Questions from previous classes

Tech Companies Expect Free High-Speed Internet for Poorer Americans to Pay Off Later

By CECILIA KANG OCT. 11, 2016

WASHINGTON — There is an axiom in technology: New products typically go to wealthy customers first, before prices eventually fall to reach the masses.

With broadband now classified like a utility, telecom and tech companies, including Sprint, Comcast and Facebook, are increasingly working to make high-speed internet accessible to every American, not just a luxury. The companies are among those that have set their sights on bringing free or cheap high-speed internet service to low-income and rural populations in the United States, spurred by philanthropy and, for some, the hope of turning Americans who are not online today into full-paying customers in the future.

and a free high-speed data plan until graduation. Facebook is also working to bring to the United States a service known as Free Basics, which gives people free access to certain websites, including Facebook. Comcast recently loosened requirements for its low-cost broadband service, expanding it to anyone in public housing.
Facebook plans to extend Free Basics internet service to Americans - report

The tech company’s program, which has been criticized for obstructing net neutrality, would allow third parties to provide scaled-down content and services.
When it was first announced late last year (and before Google’s or Facebook’s names were attached to the project) the estimate was that the construction of the new Pacific Light Cable Network would cost about $400 million. The cable will feature five fiber pairs. A single one of those pairs will be able to provide 24 Tbps of bandwidth.

Google tells me that all parties participating in building the cable will have their own portion of the cable and that the company will have its own fiber pair to keep its
Google to Build Brazil-US Cable (COTA)

Published on Tuesday, 14 October 2014 14:31
Written by Winston Qiu

According to Telecom Ramblings and Telegeography, Google is teaming up with Brazil’s Algar Telecom, Uruguay’s Antel, and Angola’s Angola Cables to build a undersea cable system between Brazil and the US. The Brazil-US cable is expected to be ready for service by the end of 2016.

The planned Brazil-US cable will hook up Boca Raton in Florida with Brazil’s Fortaleza and Santos, with six fiber pairs and a total design capacity of 64 Tbps.
How Facebook and Google’s Algorithms Are Affecting Our Political Viewpoints

10/15/2015 10:06 am ET | Updated 2 days ago

Megan Anderle
Editor at Power More
Social Media & Elections: additional references

• Solomon Messing, Eytan Bakshy, and Lada A. Adamic, "Exposure to ideologically diverse news and opinion on Facebook", Science 5 June 2015: 1130-1132.

1. Robert Epstein and Ronald E. Robertson `The search engine manipulation effect (SEME) and its possible impact on the outcomes of elections” PNAS 2015 112 (33) E4512-E4521;


3. Megan Anderle, How Facebook and Google’s Algorithms Are Affecting Our Political Viewpoints, The Huffington Post, 10/15/2015
Exposure to ideologically diverse news and opinion on Facebook

Eytan Bakshy, Solomon Messing, Lada Adamic
Facebook
Published at Science, Jun. 2015
Question: Prior research suggests individual tend to avoid ideologically cross-cutting information?

The Scientific Method

- Research question?
- Existing Knowledge
- Theory Selection
- Hypothesis
- Prediction
- Tests & Observation
- Old or New Theory confirmed

Hypothesis must be adjusted
Exposure to ideologically diverse news and opinion on Facebook

- **Goals:**
  1. compare the ideological diversity of the broad set of news and opinion shared on Facebook with that shared by individuals’ friend networks;
  2. compare this to the subset of stories that appear in individuals’ algorithmically-ranked News Feeds;
  3. observe what information individuals choose to consume, given exposure on News Feed

- **Data sets:** de-identified dataset that includes 10.1 million active U.S. users who self-report their ideological affiliation and 7 million distinct Web links (URLs) shared by U.S. users over a 6-month period between July 7, 2014 and January 7, 2015.
Concepts

• **echo chambers**: in which individuals are exposed only to information from like-minded individuals

• **filter bubbles**: in which content is selected by algorithms based on a viewer’s previous behaviors.

• Stories: “hard” (e.g., national news, politics, world affairs) or “soft” content (e.g., sports, entertainment, travel)

• three mechanisms affect exposure
  – homophily
  – algorithmic ranking
  – selective avoidance of attitude-challenging items
• 13% of these URLs were classified as hard content.
• Limited set of hard news URLs: 226 thousand distinct hard content URLs shared by at least 20 users who volunteer their ideological affiliation in their profile.
• 3.8 billion unique potential exposures - cases in which an individual’s friend shared hard content, regardless of whether it appeared in her News Feed
• 903 million unique exposures - cases in which a link to the content appears on screen in an individual’s News Feed.
• 59 million unique clicks, among users of the study.
Data Collection

Facebook community: 1.7 billion people
10.1 m users with ideological affiliation
7 million URLs hard or soft content
13% hard content
226000 distinct urls
3.8 billion potential exposure
903 m exposures
59 million clicks

Measure of content alignment (A) for each hard story by averaging the ideological affiliation of each user who shared the article;

Content Alignment:
- FoxNews.com is aligned with conservatives (As = +0.80)
- HuffingtonPost.com is aligned with liberals (As = -0.65)

Among friendships the median proportion of friendships liberals maintain with conservatives is 0.20 while the median proportion of friendships that conservatives maintain with liberals is 0.18.
How Does Facebook Choose What To Show In News Feed?

News Feed Visibility

\[ \text{Visibility} = \text{Creator} \times \text{Post} \times \text{Type} \times \text{Recency} \]

- **Creator**: Interest of the user in the creator
- **Post**: This post’s performance amongst other users
- **Type**: Type of post (status, photo, link) user prefers
- **Recency**: How new is the post
Factors considered by the news feed algorithm to decide which posts people see and
Distribution of ideological content shared on Facebook

Fig. 1. Distribution of ideological alignment of content shared on Facebook as measured by the average affiliation of sharers, weighted by the total number of shares. Content was delineated as liberal, conservative, or neutral based on the distribution of alignment scores (see SOM for details).
How much cross-cutting content individuals encounter depends on who their friends are and what information those friends share?

- Liberals tend to be connected to fewer friends who share information from the other side, compared to their conservative counterparts: 24% of the hard content shared by liberals’ friends are cross-cutting, compared to 35% for conservative.

Influence of the order of the posts

Fig. 3. (Top) Illustration of how algorithmic ranking and individual choice affects the proportion of ideologically cross-cutting content that individuals encounter. Gray circles illustrate the content present at each stage in the media exposure process. (Bottom) Average ideological diversity of content (i) shared by random others (random), (ii) shared by friends (potential from network), (iii) actually appeared in users’ News Feeds (exposed), (iv) users clicked on (selected).
The study is limited to this social media platform. Facebook’s users tend to be younger, more educated, and female, compared to the U.S. population as a whole.

Fig. 2. Homophily in self-reported ideological affiliation. Proportion of links to friends of different ideological affiliations for liberal, moderate, and conservative users. Points indicate medians, thick lines indicate interquartile ranges, and thin lines represent 90% interval.
Findings (I)

- While partisans tend to maintain relationships with like-minded contacts, on average more than 20 percent of an individual’s Facebook friends who report an ideological affiliation are from the opposing party, leaving substantial room for exposure to opposing viewpoints.

- Individual choice has a larger role in limiting exposure to ideologically cross cutting content: the click rate on a link is negatively correlated with its position in the News Feed;

- we estimate the factor decrease in the likelihood that an individual clicks on a cross-cutting article relative to the proportion available in News Feed to be 17% for conservatives and 6% for liberals, a pattern consistent with prior research (4, 17)
**Findings (II)**

- They find exposure to cross-cutting content along a hypothesized route—traditional media shared in social media. The composition of the individual’s social network is the most important factor limiting the mix of content encountered in social media.
- The way that sharing occurs within these networks is not symmetric— liberals tend to be connected to fewer friends who share conservative content than conservatives, who tend to be linked to more friends who share liberal content.
- On average in the context of Facebook, individual choices more than algorithms limit exposure to attitude-challenging content.
- Social media exposes individuals to at least some ideologically cross-cutting viewpoints, but the power to expose oneself to perspectives from the other side in social media lies first and foremost with individuals.
Connection between the study and regulation

(Cass Sunstein, Harvard Law School): Facebook could (and should) experiment with an “opposing viewpoints button,” allowing users to choose to include in their News Feed points of view very different from their own. Its immensely creative staff could undoubtedly think of other ideas. Alternatively, it could create a “serendipitous news and opinions button,” allowing people to opt in.
Tracing Information Flows Between Ad Exchanges Using Retargeted Ads

Christo Wilson
Assistant Professor
Northeastern University
Published at Usenix Security 2016
Readings for Next Class


• [*] Christo Wilson et al. Tracing Information Flows Between Ad Exchanges Using Retargeted Ad, USENIX 2016
THANKS!

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