

# Loci of Competition, Market Power, and the Evolving Internet Industry Structure

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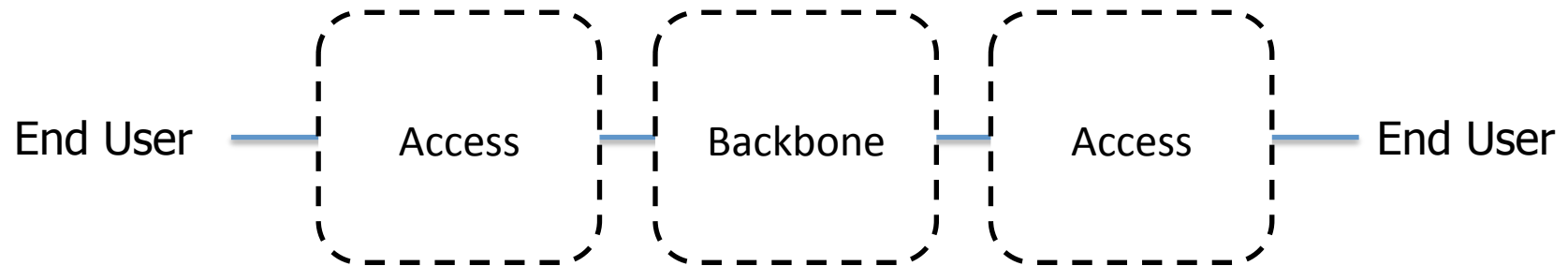
UC Berkeley School of Information

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# Value Configuration

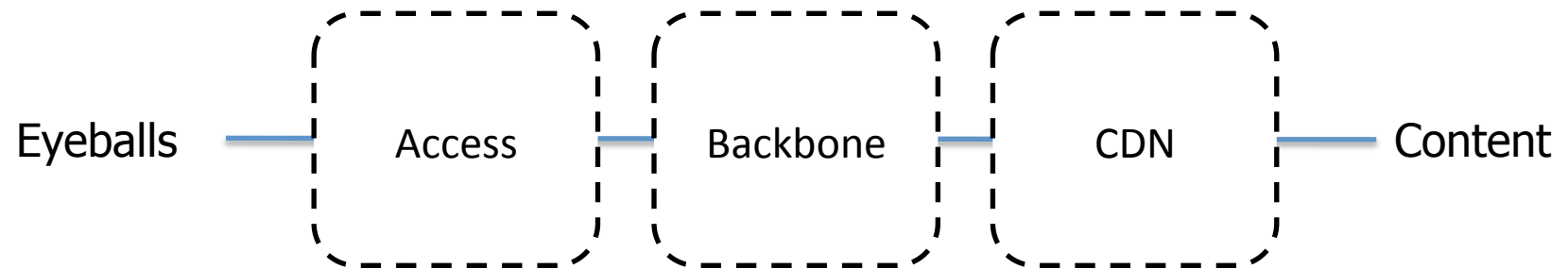
- Stabell and Fjeldstad, 1998; based on Thompson's 1967 typology of technology:
  - Intensive technology (shops)
  - Long-linked technology (chains)
  - Mediating technology (networks)
- Which is the value configuration for the Internet?

# Supply Chain(s)

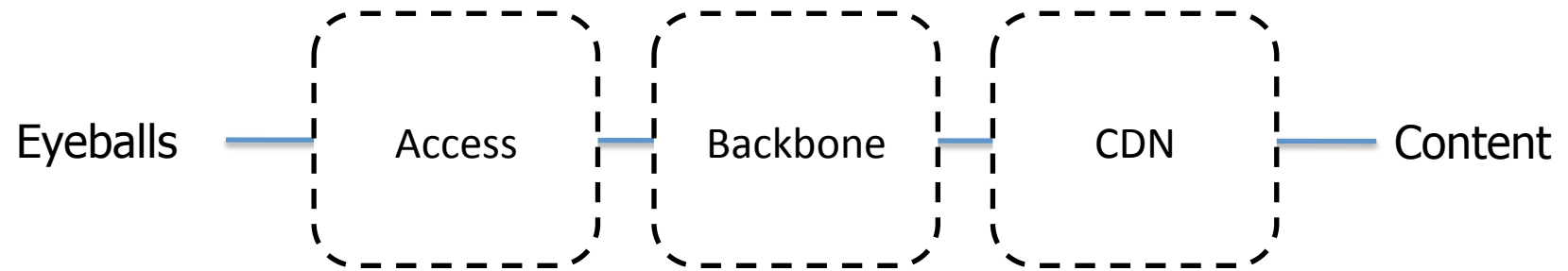


- For traditional communications, two supply chains: End users buy access service; Access network buy transit service; money flows up the respective supply chains

# New Elephant in the Room



# Dis-intermediation

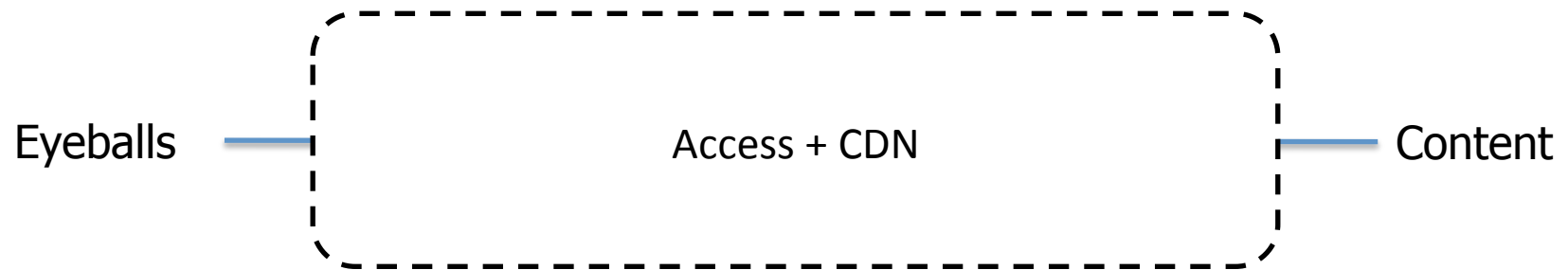


# Dis-intermediation



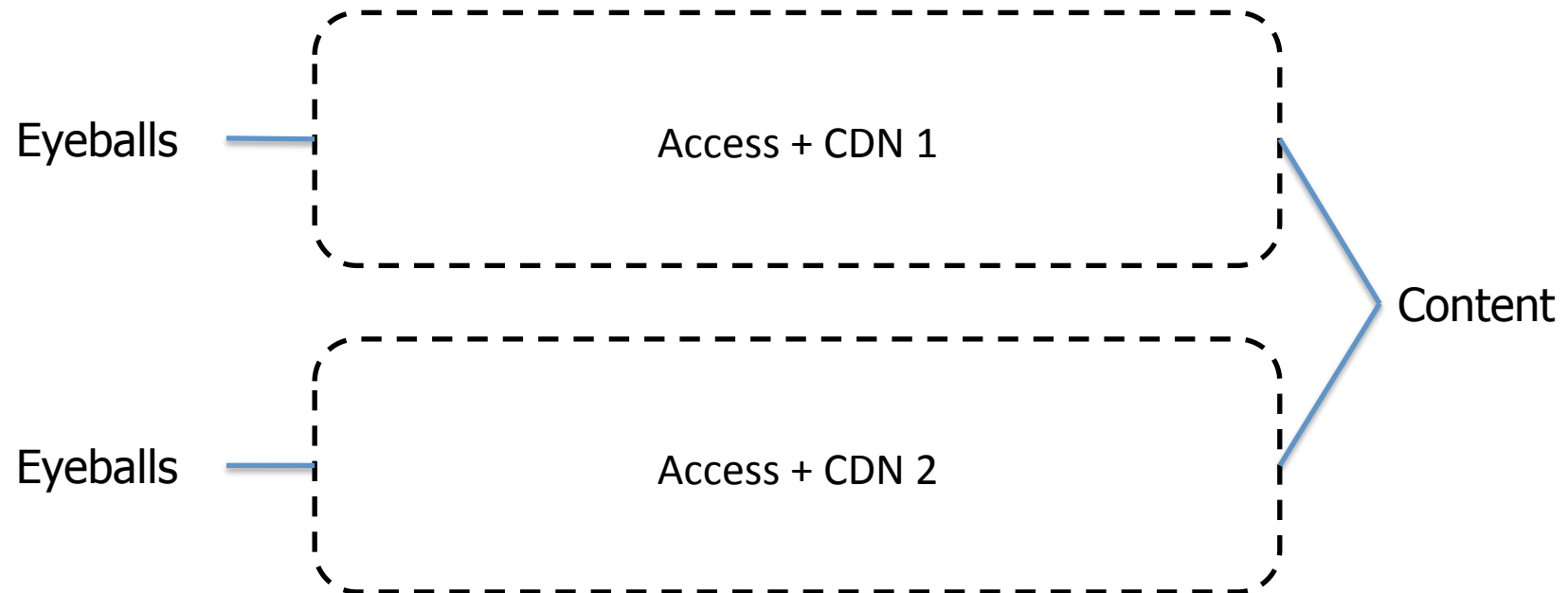
- For content distribution: supply chain model no longer accurate, since Access network is not buying content from CDN in order to sell to eyeballs
- So is this a two-sided market?

# Two-Sided Market



- Two-sided markets implies vertical integration between Access and CDN, so as to establish a platform between the two sides.
- Basis for numerous recent economic models of the Internet

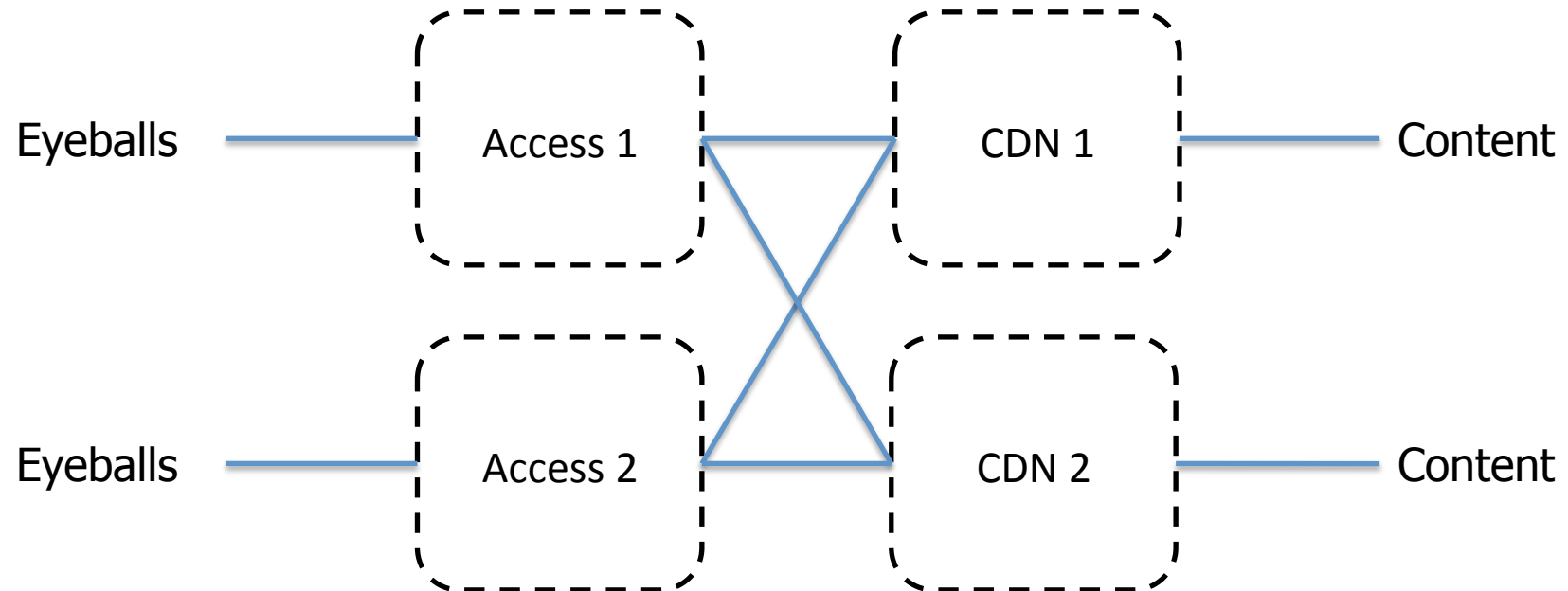
# Platform Competition



- Consumers may face a duopoly or oligopoly
- Unless consumers choose to multi-home, content providers will have to face not one but multiple terminating access monopolies
- **But we are getting ahead of ourselves!**
  - Vertical integration between Access and CDN is still exception, not norm



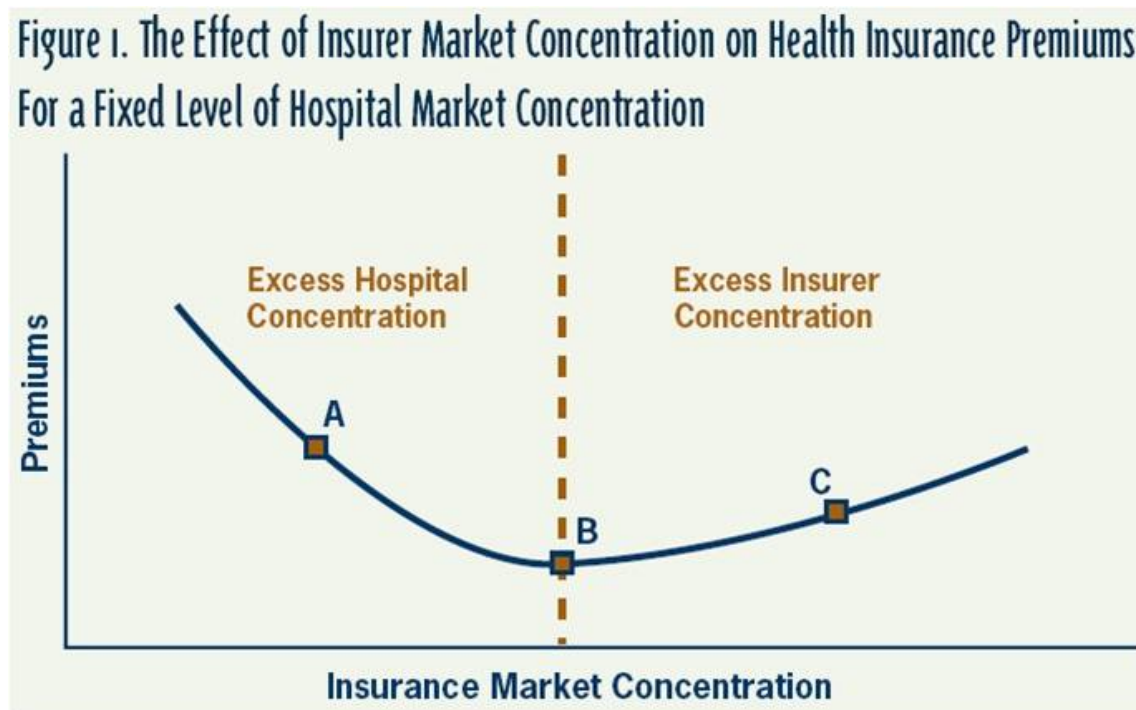
# Bilateral Oligopoly



- A bilateral oligopoly is a better model of the current state of the world [Chuang, 2011]
  - Oligopolies in two adjacent loci of competition
  - Both Access and CDN firms have market power

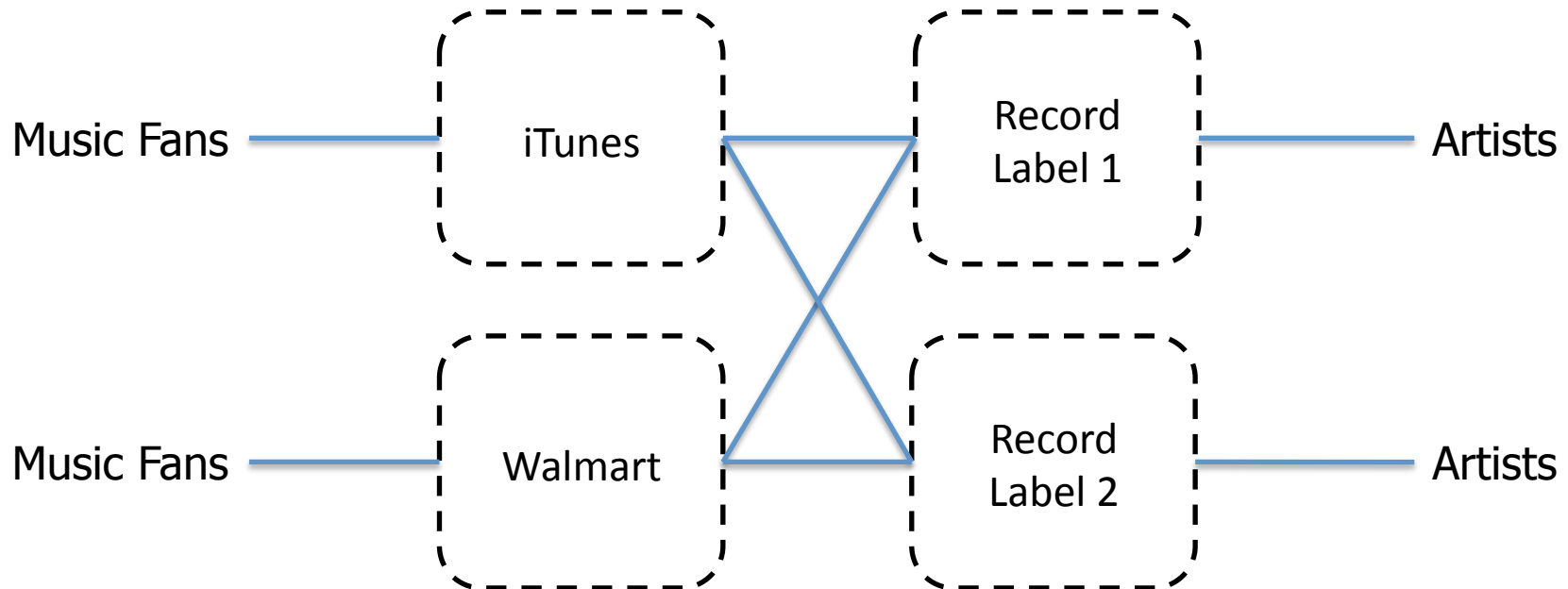
# Characteristics of Bilateral Oligopolies

- Negotiation/bargaining → long-term contracts → entry barriers for both loci
- With balance of power → lower consumer prices, increased consumer surplus
- Prevalence across different industries



[Frakt, 2010]

# Bilateral Oligopoly: A Different Example

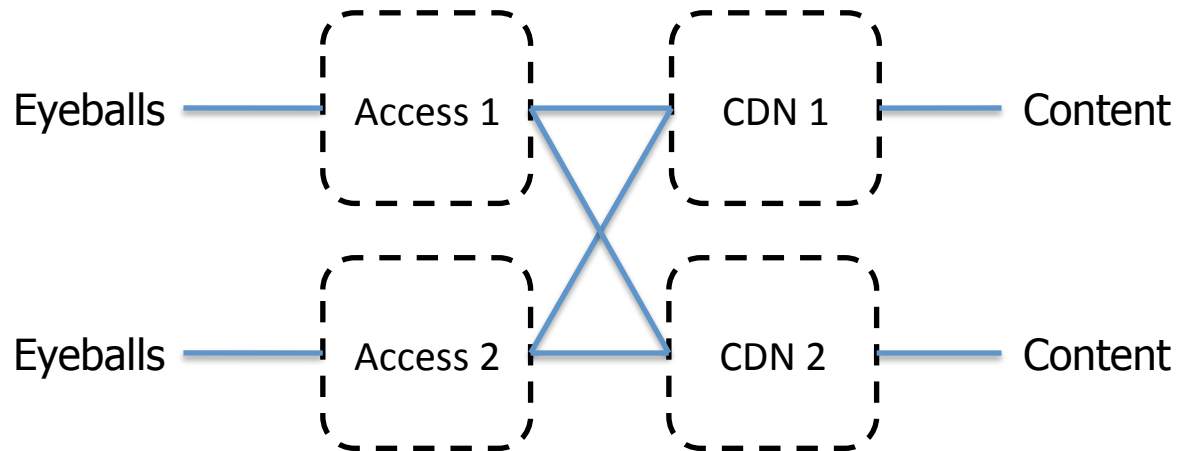


- Record labels are the terminating access monopolies in this case
  - Music stores have to multi-home with the top four labels
- Do music stores have negotiating power vis-à-vis record labels?
  - Think about how Apple iTunes has shaken up the music industry

# Some Research Questions

- Is bilateral oligopoly an appropriate model of value configuration for the Internet content delivery ecosystem?
  - *Better* than traditional supply chain or two-sided market?
  - Is a **two-sided bilaterally-oligopolistic market** different from a generic bilateral oligopoly?
- Will an increase in market concentration in (and therefore a shift in market power towards) the Access locus or the CDN locus improve consumer surplus or social welfare? Empirical-based support?
- What are regulatory principles that work best for bilateral oligopolies?
  - One example: If an increase in CDN market concentration is seen as welfare improving, should DoJ/FCC apply a more lenient standard to CDN mergers? But what about facilitating new entry?

# Counteracting Terminating Access Monopolies



- What are ways to counteract the power of terminating access monopolies?
  - Possibility 0: adoption of open access network models
  - Possibility 1: price cap by outside options (Clark et al., 2011)
  - Possibility 2: CDNs as consortia of content providers (bilateral oligopoly)
  - Possibility 3: get eyeballs to multi-home; then allow eyeballs and content to coordinate path at fine **granularity** (*a la* dual SIM mobile phones)

# Some Research Questions

- How is a combination of bilateral oligopoly and terminating access monopoly different from just a bilateral oligopoly?
- How do we objectively compare the feasibility and merits of the four options? Are there additional options beyond the four?
- Regarding Possibility 3: What technical mechanisms, economic mechanisms, business models, and/or policy interventions are necessary (or desirable) to facilitate residential multi-homing and dynamic binding of paths?
  - The physical wires are already there; but flat rate pricing is one obstacle
  - Will the value propositions for enterprise multi-homing (availability, diversity, volume) become applicable to consumers, e.g., due to new applications and services?