

# A GIFT OF FIRE

*Social, Legal, and Ethical Issues  
for Computing Technology*

Fifth Edition

## Chapter 4: Intellectual Property



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# What We Will Cover

- Principles, Laws, and Cases
- Responses to Copyright Infringement
- Search Engines and Online Libraries
- Free Software
- Patents for Inventions in Software

# Principles, Laws, and Cases

## What is Intellectual Property?

- The intangible creative work, not its particular physical form
- Value of intelligence and artistic work comes from creativity, ideas, research, skills, labor, non-material efforts and attributes the creator provides
- Protected by copyright and patent law

# Principles, Laws, and Cases

- U.S copyright Law (Title 17 of U.S. Code) gives copyright holder following exclusive rights:
  - To make copies
  - To produce derivative works, such as translations into other languages or movies based on books
  - To distribute copies
  - To perform the work in public (e.g. music, plays)
  - To display the work in public (e.g. artwork, movies, computer games, video on a Web site)

# Principles, Laws, and Cases

## Challenges of New Technology

- Digital technology and the Internet make copyright infringement easier and cheaper.
- New compression technologies make copying large files (e.g. graphics, video and audio files) feasible.
- Search engines make finding material easier.
- Peer-to-peer technology makes transferring and sharing files easier.

# Principles, Laws, and Cases

## Challenges of New Technology

- Broadband connections make transferring files easier and enable streaming video.
- Miniaturization of cameras and other equipment enable audience members to record and transmit events.
- Scanners allow us to change the media of a copyrighted work, converting printed text, photos, and artwork to electronic form.
- New tools allow us to modify graphics, video and audio files to make derivative works.



# Principles, Laws, and Cases

- What does it mean to solve the problems of technology's impact on intellectual property rights?
- We should recognize that “the problem” looks different from different perspectives.

# Principles, Laws, and Cases

## A bit of history

- 1790 first copyright law passed
- 1909 Copyright Act of 1909 defined an unauthorized copy as a form that could be seen and read visually
- 1976 and 1980 copyright law revised to include software and databases that exhibit "authorship" (original expression of ideas), included the "Fair Use Doctrine"
- 1982 high-volume copying became a felony
- 1992 making multiple copies for commercial advantage and private gain became a felony



# Principles, Laws, and Cases

## A bit of History

- 1997 No Electronic Theft Act made it a felony to willfully infringe copyright by reproducing or distributing one or more copies of copyrighted work with a total value of more than \$1,000 within a six-month period
- 1998 Digital Millennium Copyright Act (DMCA) prohibits making, distributing or using tools to circumvent technological copyright protection systems and included protection from some copyright lawsuits for Web sites where users post material
- 2005 Congress made it a felony to record a movie in a movie theater

# Principles, Laws, and Cases

## Fair Use Doctrine

- Four factors considered
  - Purpose and nature of use – commercial (less likely) or nonprofit purposes
  - Nature of the copyrighted work
  - Amount and significance of portion used
  - Effect of use on potential market or value of the copyright work (will it reduce sales of work?)
- No single factor alone determines
- Not all factors given equal weight, varies by circumstance

# Principles, Laws, and Cases

## Ethical arguments about copying

- Copying or distributing a song or computer program does not decrease the use and enjoyment any other person gets from his or her copy.
- Copying can decrease the amount of money that the copyright owner earns.

# Principles, Laws, and Cases

## Ethical arguments about copying

- Copying enables users to try out products, benefiting the copyright owner by encouraging sales.
- Businesses and organizations should make their own decisions about marketing products, not consumers who want free samples.
- Fair use guidelines are useful ethical guidelines.
- There are many arguments for and against unauthorized copying.

# Principles, Laws, and Cases

## Discussion Questions

- *How is intellectual property like physical property?*
- *How is intellectual property different than physical property?*
- *Do you agree with the idea that someone can "own" intellectual property?*

# Principles, Laws, and Cases

## Significant Cases

- Sony v. Universal City Studios (1984)
  - Supreme Court decided that the makers of a device with legitimate uses should not be penalized because some people may use it to infringe on copyright
  - Supreme Court decided copying movies for later viewing was fair use
  - Arguments against fair use
    - People copied the entire work
    - Movies are creative, not factual

# Principles, Laws, and Cases

## Significant Cases

- Sony v. Universal City Studios (1984)
  - Arguments for fair use
    - The copy was for private, noncommercial use and generally was not kept after viewing
    - The movie studios could not demonstrate that they suffered any harm
    - The studios had received a substantial fee for broadcasting movies on TV, and the fee depends on having a large audience who view for free

# Principles, Laws, and Cases

## Significant Cases

- Reverse engineering: game machines
  - Sega Enterprises Ltd. v. Accolade Inc. (1992)
  - Atari Games v. Nintendo (1992)
  - Sony Computer Entertainment, Inc. v. Connectix Corporation (2000)
  - Courts ruled that reverse engineering does not violate copyright if the intention is to make new creative works (video games), not copy the original work (the game systems)



# Principles, Laws, and Cases

## Significant Cases

- Sharing music: the Napster case
  - Napster's arguments for fair use
    - The Sony decision allowed for entertainment use to be considered fair use
    - Did not hurt industry sales because users sampled the music on Napster and bought the CD if they liked it

# Principles, Laws, and Cases

## Significant Cases

- Sharing music: the Napster case
  - RIAA's (Recording Industry Association of America) arguments against fair use
    - "Personal" meant very limited use, not trading with thousands of strangers
    - Songs and music are creative works and users were copying whole songs
    - Claimed Napster severely hurt sales
  - Court ruled sharing music via copied MP3 files violated copyright

# Principles, Laws, and Cases

## Significant Cases

- Sharing music: the Napster case
  - Was Napster responsible for the actions of its users?
  - Napster's arguments
    - It was the same as a search engine, which is protected under the DMCA
    - They did not store any of the MP3 files
    - Their technology had substantial legitimate uses

# Principles, Laws, and Cases

## Significant Cases

- Sharing music: the Napster case
  - RIAA's arguments
    - Companies are required to make an effort to prevent copyright violations and Napster did not take sufficient steps
    - Napster was not a device or new technology and the RIAA was not seeking to ban the technology
  - Court ruled Napster liable because they had the right and ability to supervise the system, including copyright infringing activities

# Principles, Laws, and Cases

## Significant Cases

- File sharing: MGM v. Grokster
  - Grokster, Gnutella, Morpheus, Kazaa, and others provided peer-to-peer (P2P) file sharing services
    - The companies did not provide a central service or lists of songs
    - P2P file transfer programs have legitimate uses
  - Lower Courts ruled that P2P does have legitimate uses
  - Supreme Court ruled that intellectual property owners could sue the companies for encouraging copyright infringement

# Principles, Laws, and Cases

## Discussion Question

- *What do you think the impact would be on creative industries, such as music, movies and fiction novels, if copyright laws did not protect intellectual property?*

# Principles, Laws, and Cases

## Significant Cases

- “Look and feel”
  - Refers to features such as pull-down menus, windows, icons, and finger movements and specific ways they are used to select or initiate actions.
  - Reflects major creative effort by programmers.

# Responses to Copyright Infringement

## Responses from the Content Industries

- Ideas from the software industries
  - Expiration dates within the software
  - Dongles (a device that must be plugged into a computer port)
  - Copy protection that prevents copying
  - Activation or registration codes
  - Court orders to shut down Internet bulletin boards and Web sites



# Responses to Copyright

## Infringement

### International Piracy

- Some countries do not recognize or protect intellectual property
- Countries that have high piracy rates often do not have a significant software industry
- Many countries that have a high amount of piracy are exporting the pirated copies to countries with strict copyright laws
- Economic sanctions often penalize legitimate businesses, not those they seek to target



# Responses to Copyright Infringement

## Responses from the Content Industries

- Banning, suing and taxing
  - Ban or delay technology via lawsuits
    - CD-recording devices
    - DVD players
    - Portable MP3 players
  - Require that new technology include copyright protections
  - Tax digital media to compensate the industry for expected losses

# Responses to Copyright Infringement

## Digital Rights Management

- Collection of techniques that control uses of intellectual property in digital formats
- Includes hardware and software schemes using encryption
- The producer of a file has flexibility to specify what a user may do with it
- Apple, Microsoft and Sony all use different schemes of DRM

# Responses to Copyright Infringement

## The Digital Millennium Copyright Act (DMCA) 1998

- Anticircumvention
  - Prohibit circumventing technological access controls and copy-prevention systems
- Safe harbor
  - Protect Web sites from lawsuits for copyright infringement by users of site



# Responses to Copyright Infringement

## The DMCA vs. Fair Use, Freedom of Speech, and Innovation

- Lawsuits have been filed to ban new technologies
- U.S. courts have banned technologies such as DeCSS even though it has legitimate uses, while courts in other countries have not.
- Protesters published the code as part of creative works (in haiku, songs, short movies, a computer game and art)
- U.S. courts eventually allowed publishing of DeCSS, but prohibited manufacturers of DVD players from including it in their products



# Responses to Copyright Infringement

## Safe Harbor

- Industry issues "take down" notices per the DMCA
- As long as sites like YouTube and MySpace comply with take down notices they are not in violation
- Take down notices may violate fair use, some have been issued against small portions of video being used for educational purposes

# Responses to Copyright Infringement

## Evolving Business Models

- Organizations set up to collect and distribute royalty fees (e.g. the Copyright Clearance Center), users don't have to search out individual copyright holders
- Sites such as iTunes and the new Napster provide legal means for obtaining inexpensive music and generate revenue for the industry and artists
- Revenue sharing allows content-sharing sites to enable the posting of content and share their ad revenues with content owners in compensation

# Responses to Copyright Infringement

## Evolving Business Models

- Cloud storage raises copyright issues.
  - Is copying legally purchased files to and from the cloud a fair use?
  - Will the companies operating the cloud services have any responsibility for unauthorized content their customers store and share?
  - Since copyright holders do not see what is stored, they do not have the option of sending takedown notices.



# Responses to Copyright Infringement

## Evolving Business Models

- What does not work
  - Zediva, a small startup in 2011, bought DVDs and rented the content (not the physical DVD) to customers legally. Court ordered Zediva to shut down.
  - Pirate Bay
  - Megaupload

# Search Engines and Online Libraries

## Search Engines

- Caching and displaying small excerpts is fair use
- Creating and displaying thumbnail images is fair use
- Google negotiated licensing agreements with news services to copy and display headlines, excerpts, and photos.
- Trademarked search terms

# Search Engines and Online Libraries

## Books Online

- Project Guttenberg digitizes books in the public domain
- Microsoft scanned millions of public domain books in University of California's library
- Google has scanned millions of books that are in the public domain and that are not; they display only excerpts from those still copyrighted
- Some court rulings favor search engines and information access; some favor content producers

# Search Engines and Online Libraries

## Tools for authorized sharing

- Creative Commons: Enables an author to specify permissions

# Free Software

## What is free software?

- Free software is an idea advocated and supported by a large, loose-knit group of computer programmers who allow people to copy, use, and modify their software
- Free means freedom of use, not necessarily lack of cost
- Open source - software distributed or made public in source code (readable and modifiable)

# Free Software

## GNU project

- Began with a UNIX-like operating system, a sophisticated text editor, and many compilers and utilities
- Now has hundreds of programs freely available and thousands of software packages available as free software (with modifiable source code)
- Developed the concept of *copyleft*

# Free Software

## Should all software be free?

- Would there be sufficient incentives to produce the huge quantity of consumer software available now?
- Would the current funding methods for free software be sufficient to support all software development?
- Should software be covered under copyright law?
- Concepts such as copyleft and the GNU Public License provide alternatives to proprietary software within today's current legal framework

# Patents for Inventions in Software

## Patent decisions, confusion, and consequences

- Patents protect inventions by giving the inventor a monopoly for a specified time period.
- Laws of nature and mathematical formulas cannot be patented.
- Obvious inventions or methods cannot be patented.



# Patents for Inventions in Software

## A few cases

- Paul Allen, co-founder of Microsoft, and e-commerce and Web-viewing
- Apple, Android, and tap-touch screens
- IBM , Amazon, and electronic catalogues

# Patents for Inventions in Software

## Patent trolls

- Some companies accumulate thousands of technology patents but do not make any products.
- They license the patents to others and collect fees.

# Patents for Inventions in Software

To patent or not?

- In favor of software patents
  - Reward inventors for their creative work
  - Encourage inventors to disclose their inventions so others can build upon them
  - Encourage innovation

# Patents for Inventions in Software

To patent or not?

- Against software patents
  - Patents can stifle innovation, rather than encourage it.
  - Cost of lawyers to research patents and risk of being sued discourage small companies from attempting to develop and market new innovations.
  - It is difficult to determine what is truly original and distinguish a patentable innovation from one that is not.