Intellectual Property

Lecture 4-2

Computers & Society (CPSC 430)

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Intellectual Property Protection

• Summary: why Intellectual Property Protection?
  – Some people are altruistic; some are not
  – Allure of wealth can be an incentive for speculative work
  – Thus, benefits to intellectual property protection

• But, these rights should come with limits
  – Giving creators rights to their inventions stimulates creativity
  – Society benefits most when inventions in public domain
  – Strike a compromise by giving authors and inventors rights for a limited time

• It might make more sense to call it “intellectual monopoly” rather than “intellectual property”
1. Trade Secret

- Confidential piece of intellectual property that gives company a competitive advantage
- Never expires
- No legal protection
- Reverse engineering allowed
- May be compromised when employees leave firm
2. Trademark, Service Mark

- Trademark: Identifies goods
- Service mark: Identifies services
- Company can establish “brand name”
- Does not expire
- If brand name becomes common noun, trademark may be lost
- Companies advertise to protect their trademarks
- Companies also protect trademarks by contacting those who misuse them
3. Patent

- A public document that provides detailed description of invention
- A government office decides whether the invention is novel, non-obvious
- Provides owner with exclusive right to the invention
- Owner can prevent others from making, using, or selling invention for 20 years
Software Patents

• Patent protection began in 1981
• Inventions can be patented, but not algorithms
• Patent Office having a hard time determining prior art
• Result: some bad patents have been issued
  – Amazon One-Click purchasing
  – Apple: squares with rounded corners
• General skepticism about value of software patents

• Patent trolls: what are they? What do you think?
Copyright Creep

- Since 1790, protection for books extended from 28 years to 95 years or more
  - latest extension aims to protect Disney characters from entering public domain?
- Copyright Term Extension Act of 1998 challenged as unconstitutional
- U.S. Supreme Court disagreed: CTEA doesn’t create perpetual copyrights
Digital Rights Management

• Actions owners of IP take to protect their rights

• Approaches
  – Encrypt digital content
  – Digital marking so devices can recognize content as copy-protected

  – Consortium didn’t stick together
  – Cracked by CS researchers

• Example: Sony BMG Rootkit (2005)
  – Made everyone angry; retracted

• Example: online music stores (2003—2009)
  – Started out with DRM, in part to lock people into platforms
  – Lately, moving away from it

• Example: streaming sites (this decade)
Is it ethical to break a digital lock in order to make fair use of a copyrighted work?
Some famous examples of fair use

• “Time shifting” (recording shows on VCR/DVR)
• “Space shifting” (transcoding music onto MP3 player)

• Use of image thumbnails in search results
• Google books – indexing full texts
Legitimacy of IP Protection for Software

• Software licenses typically prohibit you from making copies of software to sell or give away
  – Our focus is not on whether it’s ethical to violate such a legal agreement after having agreed to it.

• Instead, we are considering:
  – whether society *should* give IP protection to software
  – if so, how this protection ought to be limited
  – what ethical argument can be used to justify this protection.
Intellectual Property

“The government should aggressively prosecute intellectual property infringement, particularly including peer-to-peer file sharing.”

A total of 87 vote(s) in 75 hours

- 1 (1% of users): Strongly Agree
- 21 (24% of users): Agree
- 12 (14% of users): Neutral
- 44 (51% of users): Disagree
- 9 (10% of users): Strongly Disagree
Rights-based Analysis

• “Just deserts” argument
  – Programming is hard work that only a few can do
  – Programmers should be rewarded for their labor
    ▪ Mixing my labor with something implies ownership

• Criticism of “just deserts” argument
  – Why does labor imply ownership?
    ▪ Maybe mixing my labor with something means I lose my labor
    ▪ Pour a can of tomato juice into the ocean: I don’t own the ocean
  – A society in which all labor went to common good could be just
  – Intellectual property not like physical property
    ▪ I cut logs: I own the logs
    ▪ I write a book: I get to restrict other people from copying the book

• What do you think about this argument?
Utilitarian Analysis

- Argument against copying
  - Copying software reduces software purchases…
  - Leading to fewer software producers…
  - Leading to lower production of new software…
  - Leading to fewer benefits to society

- Each of these claims can be debated
  - Not all who get free copies can afford to buy software
  - Open-source movement demonstrates many people are willing to donate their software-writing skills
  - Hardware industry wants to stimulate software industry; freemium model; many apps are supported via ads
  - Difficult to quantify how much society would be harmed if certain software packages weren’t released

- What do you think about this argument?
Legal Action Against P2P

• RIAA Lawsuits (2003)
  – Sued 100s of high-volume sharers

• Universities hotbed for sharing
  – Responses: banning, signing site licenses

• MGM vs. Grokster
  – Grokster won at lower levels, eventually lost at Supreme Court
  – Ruling: the technology existed primarily for infringement

• Pirate Bay:
  – Repeatedly shut down, sued, operators fined and jailed (2013-15), but it’s still up
Open Source

• A variety of licenses. Some typical ingredients:
  – No restrictions preventing others from selling or giving away software
  – Source code included in distribution
  – No restrictions preventing others from modifying source code
  – No restrictions regarding how people can use software
  – Same rights apply to everyone receiving redistributions of the software (copyleft)

• GNU Project (Richard Stallman, 1984-)
  – Goal: Develop open-source, Unix-like operating system
  – Most components developed in late 1980s

• Linux
  – Linus Torvalds wrote Unix-like kernel in 1991
  – Combined with GNU components to make an OS
  – putting pressure on Microsoft, Apple, and companies selling proprietary versions of Unix
Benefits and Drawbacks of Open Source

• 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

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

• Under current copyright law, eligible works are copyrighted the moment they are created
• No copyright notice does not mean it’s ok to copy
• Must contact people before using work
• That slows down creative reuse
• Free Creative Commons license indicates
  – Which kinds of copying are ok
  – Which rights are being retained
• Flickr and Magnatune two well-known sites using Creative Commons licenses
Safe Software Development

• Reverse engineering okay
• Companies must protect against unconscious copying
• Solution: “clean room” software development strategy
  – Team 1 analyzes competitor’s program and writes specification
  – Team 2 uses specification to develop software
• Interestingly, same development strategies also used to ensure that open source licenses don’t “infect” commercial software