience for Xbox One (June 2013)
 - User could play any game without disc in tray
 - Automatic software updates of every Xbox One
- Controversial features of licensing arrangement
 - Disc could be shared only once
 - Second-hand market restricted
 - Xbox consoles would have to check in every 24 hours
- Microsoft backtracked
 - No need to connect to Internet
 - Freedom to lend, rent, buy, sell discs
 - Disc must be in tray to play game

P2P file sharing

- P2P file sharing services allow users to upload / download media on large online repository
- Early aughts, used to pirate songs, movies, games
- Lawsuits by large media companies on both companies and individuals. Individuals who shared files could be on the hook for millions of dollars in damages
- BitTorrent: shards files and distributes storage. Makes it very difficult to attribute “blame” to any one computer.

P2P file sharing

- Less of a problem today because streaming services and wide broadband availability have reduced consumer desire to “download” media.
- Also cultural shifts – more of a dialogue between media creators and consumers.

Is There a Reasonable Solution to the Conflict of Protection and Fair Use?



In the News

- Section 230 of the Communications Decency Act (CDA) (1996) says that "**No provider or user of an interactive computer service shall be treated as the publisher or speaker of any information provided by another information content provider**" ([47 U.S.C. § 230](#)).
- Platforms not liable for content posted by users
- Platforms may remove content posted by users they deem offensive or inappropriate
- What would the effect of repeal be?



Donald J. Trump ✓
@realDonaldTrump

REPEAL SECTION 230!!!

12:08 PM · Oct 6, 2020 · Twitter for iPhone

33.7K Retweets 4.8K Quote Tweets 140.2K Likes

Twitch/YouTube “Auto-Takedown”

