

Internet Centrality

Geoff Huston AM
APNIC

July 2021

Today

- Outages by Fastly and Akamai have global impact affecting all kinds of enterprises
- A DDOS attack on DYN managed to cause a meltdown of the Internet for the entire eastern seaboard of the US
- Google has such a massively dominant position across technology that everyone else is left trying to just fill in the gaps – HTTP/3, QUIC, TLS, BBR, to name just a few.
- Mobile devices are either made by Apple or run Android.
- Chrome completely dominates browser space
- The entire world now finds itself relying on just one chip manufacturer!

How can we fix this?

- Such a level of global dependence of a small set of enterprises that completely dominate their market sector is never a comfortable place to be
- Monopolies always end up price gouging and entrenching their incumbency by suppressing further innovation
- Just how bad is it today?
- Is it too late to try and fix it?

These are not new questions...

We've been here before



American Art: The Gilded Age

Mark Twain coined the phrase "the Gilded Age" in 1873. This term, with its connotations of superficiality and ostentatious wealth, has come to refer to the decades following the Civil War. During that period of rapid industrialization, the contrast between the lifestyles of so-called robber barons and average workers was enormous. The metaphor of gilded surfaces resonates in the richly decorated possessions of the ruling class, from domestic furniture to picture frames.

This gallery examines the leading cultural phenomenon of the 1870s and 1880s, the American Aesthetic movement, through a range of objects produced for affluent consumers. Aestheticism, rooted in the English philosophies of John Ruskin and William Morris, advanced the notion that a beautiful environment could promote moral and social reform. In the process, the Aesthetic movement helped to liberate American art and design from the confines of historicism by admitting fresh influences from foreign lands.

Foundations: The US in the 1870's

- The dislocation of a previously agrarian workforce by the civil war created the opportunity for expansion of the industrial workforce through urbanisation and immigration, particularly in the North East
- The massive expansion of the national railway system allowed efficient distribution of goods throughout the year
 - Raw materials could be shipped to factories, factory products could be shipped to markets
- Liberalised capital markets with offshore investment encouraged entrepreneurial ventures in the US
- The telegraph (and subsequently the telephone) network allowed the projection of power and influence, allowing corporate entities to expand their effective scope beyond a single locale
- Industrialisation transformed diverse and inefficient small scale cottage industries into large scale industrial production

The Gilded Age

A term applied to America in the 1870 – 1890's about the rapid building of new industrial and commercial corporate giants on platforms that were a mix of industrial innovation and enterprise with elements of greed, corruption and labor exploitation

Andrew Carnegie - US Steel

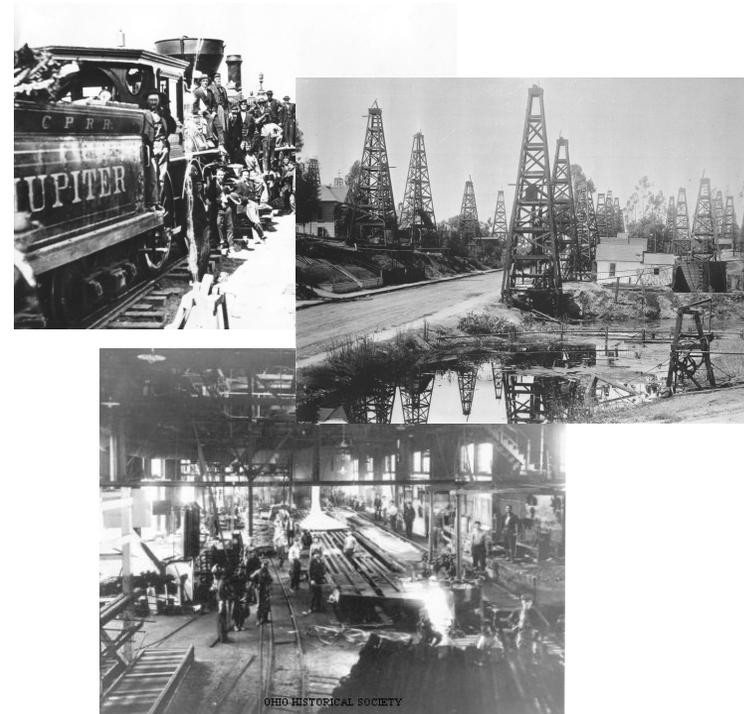
John Rockefeller - Standard Oil

Theodore Vail - AT&T

George Westinghouse – Rail Brakes

Thomas Edison – General Electric

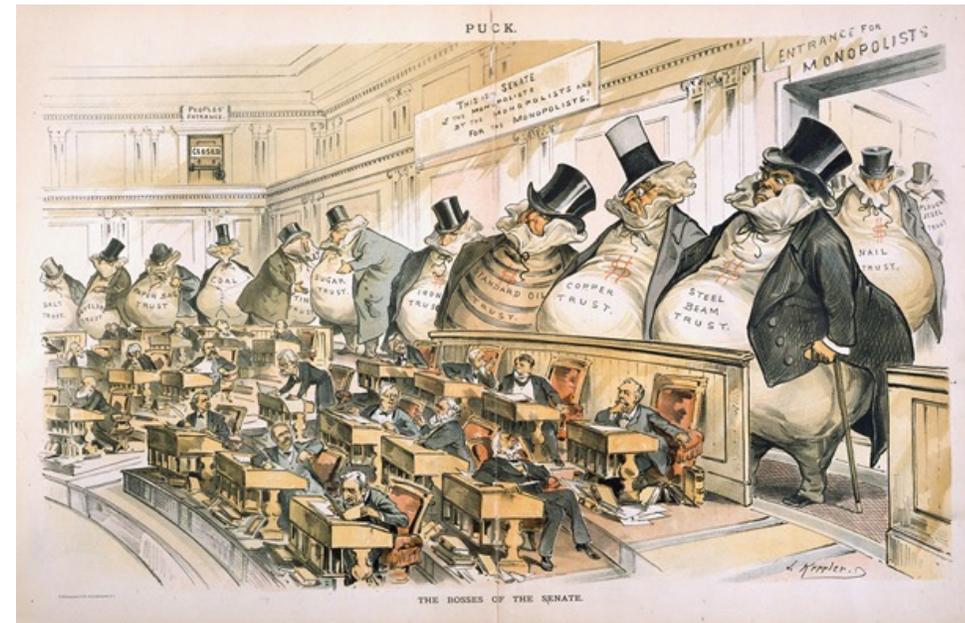
J P Morgan - Banking



The Gilded Age

During this period in the United States the dominant position within industry and commerce was occupied by a very small number of players who were moving far faster than the regulatory measures of the day.

The resulting monopolies took the US decades to dismember, and even today many of these gilded age companies remain dominant in their field



The Sherman Act

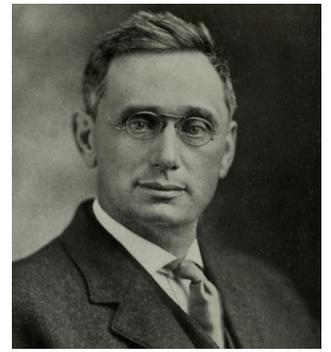
- An attempt to curtail the excessive aggregation of power that interferes with trade and competition
- The act was intended to protect the public from the perils of failure of a market to sustain competition within the market
- It prohibits anti-competitive arrangements and conduct that creates market monopolisation that results in the restraint of trade and competition within a market
- Applied in 1911 to Standard Oil, American Tobacco and General Electric
- Applied in 1982 to AT&T

What happened between 1911 and 1982? What happened after 1982?

Why wasn't the Sherman Act brought to bear on other industrial enterprises through most of the 20th century?

- Unintended side-effects of application the Sherman Act may be a factor - the break up of Standard Oil and American Tobacco caused the economic panic of 1910-1911
- Dominant enterprises turned to political lobbying to forestall political action in the form of anti-trust actions
- The US assumed a dominant position in new international markets
 - In 1913 the US auto industry was already manufacturing 485,000 units out of a world total of 606,000, and by 1929 Ford, GM and Chrysler had 80% of global market share
- The US domestic economy was a major beneficiary of large scale US enterprises dominating the global market, making them politically untouchable in the domestic marketplace

Louis Brandeis: "Big is Bad" by definition



Member of the US Supreme Court – 1916 – 1939

- He argued that big business was too big to be managed effectively in all cases.
- The growth of these very large enterprises that were at the extreme end of the excesses of monopolies, and their behaviours harmed competition, harmed customers and harmed further innovation
- The quality of their products tended to decline, and the prices of their products tended to rise once they had achieved market dominance
- When large companies can shape their regulatory environment, take advantage of lax regulatory oversight to take on more risk than they can manage, and transfer downside losses onto the taxpayer, then we should be very concerned
 - We cannot regulate our way out of this situation, so the power of the large enterprise becomes entrenched and assumes disproportionate importance in the domestic economy
 - "Too Big to Fail" was a term coined in the financial crises of 2008, but it has precedents dating back to the late 19th century

Theodore Roosevelt: ... and carry a big stick!



US President 1901 – 1909

- There are legitimate economies of scale where large enterprises can achieve higher efficiencies and lower prices to consumers in the production of goods and services by virtue of the volume of production
- Large enterprises gain access to volumes of capital and resources that are otherwise inaccessible to private (and public) sectors
- The auto industry and the electricity industry are examples of a prohibitively expensive luxury good that turned into a generally accessible product through the application of massive enterprise scale in production of the good
- An effective and strong regulatory framework can ensure adequate consumer safeguards

Salvation through Regulation? No way!

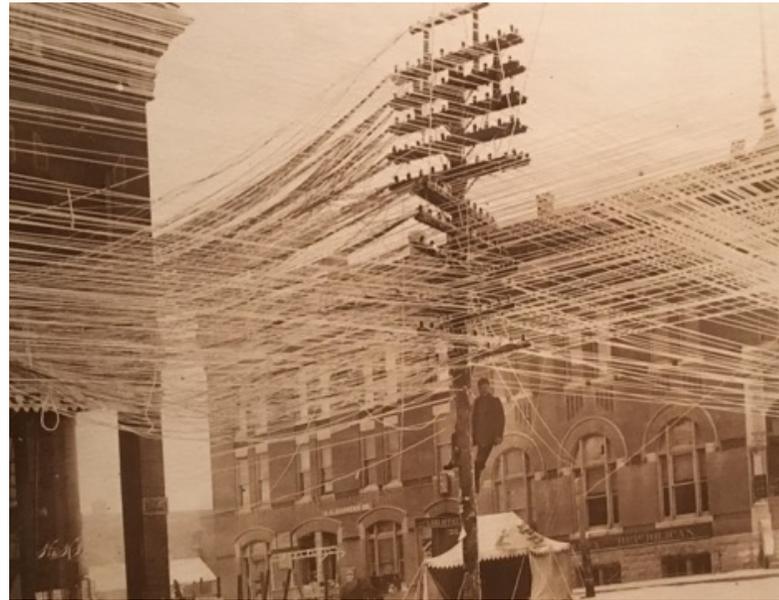


*John Ralston Saul
Author of Voltaire's Bastards*

- Brandeis: no methods of regulation ever have been or can be devised to remove the menace inherent in private monopoly and overwhelming commercial power
- John Ralston Saul: you should never expect the private sector to safeguard the public interest
- If we regulate, then are we attempting to forestall the condition, or applying regulatory sanctions on the consequent behaviour?
- What happens during periods of rapid change in the enterprise landscape? How does regulation remain relevant? How can we prevent regulation from embedding enterprises in the past?

The Rise of Telephony

- First introduced at the World Expo in 1876 the telephone became the subject of a massive boom



Public vs Private

- The transformation of the telephone from a luxury good to a public utility required large scale capital resources beyond the reach of most private enterprises
- In most countries the role was assumed by the Postal service as a public service
- In the US Theodore Vail made a deal with the US Congress for AT&T to become a state-sanctioned monopoly that would operate in the public interest
 - It took less than 6 years for AT&T to shake off these commitments and become a more traditional monopoly acting purely in self interest
 - And it took the US a further 6 decades years to dismantle AT&T's monopoly!
 - AT&T was so powerful that US foreign policy in telecommunications was simply a restatement of AT&T policies!



Telephony Deregulation

- Starting in the 1980's there was strong pressure from the US to open up the telco sector to competition
- This pressure spread worldwide through the IMF and the World Bank as US interests saw opportunities in disrupting cosy national monopolies
- However it played out in a different way, as the real deregulation was in the data market and the rise of the Internet



The Rise of the Internet

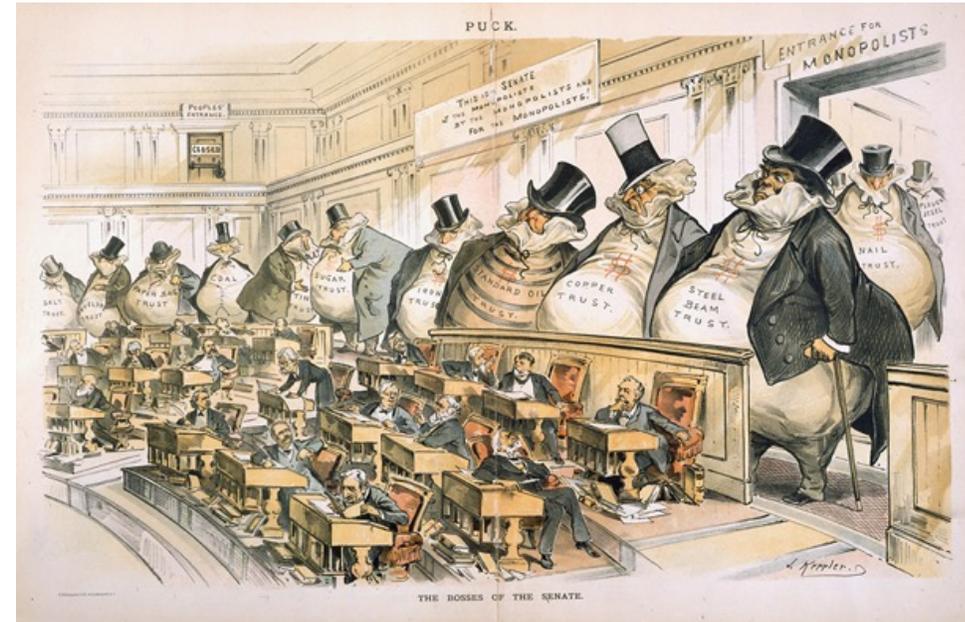
- Initially, the Internet was seen as a poster child for the transformative power of deregulation and private sector investment
- The telco sector was too large to rapidly deploy resources to meet escalating demand, so entrepreneurs moved in with venture capital backing
- When the Internet began to consolidate, volume economics came into play – larger actors were able to offer services at a lower price point, which increased their market share, which added to their volume, which...

The Rise and Rise of the Internet

- There were few natural barriers to growth
 - No labour force limitations
 - No geographic limitations
 - No regulatory inhibitors
 - No coherent business models to follow, so investors became irrationally optimistic over future growth potential
- Digital business models quickly became global in scope
 - Uber, WeWork, Cisco, Microsoft, Amazon, Apple, etc
- This “winner take all” environment created an environment that is dominated by a small number of giant enterprises that operate at a global scale

The Internet's Gilded Age

At some point in the past decade or so the dominant position across the entire Internet has been occupied by a very small number of players who are moving far faster than the regulatory measures that were intended to curb the worst excesses of market dominance by a small clique of actors.



Tech Giants Amass a Lobbying Army for an Epic Washington Battle



Catlin O'Neill, right, listening to Facebook's chief executive, Mark Zuckerberg, testify before a House committee on the protection of user data last year. Ms. O'Neill is now director of United States public policy for Facebook after serving as Speaker Nancy Pelosi's chief of staff. Tom Williams/CQ Roll Call, via Getty Images

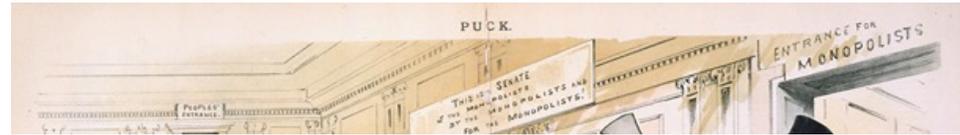
By Cecilia Kang and Kenneth P. Vogel

June 5, 2019

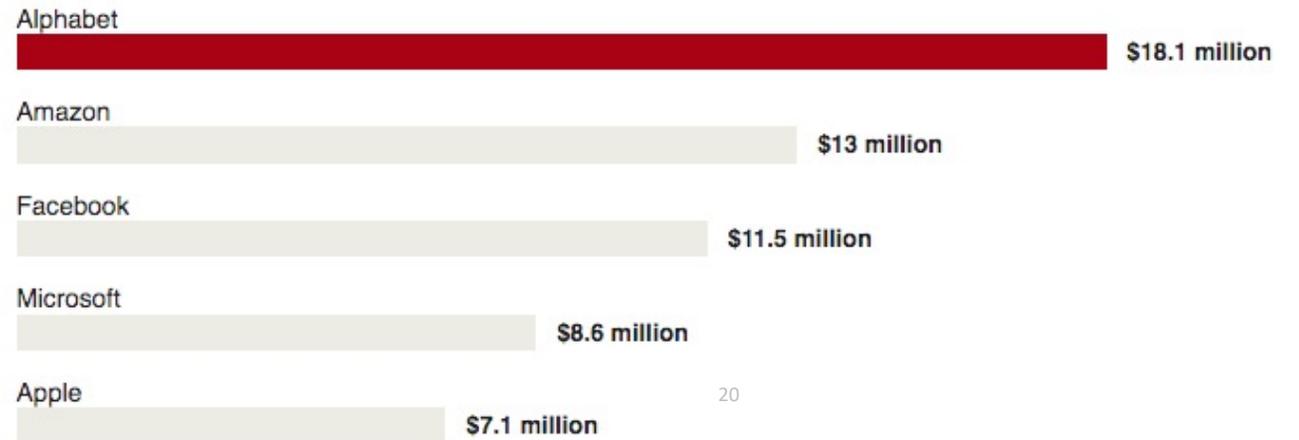


WASHINGTON — Faced with the growing possibility of antitrust actions and legislation to curb their power, four of the biggest technology companies are amassing an army of lobbyists as they prepare for what could be an epic fight over their futures.

Gilded Age



Total 2017 federal lobbying spends by tech giants

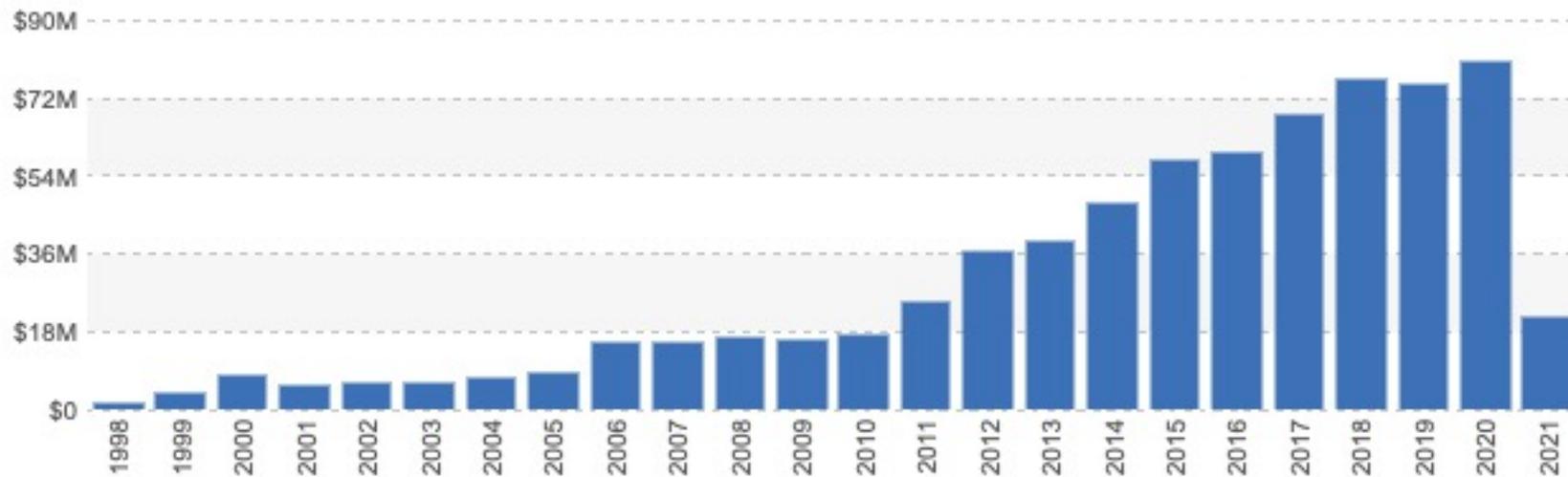


SOURCE: Open Secrets

The Internet's Gilded Age

At some point, the digital Internet will be so small that it will be far from the center of that vast, excess-driven clique.

Annual Lobbying on Internet



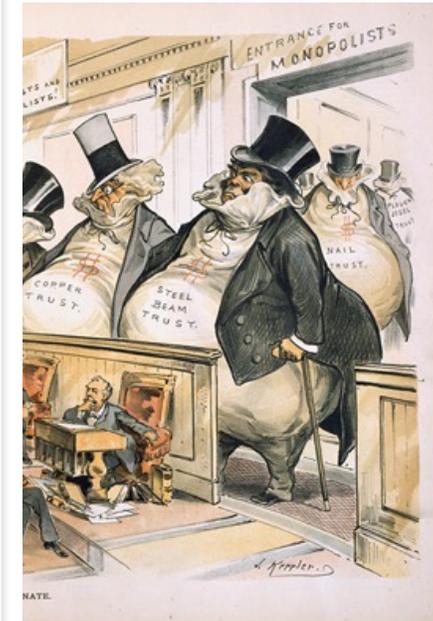
Source: Open Secrets

The Internet's Gilded Age

2020 Lobbying Sources - US

At s
the
Inte
sm
far
tha
exc
cliq

Client/Parent	Total
Facebook Inc	\$19,680,000
Amazon.com	\$18,685,000
Alphabet Inc	\$8,660,000
Alibaba Group	\$3,160,000
ByteDance Inc	\$2,610,000
SalesForce.com	\$2,050,000
IAC/InterActiveCorp	\$1,810,000
Twitter	\$1,540,000
Tencent Holdings	\$1,524,000



22

Source: Open Secrets

Market Sentiment

9 of the 10 largest publicly traded companies are now technology companies

And one fossil fuel company! 

In this top 10 list there are no:

- financial services
- chemicals
- industrials
- retails

Rank	First quarter	
1		Apple Inc. ▼2,050,000 ^[13]
2		Saudi Aramco ▼ 1,890,000
3		Microsoft ▲1,778,000 ^[14]
4		Amazon ▼1,558,000 ^[15]
5		Alphabet Inc. ▲1,395,000 ^[16]
6		Facebook, Inc. ▲838,720 ^[17]
7		Tencent ▲766,970 ^[18]
8		Tesla, Inc. ▼641,110 ^[19]
9		Alibaba Group ▼615,010 ^[20]
10		TSMC ▲613,410

The Internet's Gilded Age

These actors have enough market influence to set their own rules of engagement with:

- Users,
- Each other,
- Third party suppliers,
- Regulators and Governments

By taking a leading position with these emergent technologies, these players can amass vast fortunes, with little in the way of accountability to a broader common public good

What's the problem?

Is it that these enterprises are:

- so big?
 - exploitative of their workers?
 - distorting markets?
 - extracting monopoly rentals from consumers?
 - not providing consumers what they want?
-
- It's hard to sustain any of these criticisms against these digital giants

It's what we want?

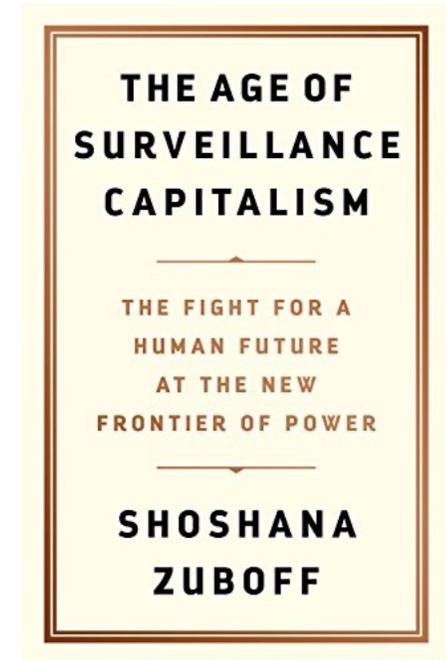
- It seems that these enterprises have focussed very sharply on giving users precisely what they want
- The ability to customise a solution to a market of 1 and still bring economies of scale to that market underlies their success
- Their ability lies in achieving a critical mass in size that allows them sufficient bulk to capitalise an asset that individually is worthless
- So we all use these services – because they are obtained through the capitalisation of something that individually we are incapable of capitalising – our own profile as to our future purchasing decisions

There are side-effects

- In order to understand what each consumer wants, the service provider needs to understand the consumer
- Which brings us to...

Surveillance Capitalism

- Much of the wealth and impact of these activities is built upon a foundation of aggregation of individual user behaviour and construction of personal profiles
- It also has benefitted from a cavalier attitude towards data security and privacy concerns and the absence of regulatory imposts that attempt to safeguard some basic common aspects of personal privacy



Change and Monopolies

- We are now communicating with a computer-mediated environment rather than with each other
- The network itself is largely incidental to this evolving story, and this is not really about the Internet any more
- It's about a set of revolutionary social changes on a par with the industrial revolution that have been triggered by abundant computing, storage and comms
- And it's dominated by a very small cartel of monopolists

Change and Monopolies

- We are now communicating with a computer-mediated environment rather than with each other

• “Every monopoly and all exclusive privileges are granted only at the expense of the public interest”
Andrew Jackson, 1830

- Social changes on a par with the industrial revolution that have been triggered by abundant computing, storage and

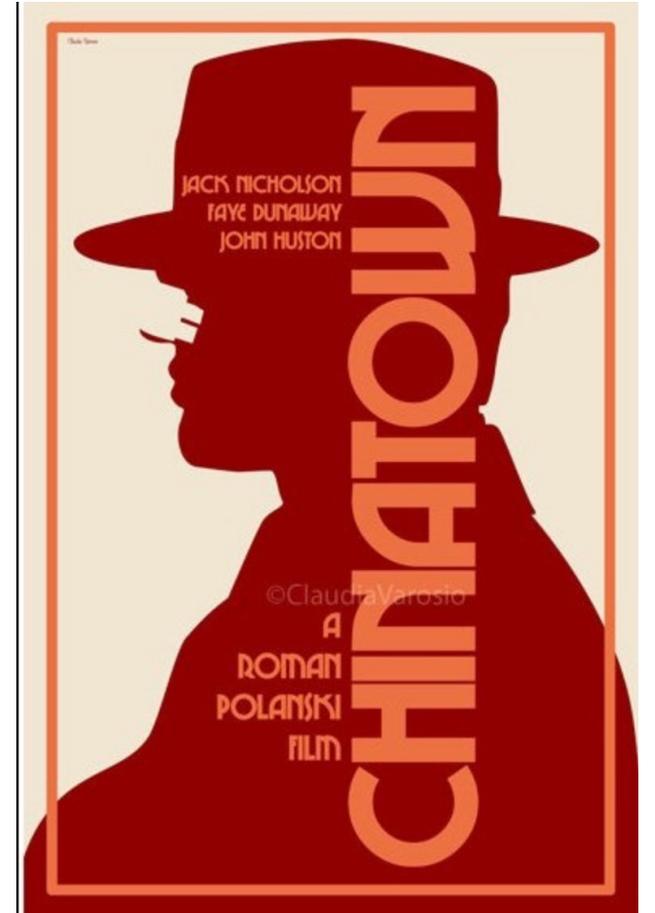
- And it's dominated by a few monopolists



Incumbency Rewards

Gittes: How much are you worth?
Cross: I've no idea. How much do you want?
Gittes: I just want to know what you're worth.
Over ten million?
Cross: Oh my, yes!
Gittes: Why are you doing it? How much better can
you eat? What can you buy that you
can't already afford?
Cross: The future, Mr. Gittes - the future!

Chinatown (1974)



What we might want

If this situation calls for some public sector response then perhaps the thrust of any such response should focus on the user rather than the dynamics of the market

But the public sector efforts to do so remain largely ineffectual despite the magnitude of the public concern over private sector seizure of the space of public discourse

Privacy Abuse?

The federal US position on privacy appears to be “do whatever you want, but if you warn consumers what you intend to do, then don’t lie about your intentions.”

That’s’ all!

US data privacy laws

There is no one comprehensive federal law that governs data privacy in the United States. There's a complex patchwork of sector-specific and medium-specific laws, including laws and regulations that address telecommunications, health information, credit information, financial institutions and marketing.

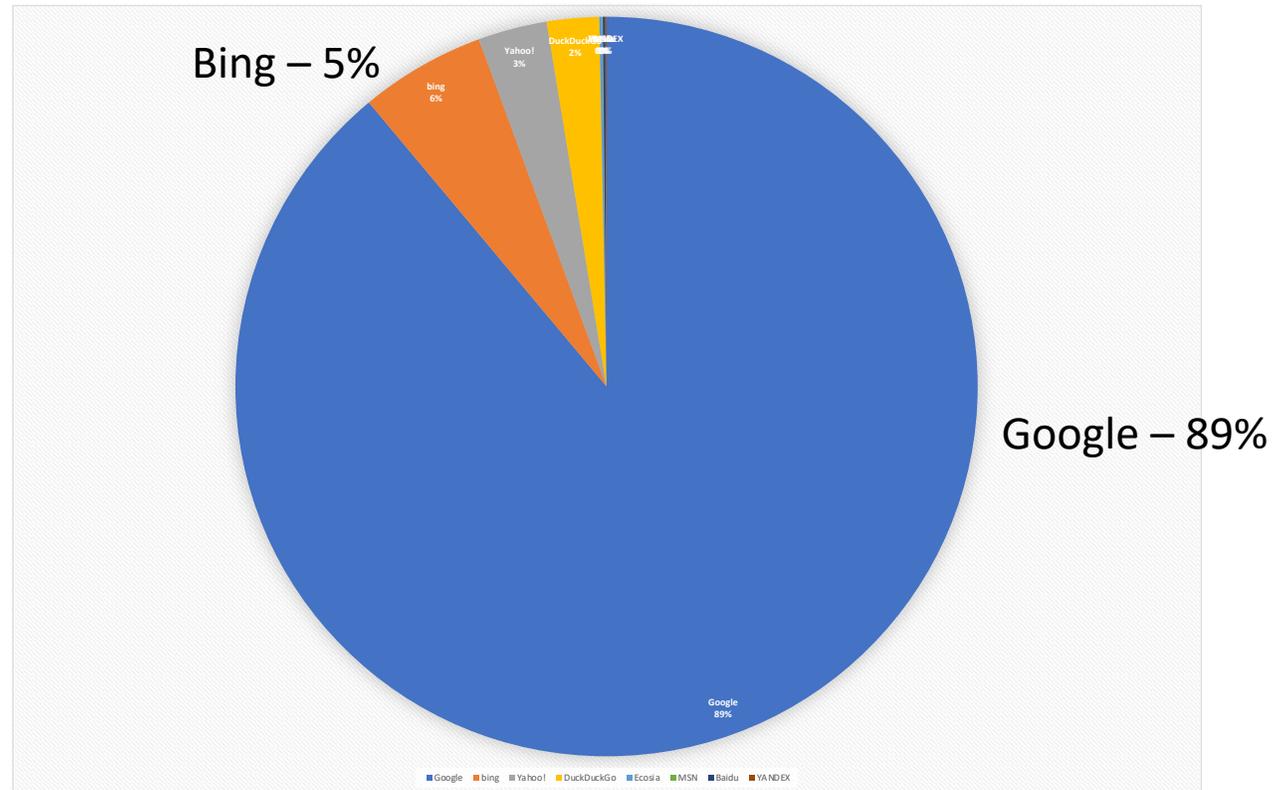
The [Federal Trade Commission Act](#) (FTC Act) has broad jurisdiction over commercial entities under its authority to prevent unfair or "deceptive trade practices." While the FTC does not explicitly regulate what information should be included in website privacy policies, it uses its authority to issue regulations, enforces privacy laws, and take enforcement actions to protect consumers. For example, the FTC might take action against organizations that:

- Fail to implement and maintain reasonable data security measures.
- Fail to abide by any applicable self-regulatory principles of the organization's industry.
- Fail to follow a published privacy policy.
- Transfer personal information in a manner not disclosed on the privacy policy.
- Make inaccurate privacy and security representations (lying) to consumers and in privacy policies.
- Fail to provide sufficient security for personal data.
- Violate consumer data privacy rights by collecting, processing or sharing consumer information.
- Engage in misleading advertising practices.

Maybe it's more serious than just privacy issues

- In a world of abundant content what do we choose to view?
- What do we choose to believe?
- Search becomes the arbiter of content selection and assumes a level of ultimate importance in this world
- What's the outcome of search being dominated by a single entity?

Is it about what we *do* or is
this more about what we *think*?



35

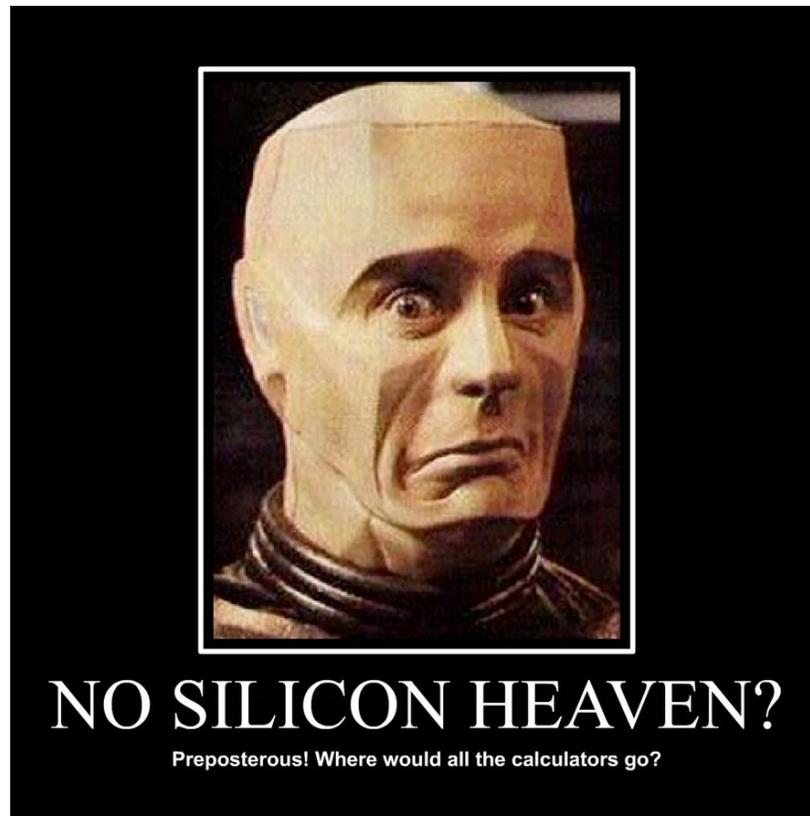
Share of search in US market - 2021

Where does all this head?

*For our society this market-driven digitisation of our world has the potential to be incredibly empowering or incredibly threatening
Or both at the same time!*

Wherever we're heading...

- It's not the Internet any more
- That has already died and gone to silicon heaven!



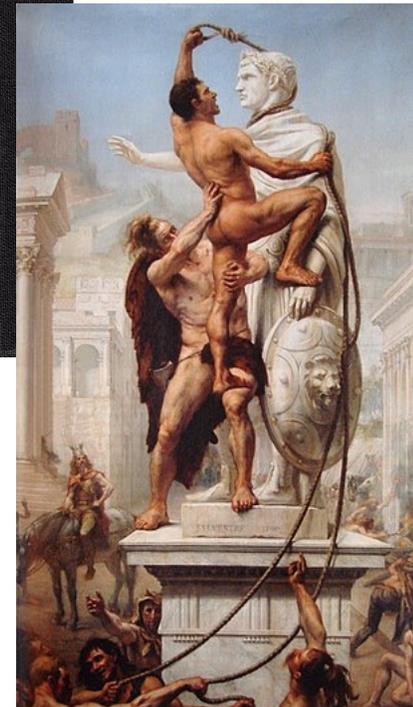
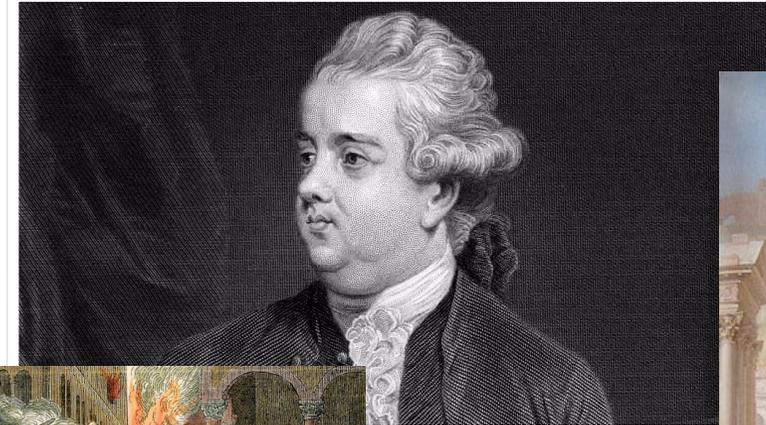
Sic transit gloria mundi

In 1776 English historian Edward Gibbon published a mighty 6 volume work tracing the Roman Empire (and Western Civilisation) from the height of Empire to the fall of Byzantium

The seeds of of the empire's eventual decline and fall were sown early in its rise

The 100 best nonfiction books: No 83 - The History of the Decline and Fall of the Roman Empire by Edward Gibbon (1776-1788)

Perhaps the greatest and certainly one of the most influential history books in the English language retains its power today



Thanks!