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The Johnson School




**NBA 600**  
**Digital Music**  
Class 6, Mon 11/5  
(Originally Wed 10/31)

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## Digital Music

- Last time talked about economics of digital goods and services
- Today focus on music industry
  - Technological changes and relation to strategic landscape
- Similar issues for video
  - But more amateur produced video
- First a brief overview of copyright and intellectual property protection



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## Intellectual Property Protection

- Three distinct areas
  - US law, but considerable effort to align laws of major countries through international treaties
- Patent protects inventions
  - Products or processes “reduced to practice”
    - Not text, film, music (creative works)
- Trademark protects names or symbols
  - Reputation and name of firm or product
- Copyright protects creative works
  - Original works of authorship



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## Goals of Intellectual Property Law

- Achieve balance between public and private good
  - Creator, inventor or owner has presumably expended considerable effort/resources
    - Developing an invention – patent protection
    - Building and maintaining a brand – trademark
    - Authoring a work – copyright protection
  - Creator might not share work broadly if do not receive some protection – depriving public
  - Public at large should have access while protecting rights of owners




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## Copyright

- Protection provided to authors/owners
  - Original works: literary, dramatic, musical, artistic, and certain other intellectual works
  - Generally gives owner exclusive right to
    - Reproduce the copyrighted work
    - Prepare derivative works
    - Distribute copies
    - Perform or display the copyrighted work publicly
- Limited term – works enter public domain after some time period or upon declaration
  - Owner loses exclusive rights




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## What Copyright Protects

- Works embodied in some fixed form
  - Not a performance, but a script or a recording
- Actual expression not thing described
  - E.g., in a computer program copyright protects the actual code not the problem that it solves
    - Other implementations are not protected
  - However, derivative works are protected
    - If someone takes code and modifies it or copies substantial portions
- Copyright holder has right to control how material is distributed or reproduced



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## Limitations of Copyright

- Fair use of copyrighted works
  - Quotation or reference
    - E.g., reviews, scholarly works, articles
  - Parody
    - 1994 supreme court decision – “Pretty Woman”
      - Roy Orbison vs. 2 Live Crew
  - Copies for personal use – so-called fair use
    - 1984 supreme court decision – video taping
- Lists of facts are not creative works
  - 1991 supreme court decision – phone directory
    - After NYNEX CD ROM directory case

## Determining Fair Use

- Defense against infringement not a right
  - Open to judgment, and thus litigation
- Four factors in determining fair use
  - Purpose and character of use
    - Commercial versus non-commercial
  - Nature of copyrighted work
    - How “creative” is the original work
  - Amount and substantiality of portion used
    - Both quality and quantity of copied material
      - E.g., characters, scenes may make substantial
  - Effect upon potential value of copyrighted work

## DMCA

- Digital Millennium Copyright Act
  - Passed in October 1998 in response to Internet
  - Also part of WIPO copyright treaty
- Main feature over prior copyright law
  - Ban on technological tools that can be used to violate copyright
    - Rather than just on copyright violation itself
  - Substantial implications for “fair use”
    - No person shall circumvent a technological measure that effectively controls access
      - While certain copying may otherwise be allowed can be prevented with digital protection

## DMCA and Reverse Engineering

- Several companies, notably Lexmark embedded software in their products
  - E.g., toner cartridge that won't work with printer without program in cartridge
  - Argued that copying infringed DMCA “access control”
- After initial victory, was overturned in district court and refused hearing by supreme court
- Broader questions about reverse engineering

## Digital Music Industry

- Early 2000's rise of Internet and file sharing
  - CD sales down 10-12% starting 2001-02, still falling at double digit rates
    - But not uniformly across region, genre
  - Song downloading became rampant
    - Napster, follow-ons such as Kazaa, BitTorrent
  - Subpoenas of ISP's and (threats of) lawsuits against file downloaders
  - RIAA industry group proponent of theory that downloading causing sales downturn

## New Technology Generations

- When a better distribution technology arises sales using the old medium have historically declined
  - Rate of 10-15% per year
  - Cassette tapes replacing vinyl albums
  - Compact discs replacing cassette tapes
  - Online replacing compact discs
- Is online music a replacement technology?
  - Extent to which format and convenience rather than whether “free”

## Music Industry Sales Today

- Oct '06, chairman of EMI said CD format is dead
  - People primarily rip to portable music players
  - Still room for physical media but need “additional content”
- Q3 '07 music industry sales
  - CD's down 18.5%
  - Digital downloads (paid) up 46.3%
- Online delivery now about 20% of total revenue

## Multitude of Factors

- Changes in competitive landscape with rise of Internet and other forms of leisure activity
  - Substitutes, supplier power, buyer power, barriers to entry, internal rivalry
- New technology changing value of compact disc as means of distribution
  - Preferred means among consumers
- Importance of experience as means of creating potential audience/customers

## Changes in Substitutes for CD's

- Increases in other activities that may compete for time with music listening
  - Cell phone usage
    - Replacing “Walkman” on campuses
  - Video games
- File downloading replacing CD purchase
  - Massive popularity of Napster and follow-on systems such as Kazaa, BitTorrent
    - Large fraction of all Internet traffic
  - Potentially lower quality but higher convenience than CD

## Changes in Buyer and Supplier Power

- Buyers
  - More informed consumers
    - Internet sites, chat, search
  - More consumer choice
    - Of format and outlets
    - Of substitutes
- Suppliers
  - Artists, potential for direct-to-consumer
  - Distribution channels
    - CD printers, retail, radio/cable, online

## Barriers to Entry and Rivalry

- Barriers
  - Production and distribution easier and cheaper
    - Online versus CD printing, distribution, channels
  - Identifying and signing talent
  - Promotion and branding
- Rivalry
  - Uniting against “common enemy” via industry trade groups such as RIAA
  - Little attempt to innovate using new technologies or media

## Value of Music in Different Forms

- Why listen to free music sources
  - Radio, cable, download
- Why buy music
  - In various forms
    - CD
    - Online download
- Personal purchase vs. gift
- Cost, convenience
  - Non-monetary costs

## Forrester and Gartner Studies

- Surveys of online consumers shows heavy downloaders still buy the most music
- Forrester identified several groups
  - Offline and nonusers: never download or burn
  - Dabblers: have tried but do infrequently
  - Learners: download, rip or burn 3-8 times/mo.
  - Lovers: over 9 times/mo.
- Lovers and learners make up 22% of population but buy 36% of music

## Empirical Studies Rare

- Surveys problematic
  - Self reporting accuracy
  - Purchase behavior in absence of file sharing
    - Don't consider whether downloads increase consumption rather than decreasing sales
- Econometric study based on actual download data
  - Instrumented file sharing systems
    - Estimate 0.01% of all downloads Sep-Dec 2002
  - Compared with various other measures to investigate relationship of downloads and sales

## File Sharing Downloads and Sales

- Strong positive relation between number of sales and number of downloads
  - Can simply reflect item popularity
- Similarly high positive relation between airplay and both sales and downloads
- More complex models show little negative effect of downloads on sales
  - One study concludes 5,000 per lost sale
    - Low percentage of album sales
  - Another study concludes slight positive effect

## Paid Song Downloads

- Apple iTunes site got things “right” by Forrester/Gartner criteria – launched 6/03
  - Broad range of music, ease of use, pay-per-song, browsing, acceptable price
  - First year of operation did not quite hit \$100M revenue goal
  - Sold billionth track in early '06, 2 billionth in early '07, 3 billionth in summer '07
- What is longer term viability of this model as new distribution medium?
  - Fee for convenience, virus free, fast, ...

## Strategic Shifts

- What is Apple's competitive position relative to the recording industry?
- War of words between Jobs and industry execs
  - September '05, Jobs called labels greedy for wanting to force rise in iTunes prices
    - Says continued success has to compete with free file sharing
  - Spring '07 – Apple goes on offensive against DRM
    - Announces DRM free EMI catalog in April

## Evolving Industry Structure

- Apple and other online providers
- Role of record labels
  - Band to customer? Madonna, Prince, Radiohead
- Where value is provided and can be captured
  - Performances and merchandising versus recordings
- Where revenues and profits go
- Power of independent artists

## Complexity of Industry

- Complicated for consumers
  - If only certain artists/formats available in certain sales venues
    - Easier to get illicit copies?
- Complicated for providers
  - Individual license agreements, often with many parties involved
  - Single track or video can involve material from many others
- What effect on revenue?

## Next Time

- DRM and Darknets
- Remember make-up class will be tomorrow, Tuesday, at 1:25 in B10