NBA 600: Day 17
Digital Goods
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Today’s Class

- Quiz covering last Thursday’s class and reading for today
- Return graded mid semester projects
- Hand out short paper assignment 4
- Start discussion of digital goods
  - What distinguishes from other goods
Mid Semester Projects

- **Allstate**
  - Supplemented highly manual processes between agents and central office with Web-based tools
  - Ability for customers to buy directly

- **Cisco**
  - Virtual company with strong technology linking internal development marketing and sales to external manufacturing
    - Original conception oriented towards meeting (increasing) needs, missed downturn
    - Painful but “ready” change to more accurate forecasting
Mid Semester Projects

- Classified advertising circulars
  - Publications targeting local area, likely buyers
  - View(ed) themselves as information providers rather than transaction enablers
    - Missed opportunity, potential decline

- FreshDirect
  - Clear strategy of providing convenience and quality, technology to deliver on strategy
    - Consideration of necessary vs. differentiating
    - Make-to-order differentiating
      - Money made in “manufacturing not distribution”
Digital Goods

- Define a digital good as anything that can be distributed in purely digital form
  - Text: books, periodicals
  - Images: photos, movies, illustrations
  - Sound: music
  - Structured data: directories, GIS
  - Not services!
- Sometimes called information goods
- Have unusual production economics
  - (Nearly) entire cost is in producing first copy
- Internet changing revenue picture
Economics of Digital Goods

- Producing first copy is generally sunk cost
  - Not recoverable if production halted
    - In contrast, for a building or equipment can recover some costs by selling
- If additional copies are cheap for anyone to produce then hard to recover cost
  - Physical copies provide barrier (e.g., printing)
    - Relatively expensive, especially mass copying
    - Degradation of copies provides barrier
- Digital goods are experiential
  - Need to make easily accessible to sell them
Challenge of Digital Goods

- Marginal cost of producing additional copy is small
  - Near zero for network distribution
  - Regardless of number of copies
    - “Infinite economies of scale”

- Natural to want to protect such goods against copying by others
  - Limit supply in order to have profitable business

- Can conflict with need to distribute widely to encourage sales
  - E.g., music business, payment for radio play
Internet and Digital Goods

- People like to share experiential goods
  - Playing a song for others, watching movies together, recommending and discussing books

- Everyone is connected on the Internet
  - One copy can quickly become many copies
    - No degradation of copies

- Still relatively hard to find things
  - People depend on trusted sources
    - Network(s) of friends
    - Certain media outlets
  - Helping people get familiar with your product
Some Cautionary Tales

- Content that is relatively easy for anyone to re-create
  - E.g., directory listings

- Content that is difficult to re-create
  - Substitutes – understanding why people buy
    - E.g., Encarta (CD) vs. Britannica (print)
    - What acts as substitute
  - Illicit copying
    - E.g., Music, movies
    - Protection vs. customer convenience
    - Exposure
Directory Listings

- 1986 NYNEX CD of NY area phone listings
  - Sold for $10k a copy
- Executive saw big opportunity, started own firm – Pro CD
  - NYNEX refused to grant license
  - Hired low paid workers to type all entries in
  - Sold CD’s for hundreds of dollars each
- Others saw profit opportunity
  - Low barrier to entry
  - More suppliers than demand, with sunk costs
    - Quickly drove price to marginal cost – near zero
Encyclopedia Britannica

- High barrier to entry
  - Lots of work required to create content
    * Creative work protected by copyright
- Printed copies sold for $1500-$2200 a set
  - In 1990 generated about $650M revenue
- CD encyclopedias appeared in early ‘90’s
  - E.g., Microsoft purchased third rate Funk & Wagnall to create Encarta in 1992
    - Sold for around $70
- Britannica viewed these as “toys”
  - But consumers used them as substitutes
Britannica’s Fall

- Revenue dropped by over half in a few years
  - Clear that CD’s were serious threat
- Management still did little
  - Channel conflict: sales force remained powerful
    - CD’s would not generate $100’s in commissions
    - Offered CD as supplement to printed version
    - Sold CD alone for $1,000, but no buyers
- In 1996 company was sold
  - Now offers CD as well as online service
    - Superior quality allows price premium over competitors, but price only about $50/copy
What was Britannica Selling?

- Parental fears of not providing best for their students
  - Own studies showed encyclopedia use was low after initial novelty
- Did PC’s become substitute for parents “doing best for their child”?
  - Similar price points in 1990’s
    - Now considerably lower
- Was encyclopedia CD just one of many added bonuses to PC?
  - Not actually worth much
Change in Encyclopedia Industry

- Total revenue now fraction of 1990
- What if Britannica had aggressively competed with $100 CD product?
  - “Defensive” introduction
    - Vs. $70 for lower quality Encarta
  - Better yet led the way
    - Before Microsoft bought Funk & Wagnall
- Are CD encyclopedias following print?
  - Largely given away
  - Web search
    - Result quality?
Strategies for Digital Goods

- Two industry structures have been demonstrated to be sustainable
  - Differentiated product – e.g., video games
  - Dominant market position – e.g., Microsoft

- Differentiating the product
  - Unique content, associated services, ease-of-use, restrictions on sales by others
  - Versioning
    - Price appropriately for different segments

- Is conflict of copy restrictions and ease-of-use inherent?
**Unique Content**

- **Protect via copyright**
  - For creative works such as books, games, films
  - Can be effective against sellers of copies
  - Socially and technologically unclear how to limit sharers of copies
    - “Six degrees of separation” means in principle anything easily obtainable via sharing

- **Make commodity content unique**
  - Law cases, numbering/indexing

- **How to create demand for your content?**
  - Engage the customer, but eventually get paid
Versioning

- Multiple versions priced for different segments of the market
  - Long pre-dates digital era, but now more opportunities for versioning
- Distinguished by content or packaging
  - Common for many goods, not just information
- Versioning information goods
  - Based on features or functionality
  - By delaying introduction
    - Hardcover then later paperback books
    - Film release, then video, then television
How Many Versions

- Usually have at least three for software
  - Low-priced: focus on price over functionality
    - E.g., personal, essentials,
  - Mid-priced: balance of two
  - High-priced: for those who want all functions
    - E.g., professional

- Majority will avoid extremes
  - With three choices nearly half generally buy mid-priced version

- Example: Quicken (name inflation)
  - Deluxe $50, Premier $70, Home&Business $80
Other Forms of Versioning

- **Recent uses of reverse delay**
  - NYT audience prefers to read printed version and to search online
    - So charge for search but not reading online
  - In contrast to WSJ which charges for all online access
    - Differences in audience and content from NYT

- **Reduced value versions**
  - With digital content often can degrade value
    - Less features, lower resolution, slower
  - Sometimes lower value has higher production cost, e.g., Wolfram research
Logic of Free Version

- For physical goods, generally too expensive to give away for free
  - Marginal cost is not low
- For digital goods, marginal cost near zero
  - Build interest and market by giving away
  - But need people to pay eventually
- Free versions (or cheaper ones)
  - Limited functionality
  - Limited time period
  - No support
  - Personal or educational use only
Strategic Uses of Free Version

- Building awareness – “advertising”
  - E.g., demo games with limited levels
- Gaining follow-on sales
  - E.g., Linux companies, McAfee (service, support)
- Creating network (critical mass of users)
  - E.g., Adobe PDF no value until widely used
- Attracting audience
  - Advertising model
- Gaining competitive advantage
  - E.g., IE over Netscape
Limited Use Versions of Software

- Structure of software industry
  - Much software used by business
    - Operating systems
    - Productivity tools (e.g., MS Office)
    - Programming tools

- Versions for personal or educational use
  - Free or lower priced
  - Build dependence and then charge companies

- Legal rather than technological means to enforce payment for usage by companies
  - Audit usage; collect punitive damages
Generality of Limited Use Model

- Doesn’t work as well for consumer goods
  - Individuals harder to police than companies
  - Less clear who to give to and who to charge

- Software copy protection abandoned in 1980’s recently being re-introduced
  - E.g., Intuit Turbotax
    - Considerable negative reaction from customers
    - Important to understand goal of protection
      - Generally can be circumvented by experts
      - Limiting casual sharing – hard to distinguish legitimate and illegitimate uses