

# The Good, the Bad, and the Ugly of the search business

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# Web-Search Engine

- Web search engines are all goodness.
- Search engines abstract out some structure in an otherwise archaic web. Without them the largeness of the web make it unusable to an average user.
- Search engines are monetized by advertisements, also called paid-search.
- This presentation is not about the search engines themselves but the accompanied business model.

# Paid-search Goodness

- When a query is entered in to a search engine, not one but two searches are performed.
  - Web-search, relevancy, pull-mode, provided free!
  - Paid-search, expected revenue, push-mode, auctioned.
- It takes billions of dollars to create and maintain a search engine. “Free” is all goodness!

# Atomic Economy

- Each ad impression is targeted individually and priced individually automatically!

# Global business for small businesses

- Paid search allows small businesses to advertise in the global market.
- Takes \$5 to open an account.
- More and more long tail is being captured.

(Search engines are not first on the web to enable this. Ebay has also done the same!)

# Before I start the bad and the ugly

Google is perhaps the biggest engineering marvel on the internet -- after the internet itself of course!

Google is just a proxy for search-engines. Most of the criticism is targeted to search engines in general though some is targeted to Google in particular.

# Difference between Newspaper advertising and search advertising

- Newspapers are less precise in targeting ad by an order of magnitude.
- There is no explicit performance feedback.
- Newspapers costs money, at least the good-ones.
- Newspapers have multiple sections: Finance, Sports, Politics etc.
- Newspaper's quality can be improved by spending money – hire more journalist or buy news from better source.
- There is a cost of advertising to a reader in terms less readability. Less ads means simpler newspaper.
- Some people desire ads in search engines!
- The content of a newspaper hardly conflicts with the ads.

# Paid-search bad and ugly.

- Widely known topic starting from Brin and Page paper introducing Google. The paper has an appendix devoted to the subject.
- Treat this presentation as a short unorganized survey.



# Lack of price-war.

- Any industry is self-regulated because the companies tend to trade per unit profit with the market share.
- The cost to society of running an industry is minimized. Each company tries to charge as less as possible.
- Examples: electronics, auto, air-lines.

# Value of a service

- $\text{Value}(\text{Service}) = \text{Utility}(\text{Service}) - \text{Price}(\text{Service})$
- Second parameter is a normalizing parameter which keeps the competition between two products of different quality.
- Examples: Business class vs Coach class ticket. Business class is superior but most people fly coach class!
- Flying coach class maximizes the social-welfare.
- Consider a situation where air-tickets are monetized by ads on them (the cost of the ads is added to the prices of the advertised goods.)
- Nobody would fly coach. Only Business class exist. Social welfare decreases.
- If there are several vendors of the air travel then each deserves negligible profit. Whereas we all know search engine profitability!

# Disconnect between price/market-share

- $\text{Value}(\text{Service}) = \text{Utility}(\text{Service}) - \text{Price}(\text{Service})$
- Outcome: A search engine tries to maximize  $\text{Price}(\text{service})$ .
- Search advertisement is highly efficient. A user tells the engine what he/she is looking for.
- Ideal Outcome: Merchants decrease their marketing budget from traditional N% based on less efficient advertising and pass the savings to the users. (Many times the goods from a merchant if bought through Ebay costs less than the same goods from the same merchant! Even though Ebay enjoys “networking” effect whereas a search engine does not!)
- From economic equilibrium point of view. The current equilibrium of Mortgage - \$6, Camera - \$2, etc., is based on that the number of queries on each search engine is non-negotiable (sort of god given). Though any major search-engine can serve all the queries efficiently. Supply >> Demand means that Price should be close to the Cost. (Example: Airline).
- In yet other words: the current equilibrium is monopolistic prices.

# Coach class becomes Business class

- When coach-class improves in quality, it either takes away share from the business class or causes pricing pressure on it.
- Not in the search business. At the moment there is no significant difference among major search-engines. Certainly, the quality gap between the leader and others has significantly decreased. Over the same period leader's market share actually has increased.

# Solutions

- Find a foolproof mechanism to share search-engine revenue with users. The choice of search-engine becomes negotiable! Consumers win!
- A single search engine is not optimal for every query. For an example, I may prefer to run academic queries on Google, entertainment queries on Yahoo, consumer queries on MSN, and everything else on Ask.
  - Make the browser's search-box more versatile. It analysis my query and send the query to the appropriate search engine of my choice.

# Browser search-box feature

- Search box options looks like:

Intelligent Search Routing Options	
<b>Default Web Search</b>	<b>Default Local Search</b>
ASK.com <input type="checkbox"/>	ASK.com <input type="checkbox"/>
Google.com <input checked="" type="checkbox"/>	Google.com <input type="checkbox"/>
MSN.com <input type="checkbox"/>	MSN.com <input checked="" type="checkbox"/>
Yahoo.com <input type="checkbox"/>	Yahoo.com <input type="checkbox"/>
<b>Except Consumer Searches</b>	<b>Default Image Search</b>
ASK.com <input type="checkbox"/>	ASK.com <input type="checkbox"/>
Google.com <input type="checkbox"/>	Google.com <input type="checkbox"/>
MSN.com <input checked="" type="checkbox"/>	MSN.com <input type="checkbox"/>
Yahoo.com <input type="checkbox"/>	Yahoo.com <input checked="" type="checkbox"/>
<b>Except Entertainment Searches</b>	<b>Default News Search</b>
ASK.com <input type="checkbox"/>	ASK.com <input type="checkbox"/>
Google.com <input type="checkbox"/>	Google.com <input checked="" type="checkbox"/>
MSN.com <input type="checkbox"/>	MSN.com <input type="checkbox"/>
Yahoo.com <input checked="" type="checkbox"/>	Yahoo.com <input type="checkbox"/>

# Issues with the auction mechanisms

- Click Fraud.
- Only Spot market. No offline, futures, and other trading possibilities.
- Do not use VCG.
- The various parameters of the auctions are hidden. If my ad loses then I do not know the reason. So I can't efficiently optimize.
- Self bidding by search engines.

# Problems with the auction mechanisms

- Search engines bids on their on ad-slots.
- It is like an ebay-seller starts bidding on its own listings by a proxy account. (Ebay consider this a fraud.)
- A Google division bidding on Google hurts other advertisers more than if the Google division was independent of Google. Many results in auction theory breaks down when the auctioneer is one of the bidders too.



# Cross Promotion Unfairness

- Google checkout customers gets about 20% discount on Google adwords.
- This naturally inflates the bids of discount getting bidders.
- In case the discount getting bidder does not win the top-slot, then other advertisers end up paying the Google checkout subsidy, instead of Google itself, who becomes the beneficiary in two ways.

# Privacy

- To target ads better, search engines keep the user query data indefinitely, without giving any control to users.
- This puts users at risk because search query log is among the most personal bits one has.
- The leading search engine does not even have a link to its privacy policy on its main page but has links to its ad-products – hinting towards the relative importance of communicating this information vis-à-vis other information.
- This is perhaps not an accident. Most users are not aware of search engine privacy implications. Putting a link to the privacy policy makes users aware of privacy issues.

# Monopolistic Search Engine

- Suppose there is a monopolistic search engine then what's wrong?

# Advertising and Mixed Motives

- Title of the slide is by Google's founders.
- A search engine may not show link conflicting with the advertisers.
- Example: Harmful effect of Cell-phone radiation link is not shown because it decreases the effectiveness of cell-phone advertisement (1998).

# Even Worse

- Quality of search engines for “commercial” category is intentionally decreased to force merchants to buy advertisements.
- If a merchant does not exist on the search engine then it does not exist on the web. The bid prices keep increasing as the importance of web keep increasing. Becomes a drag on web-economy.
- The merchants who sell at inflated prices could afford large marketing budget and other merchants no matter how good they are not presented to the audience.

# Revenue not shared with content creators

- Quality of a library is not only its index but actually the quality of books in the library.
- Similarly, we want to improve the content quality on the web. That requires incentives! Search engines do not share the revenue from the ads on the index with the content creator.

# Arm Twisting Techniques

- Pagerank is based on the assumption that people link each other for unbiased relevancy reason.
- The monopolistic search engine censors the web-pages which links each other for other reasons. For an example – I may want to put a link to your page for money. Sort of an ad and a legitimate business model for me to monetize my web-page. Doing this censors my page on the search-engine. Why?
  - To force their incorrect assumption.
  - It competes with their business model.
- Example – Searchking, BMW, Kindergarten were censored once.
- Example – Dominating search engine distributes pop-up ad blockers for free. Google Pack contains another free ad-blocker. Which unfortunately does not block Google syndicate ads.

# Search Engine bias

- Every search engine has an intentional/unintentional bias.
- Freedom of speech on the web has meaning only if the speech could be communicated to other interested parties. Plurality of search engine is a must here. Because if my speech falls on the negative side of the bias then it becomes meaningless.
- Diagonalisation argument – monopolistic search engine suppresses the arguments on the web against itself.



# Solutions

- Search engines publish their biases.
  - At least the explicit ones. Such as the following tip on searching photo editor on Google.

Tip: Use Picasa for photo-editing.

- People may not realize that Picasa is owned by Google therefore this is a self promotion aka an advertisement.
- Design a scale/algorithm which can detect and measure relative bias between two search engines.
  - Example: Like such and such newspaper is more biased towards democrats than republican.