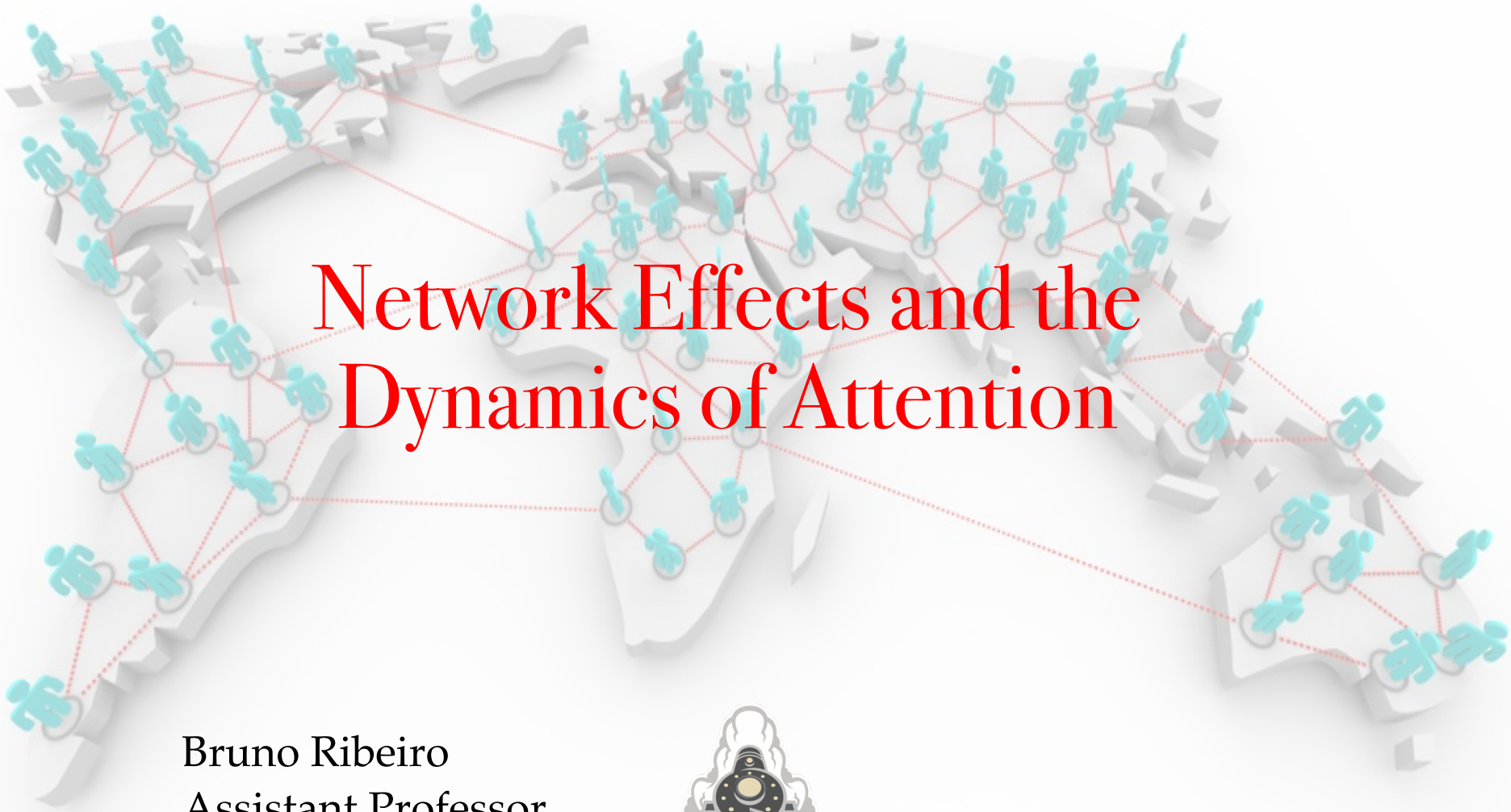

Network Effects and the Dynamics of Attention

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Assistant Professor
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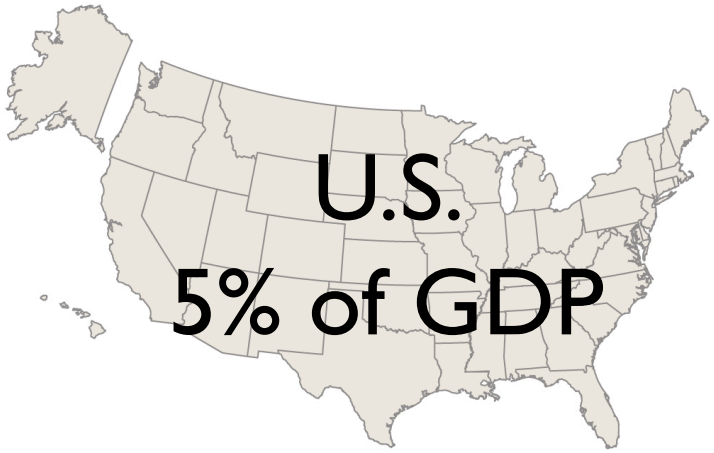
Increasing Importance of the Web

- **3 billion** Internet users worldwide by 2016
- **$1 trillion:** value of top 10 U.S. Internet companies

By 2016:



*source: Boston Consulting Group

Rise of Networks

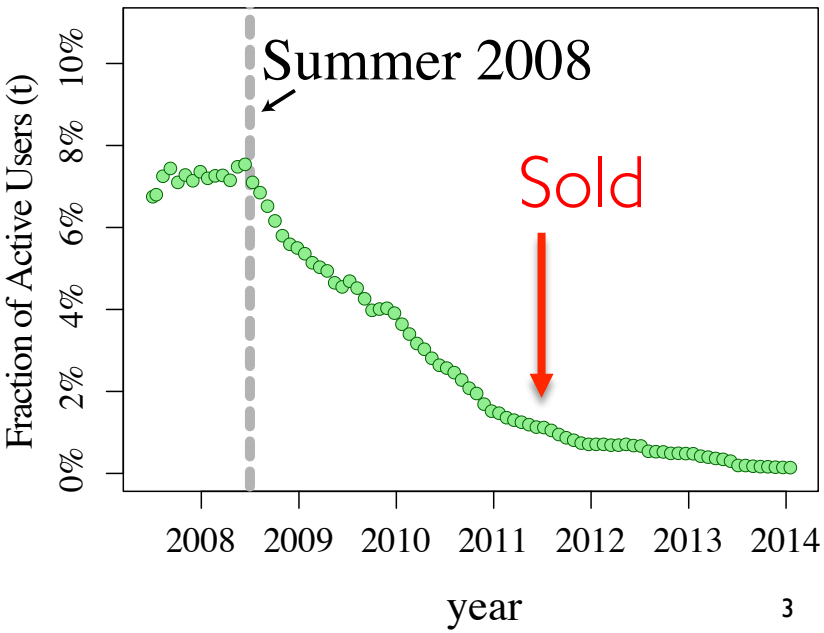
- Web & users **increasingly interconnected**
- **Networks everywhere**: online social networks, consumers, …
- Interconnection Complexity
  - Impact on Predictions (Machine Learning / Data Science Algorithms)
  - Impact on Sensemaking

myspace

An Example of Impact:

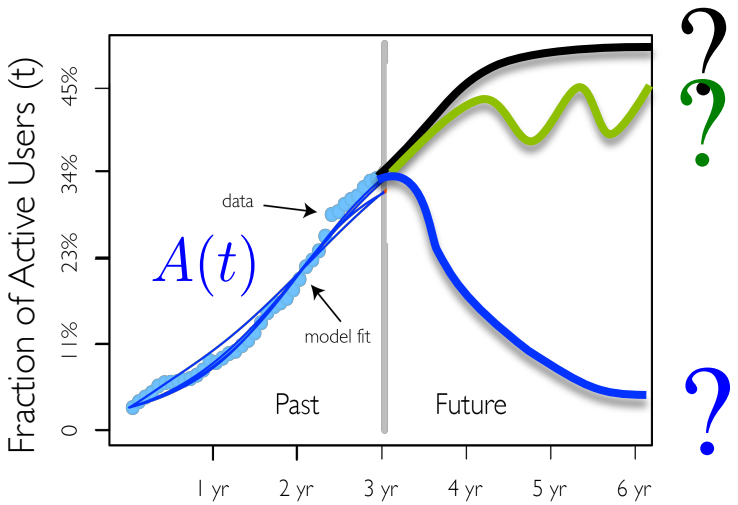
- Bought for $580 million in 2005
- Sold for $35 million in 2011

prices: TechCrunch

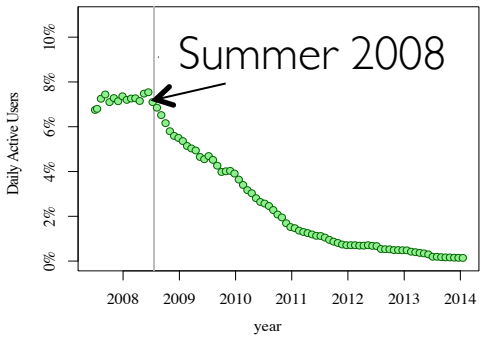


Application Example:
Predicting Network Popularity

Goal:



Why MySpace died?



-$545 million dollars

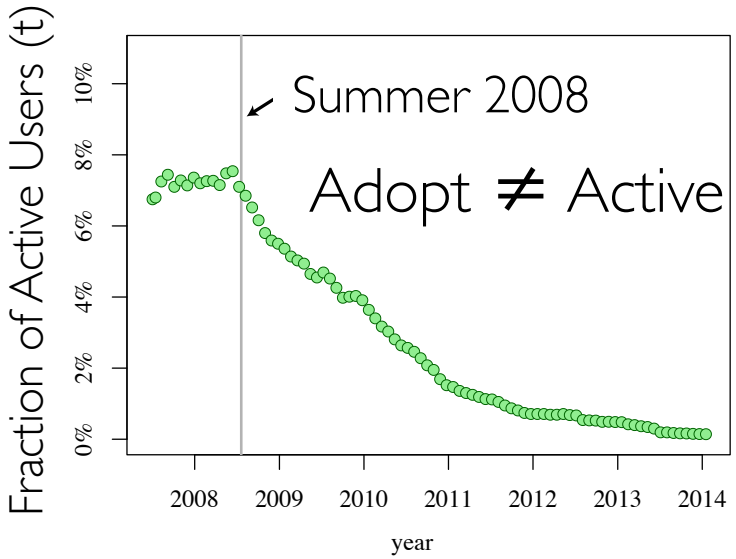
Background: Vast Adoption Literature

Economics:

Computer Science:

We know how to model adoption

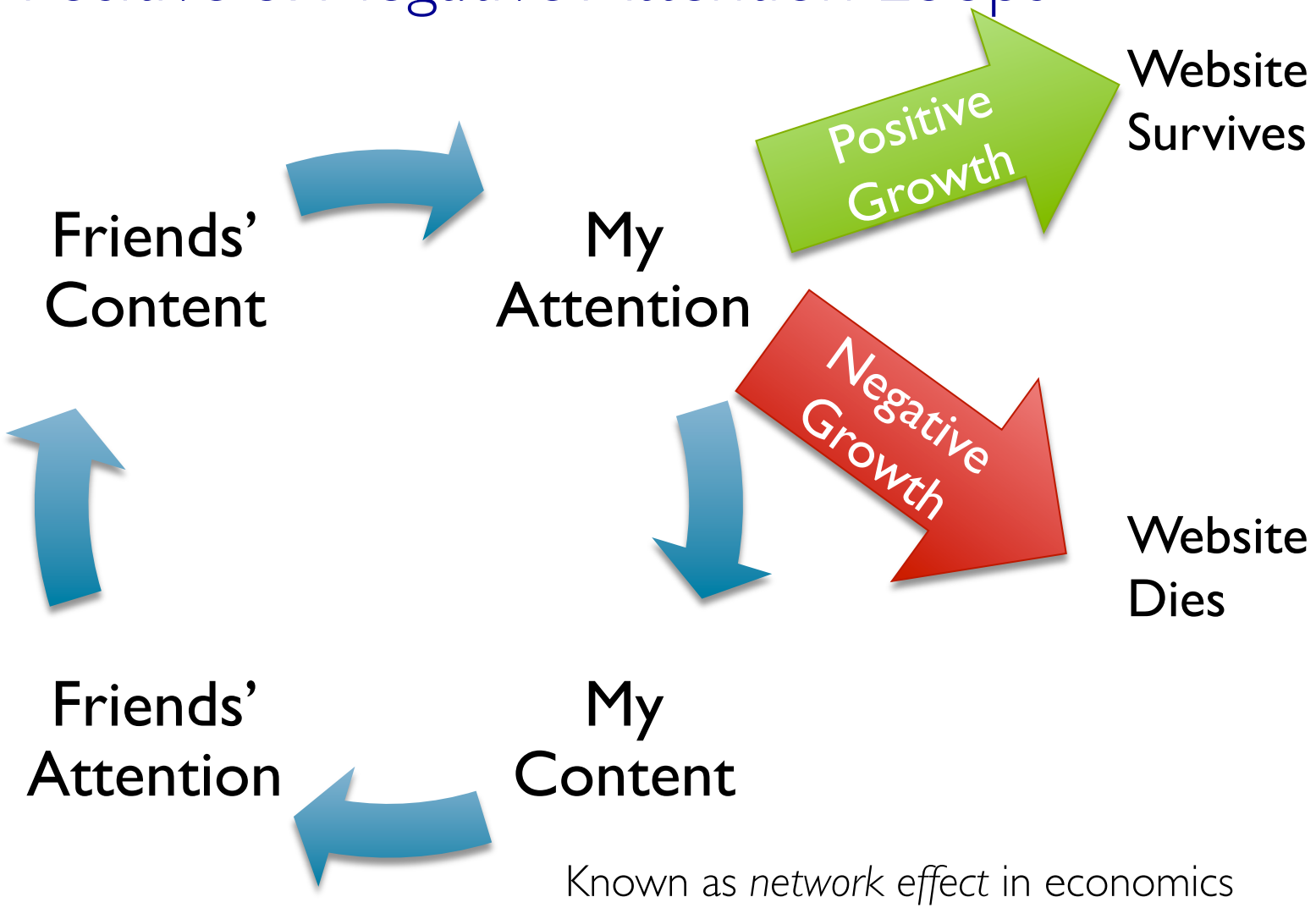
But how to model attention?



Sociology:

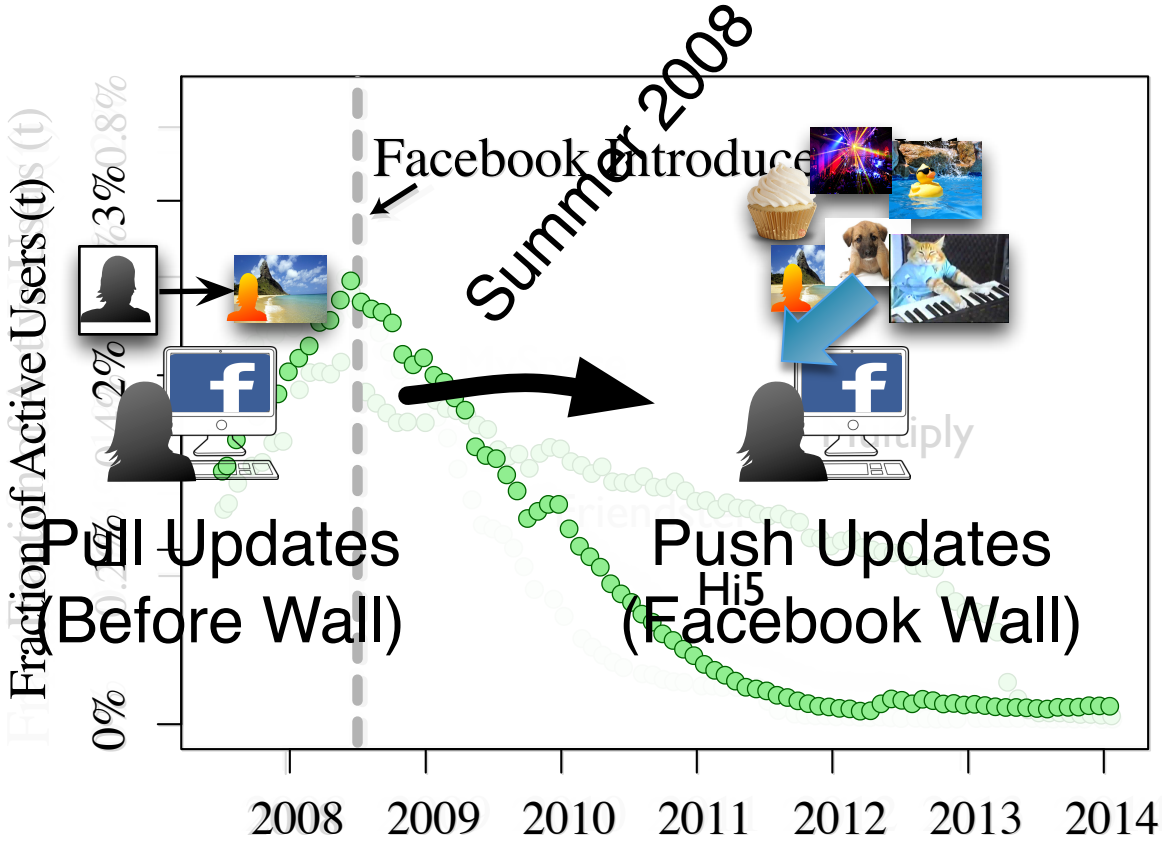
- (Ryan&Gross'49)
- (Everett '62, '03)
- (Rogers '03)
- (Centola '12)

Positive & Negative Attention Loops



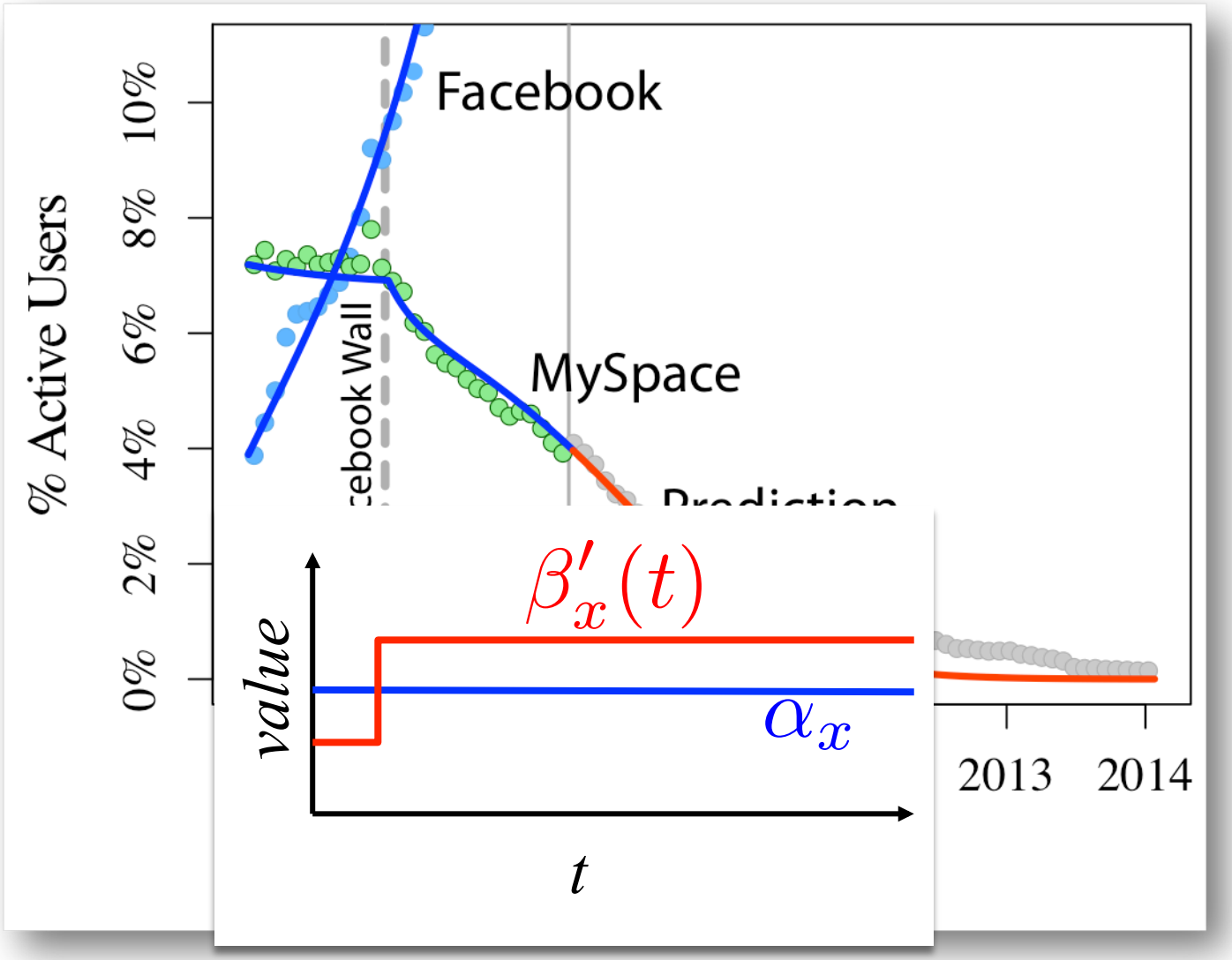
Known as *network effect* in economics
(a.k.a. network externality /
demand-side economies of scale)

Facebook Introduces Wall



Distraction of Concurrent Users
Increases as Facebook Introduces Wall

Results (Facebook x MySpace)



Broader Implications

Email:

- Brown, Killick, and Renaud,
  "To Reduce E-mail, Start at the Top", *Harvard Business Review*, Sept. 2013
  - Better managing business emails resulted in an annual gain of
    - 10,400 man-hours or
      7% increase in productivity.

- **Our next steps:**
  Goal: Automatically reduce email overload in enterprises