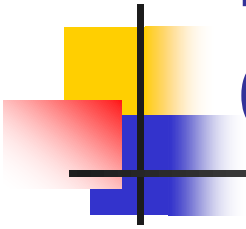
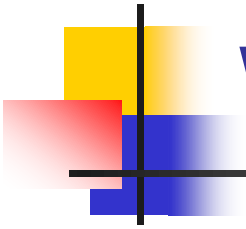
Intellectual Property in Cyberspace



- What, exactly, is Intellectual Property (IP)?
- How have IP laws been challenged by cybertechnology and digital information?
- Before examining questions about IP, we can ask why property laws (in general) are important.

Why Property Laws are Important

- Social scientists suggest that property Laws play a key role in (a) shaping a society and (b) preserving its order by establishing relationships between:
  - individuals,
  - different sorts of objects,
  - the state.



What Is (Tangible) Property?

- When discussing property, we tend to think of *tangible* items.
- Originally, "property" referred to land.
- Property now also includes objects that one can own, such as:
  - an automobile,
  - articles of clothing,
  - a DVD collection.

Property as a "Relational" Concept

- Property should not be viewed simply in terms of items or things (tangible or otherwise).
- Philosophers and legal theorists point out that property can best be understood as a *relationship between individuals in reference to things*, where three elements need to be considered:

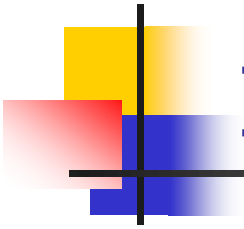
1) an individual (*X*),
2) A "thing" or object (*Y*),
3) *X's* relation to other individuals (*A*, *B*, *C*, etc.) in reference to *Y*.

Property as a Form of "Control"

- *X* (as the owner of property *Y*) can control *Y* relative to persons *A*, *B*, *C*, and so forth.
- If Harry owns a certain object (e.g. a Dell laptop computer), then Harry can control who has access to that object and how it is used.
  - For example, Harry has the right to exclude Sally from using that laptop; or he could grant her unlimited access to it.
- Ownership claims involving "intellectual objects" (involving IP) are both similar to and different from ownership of tangible objects.

Intellectual Objects

- The expression *intellectual object* can refer to various forms or instances of intellectual property.
- Intellectual property consists of "objects" that are not tangible.
- Intellectual objects represent creative works and inventions, i.e., the manifestations or expressions of ideas.



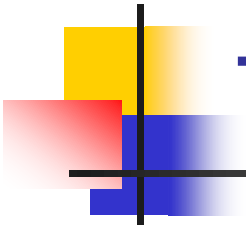
Intellectual vs. Tangible Objects

- Tangible objects are *exclusionary* in nature.
  - If Harry owns a laptop computer (a physical object), then Sally cannot, and *vice versa*.
- Intellectual objects, such as software programs, are *non-exclusionary*.
  - If Sally makes a copy of a word-processing program (that resides in Harry's computer), then both Sally and Harry can possess copies of the same word-processing program.

Intellectual vs. Tangible Objects (continued)

- The sense of *scarcity* that applies to tangible objects, which often causes competition and rivalry, need not exist for intellectual objects.
  - For example, there are practical limitations to the number of physical objects that one can own.
  - There are also limitations (natural and political) to the amount of land that can be owned.
- Intellectual objects can be easily reproduced.
  - Countless copies of a software program can be produced – each at a relatively low cost.

Ownership of Intellectual vs. Tangible Objects



- Legally, one cannot own an idea in the same sense that one can own a physical object.
- Governments do not grant ownership rights to individuals for ideas per se.
- Legal protection is given only to the tangible *expression* of an idea that is creative or original.

Ideas vs. Expressions of Ideas

- If an idea is literary or artistic in nature, it must be expressed (or "fixed") in some tangible medium in order to be protected.
- A “tangible medium” could be a physical book or a sheet of paper containing a musical score.
- If the idea is functional in nature, such as an invention, it must be expressed in terms of a machine or a process.
- Authors are granted copyright protections for expressions of their literary ideas, while inventors are given patent protection for their inventions.

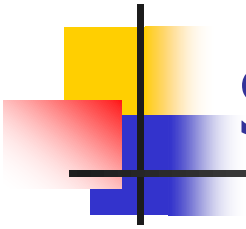
Why Protect Intellectual Property?

- One answer is: Our current laws say that intellectual property should be protected.
- But we can ask: On what philosophical grounds are our property laws themselves based?
- In Anglo-American law, philosophical justification for intellectual property rights is grounded in two different types of views:

1) natural rights,
2) conventional (or constructed) rights.

Protecting Intellectual Property (continued)

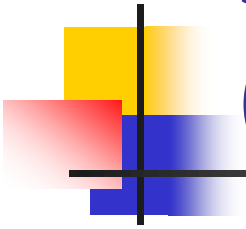
- One theory holds that a property right is a "natural right," to which individuals are justified for the products that result from their labor, including intellectual objects.
- The other theory views property rights as a social construct designed to encourage creators and inventors to bring forth their artistic works and inventions into the marketplace.



Software as Intellectual Property

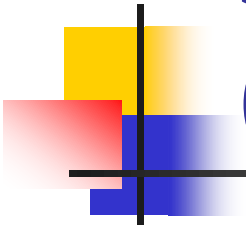
- Should computer programs be eligible for patent protection?
- Should they be protected by copyright law?
- Do they deserve both, or perhaps neither, kind of protection?
- Computer software consist of lines of programming code (or codified thought).
- It is not expressed or "fixed" in a tangible medium in a way that literary works are.

Software as Intellectual Property (Continued)



- A program's *source code* consists of symbols.
- Its *object code* is made up of "executable images" that run on the computer's hardware after they have been converted from the original source code.
- Initially, it was not clear that software programs should be given copyright protection.
- Some argued that computer programs are more like inventions that can be patented.

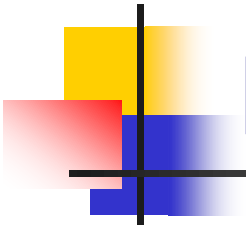
Software as Intellectual Property (continued)



- Software programs also resemble algorithms, which, like mathematical ideas or "mental steps," are not eligible for patent protection.
- Initially, computer programs were not eligible for either copyright or patent protection.
- Eventually, however, *both* copyright and patent protections were granted to software programs.

The Case for Protecting Software as a form of Intellectual Property

- The software industry has made the following kind of argument for why software should be protected with intellectual property rights.
- **PREMISE 1.** Stealing a tangible object is morally wrong.
- **PREMISE 2.** Making an unauthorized copy of proprietary software is identical to stealing a tangible object.
- **CONCLUSION.** Making unauthorized copies of proprietary software is morally wrong.



Protecting Software (Continued)

- If we apply the rules for logical validity (in Chapter 3), we see that this argument is *valid* because of its logical form.
- Consider that *if* both Premises 1 and 2 are assumed true, the conclusion cannot be false.
- Even though the argument's form is valid, we could still show the argument to be *unsound* if either or both of the premises are false.

Protecting Software Continued)

- Premise 1 (in the above argument) is fairly straightforward, and few would question its truth.
- But Premise 2 is more controversial and thus we can question whether it is empirically true.
  - For example, is duplicating a software program *identical* to stealing a physical item?
- Consider that software programs, like other intellectual objects, are nonexclusionary; so my having a copy of Program X does not exclude your having a copy of that program, and vice versa.
- Because the truth of Premise 2 is questionable, we cannot infer that the above argument is sound.

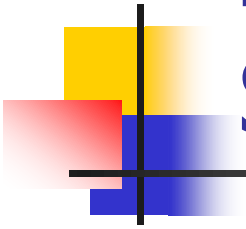
Protecting Software (Continued)

- But even if the original argument turns out to be unsound, it does not follow that its conclusion – "Making unauthorized copies of proprietary software is morally wrong" – is false.
  - For example, the argument's conclusion could be true for reasons other than those stated in the premises.
- Consider that even if duplicating software is not identical to stealing physical property, it could still cause harm to the property owner because copying the proprietary software program (like the theft of someone's physical property) deprives the property owner of the legitimate use of his or her property.

Protecting Software (Continued)

- One could also argue, for example, that unauthorized copying is harmful because it is a misuse, misappropriation, or "unfair taking" of another person's property against the property owner's will (Spinello, 2008) .
- So, there could be alternative reasons why the original argument's conclusion can be true, despite the fact that its second premise may be false.

Intellectual Property Protection Schemes



- We examines four schemes for protecting intellectual property:

1) *Copyrights*;
2) *Patents*;
3) *Trademarks*;
4) *Trade secrets*.

Copyright Protection

- Copyright law in the Anglo-American world was enacted in response to concerns about certain uses of printing-press technology.
- Two different kinds of concerns arose in response to the widespread publishing of pamphlets made possible by the printing press:

a) the British monarchy wanted to control the spread of "subversive" and "heretical" works being printed; and

b) authors wanted to protect their creative works from being reproduced without their permission.

Copyright Protection (Continued)

- The English Statute of Anne (1710) was the first law to give protection to authors for works attributed to them.
- The American Colonies followed English law regarding copyright.

Copyright Protection (Continued)

- In the US Constitution, a specific provision in Article 1, Section 8 states:

  The congress shall have the power... to promote the Progress of Science and the useful Arts, by securing for limited Times to authors and inventors the exclusive Rights to their respective Writings and Discoveries.

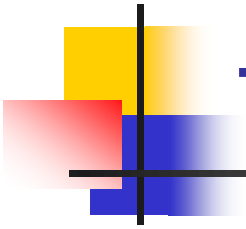
Evolution of U.S. Copyright Law

- The first copyright law was enacted in 1790.
- It applied primarily to books, maps, and charts.
- The law was later extended to include newer forms of media such as photography, movies, audio recordings, and so forth.
- In 1909, the copyright law was amended to include any "form that could be seen and read visually" by humans.
- This change was in response to a new technology: the player piano.

Evolution of Copyright Law in the U.S. (Continued)

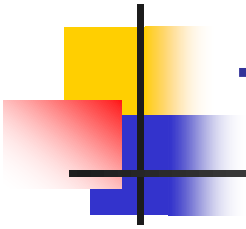
- The 1909 change was prompted by a case in 1908 involving a song that was copied onto a perforated piano music roll.
- Since the musical copy could not be read visually (by humans) from the piano roll, the copy was not considered a violation of the song's copyright.
- The "machine readable" vs. "human readable" distinction had implications for decisions about whether software programs could qualify for copyright protection.

Evolution of Copyright Law in the U.S. (Continued)



- A software program's source code can be read by humans.
- Its "executable code," which "runs" on a computer, cannot be read by humans.
- Beginning in the 1960s, arguments were made that computer programs should be eligible for copyright protection.

Evolution of Copyright Law in the U.S. (Continued)

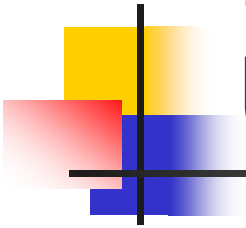


- Copyright law was significantly modified again in 1976.
- Under the 1976 Copyright Act, computer programs still did not clearly satisfy the requirements necessary for making them eligible for copyright protection.
- The Copyright Act was amended again in 1980 to address the status of software programs.

Evolution of Copyright Law in the U.S. (Continued)

- In 1976, the concept of a literary work was extended to include:
  - programs,
  - computers,
  - databases that "exhibit authorship."

Evolution of Copyright Law in the U.S. (Continued)



- A computer program was defined under the US Copyright Act as

  > a set of statements or instructions to be used directly in a computer in order to bring about certain results.

- To get a copyright for a computer program, the author had to show that the program contained an *original expression of ideas* and not simply the ideas themselves

Evolution of Copyright Law in the U.S. (Continued)

- In 1998, two important amendments were made to the 1976 Copyright Act:

1) Sonny Bono Copyright Term Extension Act (SBCTEA),
2) Digital Millennium Copyright Act (DMCA).

- The SBCTEA extended the length of copyright protection from the life of the author plus 50 years to the life of the author plus 70 years.

Evolution of Copyright Law in the U.S. (Continued)

- Protection for "works of hire" (often commissioned by corporations) produced before 1978 were extended from 75 years to 95 years.
- Critics of the SBCTEA noted that the law was passed just in time to keep Mickey Mouse from entering the public domain.
- Critics also pointed out that the Disney Corp. lobbied very hard for the passage of this act.

Evolution of Copyright Law in the U.S. (Continued)

- The DMCA has also been severely criticized, because of the manner in which the rights are extended.
- The DMCA potentially restricts the development and use of digital technology.
- It contains a controversial "anti-circumvention clause," which forbids:

  the development of any software or hardware technology that *circumvents* (or devises a technological workaround) to copyrighted digital media.

What Does Copyright Law Protect?

- A copyright is a legal form of protection given to a "person" or author.
- The author can be an entity such as organization or a corporation, such as Microsoft, as well as an individual.
- A copyright protection is given for the expression of an idea such as a book, poem, musical composition, photograph, dance movement, motion pictures, audiovisual works, or computer software.

Copyright Protection (Continued)

- For a work to be protected under copyright law, it must satisfy three conditions in that it needs to be:

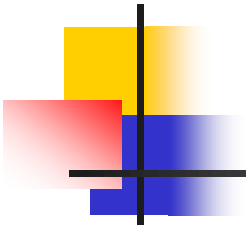
1) original;
2) non-functional;
3) fixed in a tangible medium.

Copyright Protection (Continued)

- Copyright holders have the exclusive right to:
  - make copies of the work;
  - produce derivative works, translations into other languages, movies based on the book, and so forth;
  - distribute copies;
  - perform works in public (musicals, plays. etc.);
  - display works in public (e.g., art works).

The *Fair Use* Provision in Copyright Law

- The principle of *fair use* balances the exclusive controls given to copyright holders against the broader interests of society.
- Fair use means that an author or publisher may make limited use of another person's copyrighted work for purposes such as:
  - criticism,
  - comment,
  - teaching,
  - scholarship,
  - research.



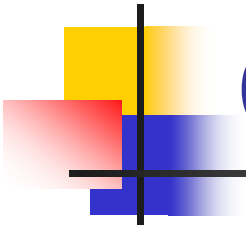
Fair Use (Continued)

- The fair-use principle has also supported the practice of "reverse engineering."
- Reverse engineering is very important in the computer industry in particular, and in engineering in general, because it allows someone to buy a product for the purpose of taking it apart to see how it works.

The *First-Sale* Doctrine in Copyright Law

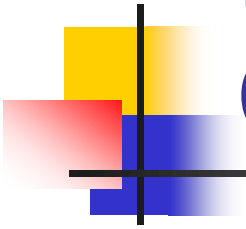
- The first-sale doctrine is another balancing scheme in copyright law.
- It applies once the original work has been sold for the first time, when the original owner loses rights over the work of art.
- Once you purchase a copy of a book, audio tape, painting, etc., you are free to give away, resell, or even destroy the copy of that work.
- It is not clear whether one is permitted to give away digital versions of these works.

SBCTEA: The Extension of Copyright Protection



- SBCTEA has been controversial (as noted above).
- See the discussion (in the textbook) involving Eric Eldred's Web site, which was set up to make available electronic versions of out-of-print books (in the public domain) that were then very difficult to locate.
- When SBCTEA passed, many books that were about to enter the public domain could not be included on Eldred's site.

DMCA: The Extension of Copyright Protection



- The DMCA has a controversial anti-circumvention clause (described earlier).
- See the discussion (in the textbook) involving Dimitri Sklyarov, a graduate student who wrote a program to decrypt the code for an electronic book reader that was developed by Adobe (a U.S.-based software company).
- Adobe feared that with Sklyarov's program, "pirates" could read e-books for free.
- Sklyarov, a Russian citizen, was arrested under the DMCA's anti-circumvention clause, when he attended a conference in the U.S.

The (Now Classic) LaMacchia Case

- In 1994, Robert LaMacchia, a student at MIT, was arrested for operating an electronic bulletin board system (BBS) system (*Cynosure*), on which users could upload/download proprietary (copyrighted) software.
- LaMacchia did not charge users for his service and he did not make any money from the Cynosure BBS; so, did he commit a crime?
- How did the incident involving LaMacchia and Cynosure foreshadow the Napster case?

The Original Napster Case

- In 1999, the Napster Web site was sued by the Recording Industry Association of America (RIAA) for distributing copyrighted music on the Internet.
- Gnutella, Morpheus, and KaZaA have also distributed copyrighted music on the Internet.
- Unlike Napster, which used a centralized server, index, and registry of names, the other services used a “decentralized” system.

The *Verizon v. RIAA* Controversy

- The Recording Industry took a different approach in challenging Gnutella, Morpheus, and KaZaA.
- It issued court subpoenas to Internet Service Providers (ISPs) such as Comcast and Verizon, as well as to major universities, for the names of users it suspected to have downloaded and exchanged large volumes of copyrighted music via those ISPs.
- In the *Verizon v. RIAA* case, Verizon challenged the RIAA in court on the grounds that complying with such requests violated specific articles of the U.S. Constitution.
- As a result of the RIAA's suits, some universities have disabled their P2P file-sharing systems altogether.

Scenario 8-1

- While many recording artists have entered into contractual agreements with streaming survices like Spotify, some artists have not
- In November 2014, Taylor Swift publicly announced that she would not allow her newly released album to be streamed on Spotify
- Swift complained that the income from Spotify pales in comparison to the money they collect when the music is purchased from iTunes or Amazon, or as a CD.

(Online) Music Streaming Services

- Review Scenario 8-1 in the textbook.
- In some ways, streaming services pose the next challenge for copyrighted music.
- Some critics of streaming services believe that these online services both:

a) contribute to piracy,

b) are responsible for the decline of CD sales.

- Streaming's defenders offer a different view.

Streaming Online Music (Continued)

- Spotify, a very popular streaming service, has argued that it provides members with an alternative to piracy (while, at the same time, providing revenue to recording artists that they otherwise would not receive).
- Spotify also points out that its members reported (in a survey conducted by Spotify) that they had paid either very little or nothing for music before joining that streaming service.
- So, Spotify claims that if the sale of CDs has fallen, it is not because of its service; thus, it cannot be held responsible for any decline in CD sales.

Streaming Online Music (Continued)

- Spotify has also pointed out that it has explicit contractual agreements with the recording artists and record labels featured on its service.
- So, streaming services like Spotify are very different from the various P2P music sharing sites in the past, which enabled users to download unauthorized copies of proprietary recordings in violation of copyright law.

Streaming Online Music (Continued)

- While many recording artists have agreed to Spotify's terms, others have refused to grant Spotify the right to have their songs played.
- Others have subsequently changed their mind and had their music removed; e.g., Taylor Swift, who did not allow her album *1989* to be aired on Spotify, has since removed all of her earlier music from that streaming service as well.
- Swift believes that Spotify's policies are "unfair" to recording artists because they significantly decrease the amount of income artists would receive if Spotify's users instead purchased music in the form of CDs and MP3s.

Streaming Online Music (Continued)

- Are Spotify's practices unfair, as Swift claims, and for the reasons she suggests?
- First, we should note that Spotify is a service whose practices are in strict compliance with copyright law.
- So unlike "pirate" music sites, beginning with Napster and evolving to the present day, Spotify has legal contracts with recording artists and record labels; these contracts also include a royalty structure to which both parties agree.

Streaming Online Music (Continued)

- But Swift is correct in claiming that recording artists – at least some of them – stand to gain far more royalty income by "going the song-for-purchase route" than from the royalties offered by Spotify.
  - For example, recording artists who are currently in their prime, such as Swift and Beyoncé, may be significantly affected by the amount of royalty income they can potentially lose.

Streaming Online Music (Continued)

- Not all, or even most, recording artists, are negatively affected in the same way as Swift apparently is by Spotify's policies, as well as those of other major streaming services.
- As some critics point out, some solo artists and bands who may be starting out in their careers can gain more exposure through services like Spotify than they otherwise would.
- Also, recording artists who are past the primes of their careers can benefit from still having their songs aired to Spotify users.
- So, Swift's claim that Spotify is "unfair" to recording artists does not seem to be completely accurate, since many artists do indeed stand to gain from exposure to their music via this online service.

Streaming Online Music (Continued)

- We can now see how the debate over access to digital music has moved well beyond the earlier Napster-era questions pertaining to illegal downloading.
- For example, that debate now includes questions about legitimate modes of freely accessing/listening to copyrighted music via a process that financially rewards musicians and the recording industry.
- Of course, this debate is no longer limited to online music; it now includes issues affecting unauthorized access to (copyrighted) online movies as well.

The *MGM v. Grokster* Case

- Review the discussion of the *MGM v. Grokster* case (in the textbook).
- MGM and several motion picture studios sued Grokster for "contributory copyright infringement" through its file-sharing service.
- MGM alleged that over 90% of the material exchanged on Grokster was copyrighted material and that the P2P service was legally liable for the material being exchanged.

MGM v. Grokster (Continued)

- A district court disagreed with MGM, ruling that Grokster could not be held liable for the distribution of copyrighted material because:

1) it lacked sufficient knowledge of the infringement, and
2) it did not materially contribute to the copyright infringement.

- The case was later appealed to U.S. Supreme Court, which sided with MGM.

Patent Protections

- A patent is a form of legal protection given to individuals who create an invention or process.
- Unlike copyrights, patents offer a 20-year exclusive monopoly over an expression or implementation of a protected work.
- Current U.S. patent law is based on the Patent Act of 1952, amended in 1995.

Patents (Continued)

- Patent protection can be applied to inventions and discoveries that include utilitarian or functional devices such as machines, “articles of manufacture,” or "compositions of matter.“
- Patents are granted to inventions and discoveries that satisfy three conditions:

1) *usefulness,*
2) *novelty,*
3) *non-obviousness*.

Patents (Continued)

- Computer hardware inventions clearly satisfied the requirements of patent law.
- Computer software did not (initially).
- Beginning with *Gotshalk v. Benson* (1972), the U.S. Patent Office and the courts established a strong opposition to patents.
- Benson applied for a patent for an algorithm he developed that translated the representation of numbers from base 10 to base 2.

Gotshalk vs. Benson

- Benson's algorithm is an important feature of all programs.
- If he had been granted a patent for his algorithm, Benson would have controlled almost every computer in use for 12 years.
- The patent was denied to Benson on the basis of a policy that bars patents for mere mathematical formulas or abstract processes that can be performed by a series of "mental steps" with the aid of pencil and paper.

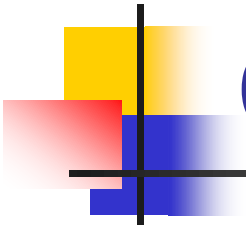
The *Diamond v. Diehr* Case

- The *Diamond v. Diehr* case is considered a landmark ruling in the dispute over patenting software.
- The outcome of this court case, based on 5-4 decision, resulted in the first patent awarded for a computer program.
- In this instance, the computer program assisted in a process of converting rubber into tires.
- Critics argued that Diehr had only a new computer program, since all of the parts of the machine used in the conversion process consisted of traditional technology except for the computer program.

Diamond v. Diehr (Continued)

- Although the Court ruled in favor of Diehr, the justices, in their decision, continued to affirm the view that computer algorithms themselves are not patentable.
- The Court pointed out that the patent awarded to Diehr was not for the computer program but for the rubber tire transformation process as a whole.

Proliferation of Patents for Computer Software



- Some worry that patent protection has gone too far.
- The U.S. Patent and Trademark Office (PTO) issues about 20,000 new software patents every year.
- Aharonian (2001) notes that between 1993 and 1999, the number of patents issued increased by tenfold.
- Between 1979 and 1999, more than 700,000 patents had been issued for electronics inventions.

Trademarks

- A *trademark* is a word, name phrase, or symbol that identifies a product or service.
- The Lanham Act, also referred to as the Trademark Act of 1946, was passed to provide protection for registered trademarks.
- The Act intends to ensure that the quality associated with a certain logo or symbol used by a business actually represents the quality that consumers expect (e.g., the BMW label).

Trademarks (Continued)

- To qualify for a trademark, the "mark" or name is supposed to be *distinctive*.
- However, Deborah Halbert (1999) notes that a (not so distinctive) trademark for "uh-huh" was granted to Pepsi.
- Also, consider that a major movie theatre in the U.S. has trademarked the expression “Silence is Golden.”

AOL v. AT&T

- America OnLine (AOL) tried to register a number of symbols as official trademarks.
- For example, it applied for trademarks of its expression "You've Got Mail," "Buddy List," and "IM" (for Instant Messenger).
- If AOL was allowed to register them, other providers who used these expressions would be infringing on AOL's registered trademarks.
- AT&T challenged AOL.
- The court ruled that the expressions were not unique to AOL.

Trade Secrets

- A trade secret is defined as

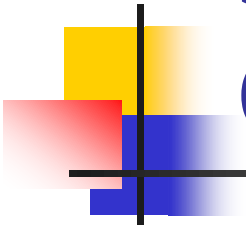
  information used in the operation of a business or other enterprise that is sufficiently valuable and secret to afford an actual or potential economic advantage over others.

- Trade secrets can be used to protect:
  - formulas (such as the one used by Coca-Cola);
  - blueprints for future projects;
  - chemical compounds;
  - process of manufacturing.

Jurisdictional Issues Involving Copyright Laws

- Intellectual property (IP) laws enacted in the U.S. have implications that are global.
- Some international treaties for IP have been signed, such as TRIPS (Trade Relationship Aspects of Intellectual Property Standards).
- The TRIPS agreement implemented requirements from the Berne Convention for the Protection of Literary and Artistic Works.
- TRIPS is recognized by signatories to the World Intellectual Property Organization (WIPO).

State Laws in the U.S. Affecting Goods and Services



- Different states in the U.S. have different laws affecting the sale-of-goods and contracts involving goods and services.
- One controversial law (at the state level) affecting software is the Uniform Computer and Information Transactions ACT (UCITA).
- UCITA is designed to govern contracts for the development, sale, licensing, maintenance, and support of computer software.

UCITA

- UCITA also extends to all shrink-wrap and “click-wrap” agreements.
- Thus far, UCITA has been enacted into law in the states of Virginia and Maryland
- But UCITA has implications for all states because contracts span multiple states and thus potentially involve Virginia and Maryland law in the process.

Philosophical Foundations for Intellectual Property

- Three distinct types of traditional (philosophical) theories regarding property rights can be articulated, i.e., the:

1) labor theory;
2) utilitarian theory;
3) personality theory.

- It is important to note that some theorists argue against property protection of any kind.
- Others argue against protecting intellectual property, but not against tangible property.

The Labor Theory of Property

- Introduced by John Locke (17th century).
- According to the labor theory, a person is entitled to the results of his or her labor.
- Property rights are justified because of the one's physical "sweat of the brow."
- It makes sense for physical objects, but does it apply intellectual objects as well?

Criticisms of the Labor Theory

- The Labor Theory assumes that a property right is a *natural right* (but gives no clear defense of this view).
- It applies only to people who "own their bodies," ruling out slaves and indigent peoples such as Native Americans.
- Intellectual works don't always require the same kind of onerous labor.

The Utilitarian Theory of Property

- A property right is not a natural right; rather it is a conventional right granted by governments.
- Property rights should be granted because they provide an incentive to bring ideas into the marketplace (i.e. they have social utility).
- Utilitarian reasoning was used by the framers of the US Constitution (Article 1, Section 8).

Criticisms of the Utilitarian Theory of Property

- This theory (questionably) assumes that there must be an economic incentive to produce creative works; otherwise, creative works would not be produced.
- Utilitarian theory in general favors the interests of the greatest number of persons (affected by a social policy) at the expense of the minority population that is also affected by a social policy.

The Personality Theory of Property

- Traced back to G.W.F. Hegel (19th century).
- Property rights are not tied to labor or to economic incentives.
- A property right should be granted because of the personality of the author that is invested in the creative work (regardless of economic considerations).
- Consider that the commercial use of a creative work may not represent the author's personality, as in the case of a Nike TV ad using John Lennon's song "Revolution."

Criticism of the Personality Theory

- The personality theory assumes that property rights are natural or moral rights.
- This theory ignores three factors:

a) the role of economic incentives;

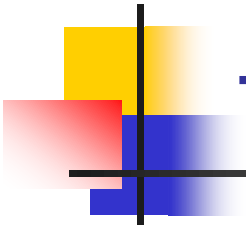
b) the role of labor involved;

c) the fact that an author might not have invested her "true" personality in some creative work (such as a deliberate attempt on the part of the author of a creative work to deceive someone).

Summary of the Three Philosophical Theories of Property

Labor Theory	Argues that a property right is a "natural right" and that property rights can be justified by the labor or "toil" that one invests in cultivating land or in creating a work of art.
Utilitarian Theory	Argues that property rights are not natural rights but rather artificial rights created by the state. Property rights are granted to individuals and to corporations because they result in greater social utility overall.
Personality Theory	Argues that a property right is a "moral right" and that property rights are justified not because of labor or social utility but because creative works express the personalities of the authors that create them.

The Case Against Property Rights for Software

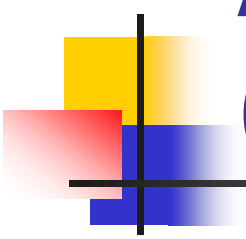


- Not everyone believes that property rights for software are justified.
- Some argue that while property rights for physical objects make sense, intellectual property rights for software does not.
- Richard Stallman has opposed copyright protection for software.

Alternative Frameworks to Property Rights for Software

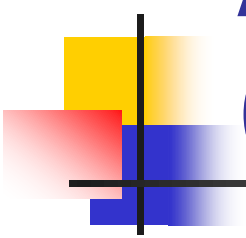
- Stallman (2004) views software ownership as a form of "hoarding" that disregards the general welfare of society.
- He believes that software should be freely available for humankind rather than restricted by property rights.
- Stallman notes that the development of software in the computer industry has evolved from a spirit of cooperation and sharing to one in which cooperation is virtually forbidden.

Alternative Frameworks (Continued)



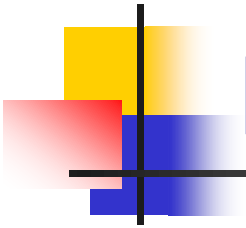
- Grodzinsky, Miller, and Wolf (2004) suggest that Stallman's position on why software should be free may have been influenced by the MIT culture of the 1970s, where source code could be freely exchanged.
- Although Stallman advocates for the view that software should be free, he intends "free" to refer to liberty not to price (or "free" as in free speech versus free beer).

Alternative Frameworks (Continued)



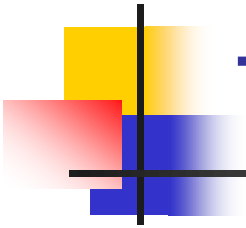
- In the late 1970s and early 1980s, the burgeoning computer industry hired many of the best software developers and programmers from academic computing labs.
- Some of those individuals took the software they developed with them, and some of that software eventually became proprietary.
- In response, Stallman began his GNU (Gnu's Not Unix) project in 1984, whose goal was to develop an entire Unix-like operating system that was "open" and freely accessible.

GNU and the Free Software Foundation (FSF)



- FSF was formed in 1985 to support of Stallman's GNU project.
- According to FSF, four "freedoms" are essential for free software, i.e., the *freedom to*:

1. run the program, for any purpose;
2. study how the program works, and adapt it for your needs;
3. redistribute copies so you can help your neighbor;
4. improve the program, and release your improvements to the public so that the whole community benefits.

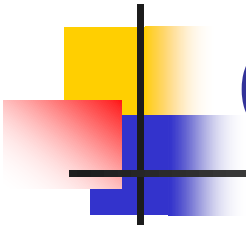


The Open Source Initiative (OSI)

- OSI shares many of the same goals as FSF, including the ability of a software user to look at, understand, modify and redistribute the source code for that software.
- Like FSF, OSI requires that the source code for "open source software" (OSS) is freely available.
- So, both the OSS and FSF movements are similar with respect to their requirements for source code in the software development process.
- There are also important differences between OSS and FSF.

OSS and FSF (Continued)

- Raymond (2004) notes that OSS and FSF have different philosophies or "attitudes" because:
  - FSF continues to focus on promoting its philosophical position that software should be free.
  - OSS has concentrated its efforts more on promoting the open source model as an alternative methodology to "closed-source" development for software.
- OSS and FSF also differ with respect to requirements for how the software is used "downstream."



OSS and FSF (Continued)

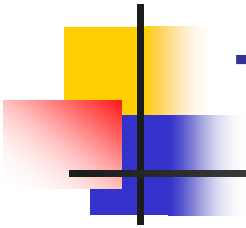
- FSF requires that all derivative pieces of software be subject to the original requirements and thus remain "open" and nonproprietary.
- OSS is more flexible with respect to its derivative software.
- FSF requires that users strictly adhere to its GPL (General Programming License) in all derivative uses of its software.
- OSS supports less restrictive licenses that permit programmers to alter the open source software and to release it as a proprietary product.

Alternative Frameworks and the Sharing of Information

- Stallman focuses his arguments specifically on why computer software, not necessarily all information, should be free (although some of his followers subscribe to the view: information wants to be free).
- But Stallman correctly recognizes that information is something that humans desire to *share* with one another.
- We do not need to accept his position on software being free to appreciate the force of Stallman's insight about the broader notion of information.

Alternative Frameworks (continued)

- In order for information to be shared, it must be communicated.
- So, intellectual-property laws that prohibit or even discourage the communication of information undermine the very purpose of information as "something to be shared" (McFarland, 2004).



The “Common Good” Approach

- Stallman's insight about the nature of information dovetails with the “common-good” approach to ethics.
- McFarland (2004, 2005) draws on some principles of virtue ethics and natural law theory in discussing how the “common good” applies to intellectual property issues.
- McFarland does not necessarily accept Stallman's claim that software should be totally free.

"Information Wants to Be Shared" vs. "Information Wants to Be Free"

- Building on the insights of McFarland and others, we argue for the principle: *information wants to be shared*.
- This principle could be used as a starting point to guide policy debates.
- If we presume in favor of this principle, we can have fairer information policies.

Information Wants to Be Shared (Continued)

- De George (2003) notes that original copyright laws (involving print media) were designed to encourage information distribution.
- With recent laws covering digital media, such as the DMCA and SBCTEA, the distribution of electronic information is now being inhibited, despite the fact that this kind of information exchange is easy and inexpensive.

Information Wants t Be Shared (Continued)

- The original computing and Internet environments were governed by an implicit principle of *sharing* information.
- For example, Doug Englebart did not apply for a patent for the mouse that he invented.
- Also, Tim Berners-Lee did not copyright his HTML code that was eventually used as the standard protocol for the Web.

Preserving the Intellectual Commons

- We have framed laws and policies to protect the *physical commons* (i.e., parks, natural resources, etc.).
- The *intellectual commons* (of ideas) is now threatened by strong intellectual property laws.
- Many believe that we urgently need to act now to preserve the intellectual commons.

The Public Domain of Ideas

- The public domain of ideas is shrinking.
- Recall Eric Eldred's Web site of older books, which was forced to shut down.
- Books and information once easily available are now threatened as soon as they are converted into digital form.
- What will the future status of digital books be for interlibrary-loan practices?

The Environmental Movement: An Analogy for Cyberspace

- Boyle (2004) believes that a "political movement," similar to the environmental movement that emerged in the 1970s, is needed to preserve the public domain.
- Boyle points out that just as a political movement was necessary to save the environment from inevitable destruction, so too is an analogous movement needed to save the intellectual commons.

Environmental Analogy (Continued)

- Boyle notes that “the environment” almost “disappeared” under the simplistic claim of (highly individualistic) property rights.
- The public domain of information is disappearing because of similar interests.
- The environmental movement "invented" the concept of the environment so that farmers, consumers, hunters, and bird watchers could “discover themselves as environmentalists.”

Environmental Analogy (Continued)

- Boyle concludes that we may also need to invent (or perhaps "reinvent") the concept of the public domain in order to call into being a coalition of stakeholders that could protect it.
- He suggests that it might still be possible to reclaim the public domain of ideas, if we act responsibly.

Defending the Principle: *Information Wants to Be Shared*

- If we defend the principle that information wants to be shared (but not totally free), then it will be possible to frame reasonable intellectual property policies that both:

a) encourage the flow of information in digital form;

b) reward fairly the creators of intellectual objects, including software manufacturers.

- One promising scheme for accomplishing these objectives is the Creative Commons initiative.

The Creative Commons (CC)

- The Creative Commons (CC), a nonprofit organization, was launched by Lawrence Lessig and others in 2001.
- CC aims at providing creative solutions to problems that current copyright laws pose for sharing information.
- CC expands the range of creative work available to others legally to build upon and share.

CC (Continued)

- CC provides a set of licensing options that help artists and authors give others the freedom and creativity to build upon their creativity.
- Lessig (2004) points out that a “creative” scheme for licensing is needed because the current intellectual property rights regime does not make sense in the digital world.

CC (Continued)

- CC does not aim to undermine copyright law.
- Lessig believes that there should be a way to maintain copyrighted works and still make it possible for people to license the use of those works.
- Traditional copyright regimes tend to promote an "all or nothing" kind of protection scheme with their "exclusive rights" clauses.
- Goetz (2004) notes that CC provides a middle ground because it makes possible a "some rights reserved" approach versus an "all rights reserved" policy.

CC (Continued)

- Lessig believes that the Internet allows for an "innovation commons" and that the CC licensing schemes help to promote this vision.
- CC provides a menu of options in its licensing and contract schemes, available for free on its Web site.
- These enable copyright holders to grant some of their rights to the public while retaining others.

CC (Continued)

- The CC menu provides four options:

1. **Attribution**—Permit others to copy, distribute, display, and perform the work and derivative works based upon it only if they give you credit;
2. **Noncommercial**—Permit others to copy, distribute, display, and perform the work and derivative works based upon it only for noncommercial purposes;
3. **Derivative works**—Permit others to copy, distribute, display, and perform only verbatim copies of the work, not derivative works based upon it;
4. **Share alike**—Permit others to distribute derivative works only under a license identical to the license that governs your work.

CC (Continued)

- CC Licenses allow musicians to dictate how their music will be used – even if they sign with a record label (as long as the CC terms are part of the contract).
- Both artists and fans can benefit from the kinds of licenses made available through CC.
- The recording industry and other organizations that have benefited from the traditional copyright regime may lose some influence, power, and control because of the new licensing schemes made possible by CC.

CC (Continued)

- With its creative and flexible licensing schemes, CC both encourages the flow of information in digital form and protects the legal rights and interests of artists and authors.
- Artists and authors can be recognized and rewarded, financially and otherwise, for their creative contributions, yet still share their works (or portions of their works) with others.
- This also supports Lessig's notion of an "innovation commons" because it allows authors and artists to build upon the works of others.

CC (Continued)

- CC also helps to preserve the future of the commons, and it promotes the kind of spirit of cooperation and sharing among creators advocated by FSF and OSI.
- CC also provides an implementation scheme for our principle *information wants to be shared*, by helping us to frame intellectual property policies that avoid having either to:

a) endorse the view that information should be absolutely free,

b) support overly strong copyright laws that discourage sharing and innovation and also diminish the intellectual commons.

Recent Legislation: PIPA, SOPA, and RWA

- In 2011, three controversial pieces of legislation threaten the information commons were introduced in the US Congress:
  - PIPA (Protect Intellectual Property Act),
  - SOPA (Stop Online Piracy Act),
  - RWA (Research Work Act).

PIPA and SOPA

- PIPA's and SOPA's supporters argued that stronger laws were needed to enforce copyright protection online and to crack down on pirates, especially those operating from Web sites in countries outside the US.
- Critics argued that SOPA and PIPA would grant the U.S. government, as well as some major corporations, broad powers that allow them to shut down Web sites that they merely suspect are involved in copyright infringement.
- Critics also worried that the government and corporations would be able to do this without first having to get a court order and go through the traditional process of having either a trial or court hearing.

PIPA and SOPA (Continued)

- Following major (online) protests, the U.S. Congress decided to postpone voting on PIPA and SOPA.
- Although the bills were eventually shelved, they have not been abandoned by their original sponsors in Congress, and key supporters have vowed to introduce alternate versions in the near future.
- Some critics worry that the Cyber Intelligence Sharing and Protection Act (CISPA), introduced in Congress in 2012, is a "back door" effort to get PIPA- and SOPA-like legislation passed.

RWA

- RWA (Research Works Act), also introduced in Congress in late 2011, focused mainly with scientific and academic research that was accessible online.
- RWA was designed to replace the National Institute of Health (NIH) Public Access Policy, which had mandated that any NIH research funded by U.S. tax payers would be freely available online.
- RWA's critics worried that future online access to important health information would be severely restricted.

RWA (Continued)

- Some critics worry that RWA would not only block the sharing of important health-related information (generated by NIH grants), including the public availability of biomedical research results, but could also significantly restrict the sharing of much scientific and academic information in general.
- Other critics point out that taxpayers have already paid once for this research, via their taxes that funded NIH grants; so people wishing to access this information in the future would effectively be required to pay twice because of the new fees.

RWA (Continued)

- RWA's opponents have also noted that many large (privately owned) publishing companies, who stood to gain financially, were staunch supporters of RWA.
- One of these companies, Elsevier Press, had contributed money to the political campaign for US Congressman Darrell Issa (a co-sponsor of the original RWA legislation).
- Elsevier became the target of an international boycott ("The Cost of Knowledge" Boycott) by academics and scientists, as described in Scenario 8-5 in the textbook.

Intellectual Property Battles in the Near Future

- The current intellectual property disputes over digital information seem to be as contentious as ever.
- Copyright owners and corporations will likely continue to lobby the U.S. Congress for stronger copyright protections.
- Academic and library organizations will likely continue to argue for legislation that will favor online scientific and academic information being freely accessible to students and ordinary users.
- It is not yet clear how the information commons will ultimately be affected.