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Today’s Agenda:

1. Basic DRM Concepts
2. Modeling DRM (Bergemann, et. al., etc.)
3. Case: File Sharing
4. Next Time: the Long Tail

Note: these slides are based partly on Jeff Mackie-Mason’s 646 slides from Winter term 2008.
Content owners have a variety of rights to control...

1. Duplication
2. Performance
3. Creation of Derivative Works
4. Distribution
5. Public Display
Challenge:

How Should “Copy” Rights be Managed?
What implications does digital technology have for rights management?
What are some management options?

1. Sell
2. License
3. Retain Exclusively
4. Give Away
duplication

performance

creation of derivative works

distribution

public display
duplication

performance

creation of derivative works

distribution

public display
duplication

performance

creation of derivative works

distribution

public display
duplication

performance

creation of derivative works

distribution

public display

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duplication

performance

creation of derivative works

distribution

public display
duplication

performance

creation of derivative works

distribution

public display

Source: http://www.amazon.com/
duplication

performance

creation of derivative works

distribution

public display
How Much Value has been generated by the Star Wars franchise?

• Performance: $4-7 billion (source Wikipedia, Forbes)
• Merchandising Revenue (derivative works):
  ~$15-18 billion (source: Forbes, May 24, ‘07)
• Duplication/Public Display: ????
How do digitization and the internet affect rights management?

• Reduced reproduction costs
• Reduced distribution costs
• Information Goods are “experience goods”
• Implication: give some content away
Giveaways?

• Sampling “repeated use” goods (barney...)
• Similar but not identical goods (lower resolution photos)
• “versioning” (a few pages of a book...)
• As inducements for complements (iTunes/Ipod, etc.)
Less restrictive control...

• Increases value...why?
• But may also decrease value...why?
DRM flexibility

• Suppose production costs negligible
• Market demand is $p(y)$
• The firm wishes to

$$\max_y p(y)y$$
Demand

\[ p(y) \]
\[ \pi(y) = p(y)y \]
Profit-maximization

\[ \pi(y) = p(y)y \]

\[ MR(Y) = p'(y)y + p(y) \]
Suppose rights owner increases flexibility: Increases value (wtp) to users

Note: $\alpha$ here has a different meaning than in the Bergemann paper
Profit maximization with "flexibility effect"

\[ \pi(Y) = \alpha \pi(y) \]

\[ \pi(y) = p(y)y \]
Profit maximization with "flexibility effect"

\[ P(Y^*) > p(y^*) \]
\[ Y^* = y^* \]
2. Increased flexibility increases outside options, fewer consumers want to purchase

\[ P(Y) = \alpha p(Y) - \beta \]
Price Effect is ambiguous: it depends on the size of $\beta$, i.e. where the $y,Y$-axis crossing occurs.
Bergemann, et. al.

• This paper explicitly models the tradeoff between “flexibility” (i.e. the number of copies a consumer is allowed to make) and # of unlicensed copies.

• If $\alpha$ is not “too large” then consumers only consume licensed copies ($\alpha$ measures the “permeability” of the content distribution environment)

• However, for large enough values of $\alpha$, unlicensed copies will be consumed; prices and profits for the licensed copies are lower
Bergemann, et. al., cont’d

• They also consider the case of complementary goods: the information goods + a platform (Itunes/Ipod)

• In the integrated case, flexibility and profits are higher

• In the non-integrated case, flexibility and profits are lower, due to the tradeoff between flexibility and consumption of unlicensed copies.
Applications...

- Shapiro and Varian provide historical examples of lower reproduction and distribution costs leading to higher content revenues.
- e.g. circulating book libraries, video tapes.
- How likely is this for, say, file-sharing of audio and video?
“[Book] publishers and movie producers understood their own industries, but they didn’t understand their complementors’ industries.” SV p. 97

What does this mean?
Should music publishers abandon DRM?

• Apple’s Perspective?
• RIAA’s Perspective?
How do you avoid losing most revenue to “sharing” and piracy?

• Sell complement that is hard to copy (customer support, updates, etc.)
• Reduce price, makes illegal activity less desirable, increases number of consumers