

Intellectual Property and the Computer

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Week 7

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Intellectual Property

- A metaphor
 - Based on older idea of ownership of land and other items
 - Grants ownership of intangible, intellectual works
- Can be brought, sold, leased (licensed)
- Increasingly important in "information age"

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Three Forms of Protection

- Hardware, software or digital content might be protected as
 - Copyright
 - Patent
 - Trade Secret
- Designed for different things
 - Patents for Inventions
 - Tangible inventions (with engineering models & diagrams)
 - Extended to chemical formulae, etc.
 - Copyright for written works
 - Books, plays, musical compositions

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The Basic Idea

- A balance between
 1. General social interest in the publication of creative works and the sharing of valuable new inventions vs.
 2. A need to give some reward to encourage publishers and inventors to create/share new material
- Results in: system exclusive but temporary rights over invention or work
 - Copyright originally (1790 in USA) for 14 years
 - Patent for 20 years (used to be 17 in USA)
- After protection expires, invention/work enters public domain
 - Generic version of Prozac
 - Free on-line distribution of Shakespeare, etc.

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Copyright

- Granted automatically when work is created
 - No longer need to submit a copy to Library of Congress, or to include the © symbol
- If owned by individual
 - Lasts for 70 years from death of author
- If a "work for hire" produced for employer
 - Employer owns for 95 years from creation

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Patent

- Protects an invention
 - Expanded in recent decades to less tangible things
 - Including "business process" patents such as Amazon 1-Click ordering
 - Also genetically engineered plants and animals
 - Even human genes discovered by firms
- Must be applied for
 - Long, expensive process
 - Details of invention are published but protected
- Criteria for valid patent
 - Novel, unpublished, and not obvious to one skilled in the field
 - Useful
 - Reduced to practice through successful implementation

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Trade Secret

- Protects commercial secrets
 - Such as the Coke formula
- If firm takes serious steps to protect its secrets
 - Limits industrial espionage
 - Protects secrets revealed in trial discovery process
- Can protect material not covered by patent or copyright
 - Unlike patent and copyright, does not expire

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Sonny Bono Copyright Act

- Most recent extension of copyright
 - From 50 to 70 years after author's death for individual work
- Result of corporate lobbying
 - Vast majority of older works will be impossible to obtain in any form
 - Dead people will not be motivated to write any more books, so retroactive application is dubious
 - Protects Mickey Mouse from going into public domain
- Constitutionality recently upheld
 - Despite requirement for copyright to be temporary

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Ease of Theft

- Technology is making all digital content vulnerable
 - E.g. CD has become easy to copy
 - Unlike in 1980s
 - Digital copies are perfect
 - Unlike analog music copies
 - Digital copies are easy to make and distribute
 - Unlike, say, xeroxing a book
 - File-sharing networks and downloads

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End User License Agreement

- Most software is licensed, not purchased
 - Terms of EULA are allegedly accepted when shrink-wrap is broken
- Limits rights of purchasers
 - e.g. no guarantee that software works
 - no responsibility for losses
 - can't use on two computers at once
 - must "activate" to continue use after 30 days
 - agree not to change/reverse engineer code
 - In one case (McAfee) to write reviews of product!

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Digital Rights Management

- Restricts rights of users to purchased material
 - Lesson of audio CDs is a warning to publishers
- Example: Adobe Acrobat
 - Creator controls ability to print, modify, cut/paste, copy to PDA, etc
 - Rights system allow activation for specific computer for limited period only

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Another DRM Example

- Microsoft Office
 - Old features allow read-only, password protection and change tracking
- New 2003 IRM ("Information Rights Management") features control distribution of documents
 - Emails & documents that self-destruct
 - Material viewable on one computer only
 - Limiting of ability to forward email
- Will also prevent opening using other office software...

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Hardware Support Coming to PC

- Some hardware includes DRM already
 - e.g. Audible.com allows copying of audio book to only one portable device
- Standards being sought for redesign of PCs
 - Combination of hardware and software to restrict user access to files stored on a PC
 - Changes to Windows, hard drives, BIOS
 - Examples:
 - Allows access to music files for one month only
 - Prevent downloading of unauthorized music files

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Digital Millennium Copyright

- Passed in 1998 by Congress
 - Fundamental overhaul to deal with new technologies
 - Aims to make anti-piracy measures more enforceable
- Big, complex bill
 - Creates new abilities to regulate how content is used
 - Forbids modification of hardware/software to get around protection systems

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Gives Broad Protection

- Can embed an unnecessary protection chip
 - Law will protect from otherwise legal "reverse engineering" to make compatible product
- Lexmark laser printers
 - Built authorization codes into toner cartridges
 - Successfully sued Static Control Components for making compatible cartridges
 - So now customers pay more to print

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Implications for "Fair Use"

- Law and court decisions allow "fair use" of copyrighted materials
 - Quotations for scholarly use
 - Limited materials on reserve in library
 - Lending a book to a friend
- New technologies can strip these rights from digital materials
 - Limit who/where/for how long can be accessed
 - DCMA prevents modification even of legally purchased materials
 - Overrides general legality of "reverse engineering"

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Xbox Hacking

- Xbox includes DRM capabilities
 - Prevent playing of uncensored or foreign games
 - or regular games copied to CD
 - or even Linux operating system, or Divx movie file players
- Thriving market in "mod chips" to overcome this
 - Fitting these is illegal, under DCMA
 - Some allow USB transfer of games from PC
- Recent crackdown on firms selling Xboxes with mod chips fitted



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One Example: DVD Playing

- DVDs are scrambled using CSS system
 - Prevent copying onto hard drive
 - Add region controls
- Need to descramble legal DVD to play
 - Commercial players license algorithm
 - a 16 year old Norwegian guy wrote his own, called DeCSS, for Linux
- Code to play DVDs is illegal to publish
 - Or, according to MPAA, make hyperlink to, or sing, or print on T-shirt



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