

# data-ppf.github.io 2021-04-13

lecture 13 of 14: present problems: ‘data, money, and power’

chris wiggins + matt jones, Columbia

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## 1 outline

- 0. reminder: power “vs” ethics
  - locus of power w.r.t. data, 2000-2020: .com
  - esp .com funded by ad model (GOOG/YT; FB; TikTok...)
- 1. The Ad Model
  - a. brief historical view
  - b. role of data+algorithms
  - c. consequences
- 2. The VC Model
  - a. brief historical view
  - b. consequences, esp growth, speed, scale
- 3. Power (Next time: checks on power)

This week brings together much part 2/3, e.g.,

- weak privacy protections for personal data (lecture 9)
- new machine learning and storage technologies (lectures 10-11)

## 2 but first: student reactions

272 attention  
97 goldhaber  
25 vc  
5 grimmelman  
4 skeptical  
3 naive

### 2.1 Goldhaber: ok, the money thing (1/n)

- The more addicting an application is and the more a user is actively interacting with advertising content i.e the more attention these companies can get users to give to their platform – the more money they generate. As such, attention and money are quite interchangeable: one garners the other and vice versa.
- I was not convinced by the argument that money would become less important in the attention economy
- I found his claim that “attention is an enduring wealth” a little less convincing ... particularly after reading VC Epilogue which highlights

that the attention driven process of seed funding over time receives no more than market-like returns with higher levels of risk.

- money did not lose importance,

## 2.2 Goldhaber: ok, the money thing (2/n)

- I am also skeptical that the attention economy will gain prominence over the current market system
- attention has definitely been commodified ... “influencers”, the purposefully addictive nature of apps and websites, the obsession with “going viral,” ... his claim that attention will form the backbone of the economy in the near future while money will become obsolete is a bit too much to accept.
- I’m not convinced by Goldhaber’s claim that money becomes less important in an attention economy.
- Professional Youtubers would not do what they do if they couldn’t make money of it, companies wouldn’t sponsor these influencers if there wasn’t money to be gained, and platforms like Youtube would probably lose money if they weren’t addicting enough

## 2.3 Goldhaber: ok, the money thing (3/n)

- I also take issue with his statement “attention is enduring wealth”:
- replacing money feels next level.

## 2.4 Goldhaber: ok, the money thing (4/n)

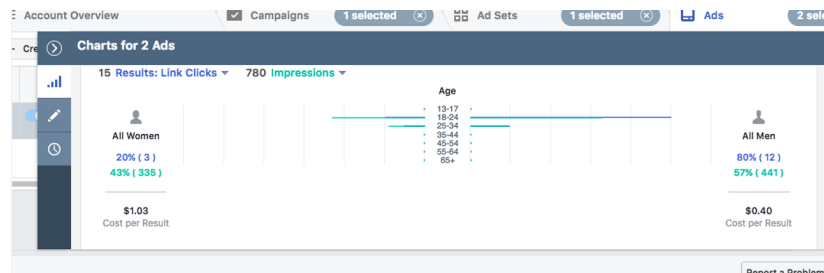


Figure 1: ok, but... (Lecture 1)

## 2.5 Goldhaber: good

- The analogies at the beginning of the articles are mind-blowing to me since what was written in 1997 exactly foresaw the trend of the attention economy in the following twenty years.
- Seeing that Goldhaber's talk was from 1997, I couldn't believe how much he's gotten right.
- I'd echo some of the previous commenters who recognize how prescient some of Goldhaber's claims are
- I found Goldhaber's piece on attention almost terrifyingly relevant . . . Every app I use, whether it be Instagram or Tiktok. Depending on what I like or click on, I get curated algorithms of ads, videos, pictures.
- I found that Goldhaber's broad predictive direction resonates with many of our contemporary predicaments when it comes to the intersection of wealth and human data.
- technology has transformed to an addictive drug.

## 2.6 other themes

- VC
- effect on information platforms, reality

### Opinion

# I Talked to the Cassandra of the Internet Age

The internet rewired our brains. He predicted it would.



**By Charlie Warzel**  
Mr. Warzel is an Opinion writer at large.

Feb. 4, 2021

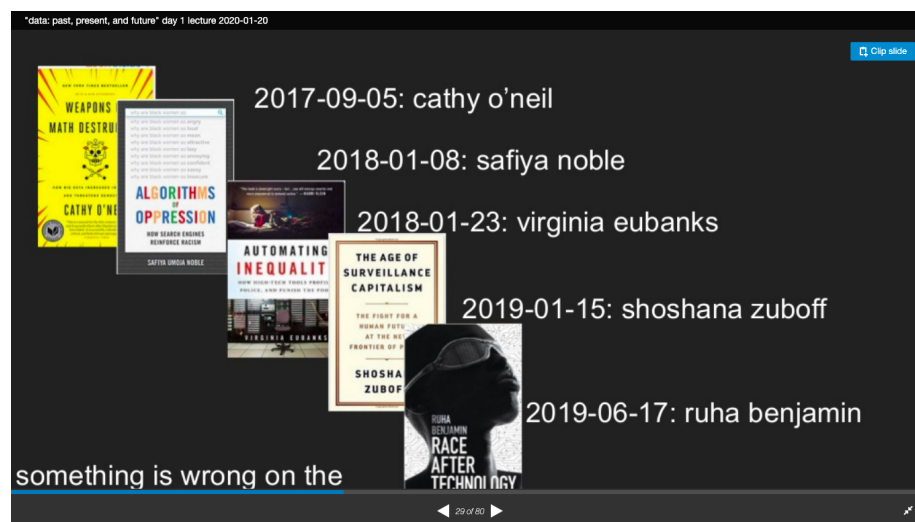
Figure 2: for more, your local paper

## 3 0. Reminder: power “vs” ethics

### 3.1 (last week's 4.3) internal: profit

- ethics must hold power to account, how is this in conflict?
  - general biz ethics: money vs risk
  - b2c ethics: consumer harms vs consumer profits
  - in ad model, privacy is inconvenient: next week
  - in ad model, consumer as product: next week

### 3.2 Recall from Lecture 1: something is wrong on the internet



## 4 1. The Ad Model

### 4.1 1.a Advertising: not new

### 4.2 1.a Advertising and PR

Just a few months before the great financial crash of 1929, the president of the American Tobacco Company hired Edward Bernays, author of *Crystallizing Public Opinion*, to arrange for a group of women to smoke cigarettes in an Easter day parade. This act was not “advertising” in any conventional sense: the event was calculated to shift the attention of thousands of people from the parade to the novelty of women smoking: a buried message crafted to shape people’s thinking about a particular topic in the hopes of boosting cigarette sales among women. In so doing, the attention of thousands of people was monetized. This was the same year that the “Nielsen certified performance surveys” company released the first consumer



Figure 3: 1835

market survey, allowing marketers to quantify the attention they wished to capture.

#### 4.3 1.a Simon on information and attention, 1971

[I]n an information-rich world, the wealth of information means a dearth of something else: a scarcity of whatever it is that information consumes. What information consumes is rather obvious: it consumes the attention of its recipients. Hence a wealth of information creates a poverty of attention and a need to allocate that attention efficiently among the overabundance of information sources that might consume it.

-Herbert Simon, *Designing Organizations for An Information-Rich World*, in *Computers, Communications, and the Public Interest*, ed. Martin Greenberger (Baltimore: Johns Hopkins Press, 1971), at pp. 40-41.

#### 4.4 1a. Advertising and Media, e.g., 1973

CORPORATIONS ARE NOT RESPONSIBLE.  
 CORPORATIONS ARE NOT RESPONSIBLE TO GOVERNMENT.  
 CORPORATIONS ARE NOT RESPONSIBLE TO THEIR EMPLOYEES.  
 CORPORATIONS ARE NOT RESPONSIBLE TO THEIR SHAREHOLDERS.

... you are the product

- [Television Delivers People, 1973](#)

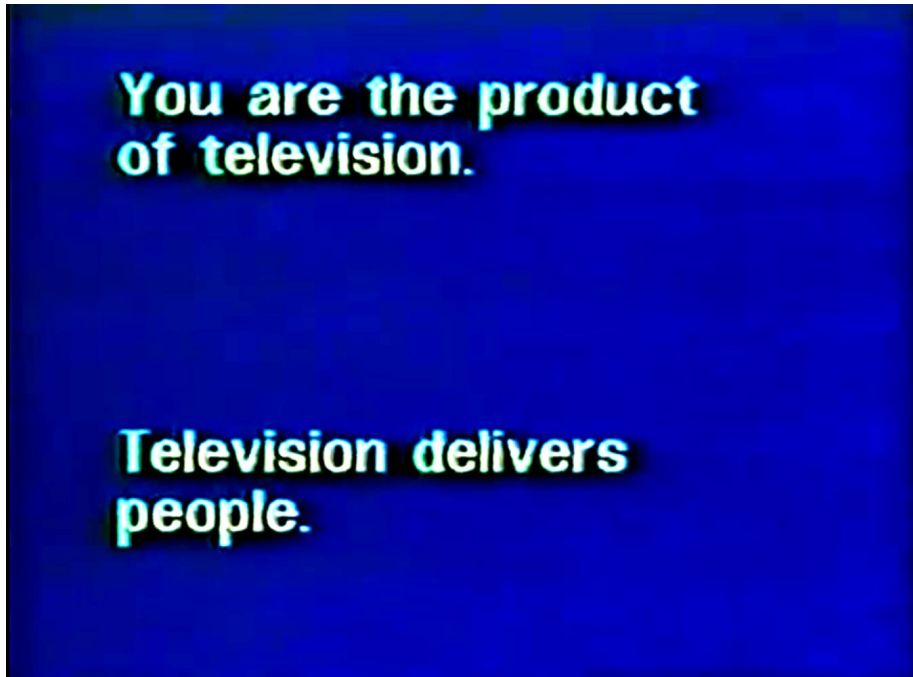


Figure 4: television delivers people

#### 4.5 1a. Advertising and attention: Goldhaber 97

- 8/6/91 WWW
- 1994 Yahoo!
- Advertising on new Media: 1980s/1994 (banners)
- 1995 eBay, Amazon
- [First Monday](#), internet journal started 1996

Information, however, would be an impossible basis for an economy, for one simple reason: economies are governed by what is scarce, and information, especially on the Net, is not only abundant, but overflowing. ... It is not in any way scarce, and therefore it is not an information economy towards which we are moving. ... flowing in the opposite direction from information, namely attention.



#### **4.6 1a. G'97: attention, needs, and personalization**

If you are still paying attention, . . . . I am addressing some need or desire that you now have. Thus it appears, in a certain sense that I am paying each of you attention individually, even though I can't really be doing that. . . . I am offering you individually the illusion of my full attention.

#### **4.7 1a. G'97: attention and productivity**

There just is not enough work of the older kinds to keep us as busy as we once were. . . . Yet strangely, we are all busier than ever. . . . It is precisely because material needs at the creature comfort level are fairly well satisfied for all those in a position to demand them that the need for attention . . . takes on increasing importance. In other words, the energies set free by the successes of what I refer to as the money industrial economy go more and more in the direction of obtaining attention.

#### **4.8 1a. G'97 vision: WWW democratizes attention, therefore...**

For organizations:

- brand of employer -> brand of individual
- money and attention:
  - substitution has not yet happened...
  - ... unless you count time (see Tufekci's point about phone minutes as currency)

#### **4.9 1a. G'97 \$\$ vision: e-books**

At present, for instance, it is impractical to distribute books directly over the Net, though it is easy to foresee that need not be the case for long.

physical books will be seen as cumbersome and quaint

#### **4.10 1a. G'97 \$\$ vision: paywalls**

So in the case of a book, the Internet should now be viewed as a useful and free publicity mechanism. Let passages be freely copied and circulated on the Net, because only if physical most of the time, the more of copying that takes place, the more customers there will be is more convenient than e for the physical printed version. If you have a Web site, don't charge for it, because that will only reduce

the attention it gets. If you can't figure out how to afford it without charging, you may be doing something wrong.

#### 4.11 1b. Advertising, data, and algos WWW, e.g., 1998



Figure 5: Pagerank 1998, from Winograd of the IR community

#### 4.12 1b. Democratization of attention! “Web 2.0” (1999, 2004->)

- e.g., “O’Reilly Media Web 2.0 Conference” 2004
- explosion of *content* (thus opportunity to optimize) vying for attention
- and advertising: Google (1998) buys Doubleclick (1995) for \$3bn in 2005
- By late 2008, “Ad Model” was normative for
  - founders
  - investors
  - **users**

#### 4.13 1.b ad model 2005-2010: data+algos+ML made this possible

After a couple years at Facebook, Hammerbacher grew restless. He figured that much of the groundbreaking computer science had been done. Something else gnawed at him. Hammerbacher looked around Silicon Valley at companies like his own, Google (GOOG), and Twitter, and saw his peers wasting their talents. “The best minds of my generation are thinking about how to *make people* click ads,” he says. “That sucks.” - 2011

- how to *make people*?
  - lots of content  $a$
  - lots of logged engagement  $y$
  - lots of demographic and other user data  $x$
  - ML algos to optimize the above

## 5 1c. algo consequences for information (Grimelman 2018)

- “The second trend is that since the platforms are primarily advertising driven, they optimize their designs to *maximize* advertising revenue [ed: \$]. This typically means *maximizing* “engagement” [ed:  $y$ ]: staying on the site for as long as possible, continuing to read and watch. And this, in turn, means that platforms are carefully and constantly watching to see which content beats out its rivals in drawing attention. They *aren’t neutral* in this; *platforms prioritize and promote* the content most likely to grab users by the lapels. Facebook shuffles its News Feed; Twitter lists “Trends for you”; YouTube suggests related videos and will even autoplay the next video after the current one ends.”
- role of 1) experiment 2) prescriptive model, find best action/article
- [the platform is the message](#) (see also video of talk)

### 5.1 1c. algo consequences for information: taxonomy

- Digital social media have a few characteristics that intensify this old tendency. The first is simply **speed**: sharing on Facebook or Twitter is instantaneous. A meme can go viral in a matter of hours simply because it loses so little time each trip around the sharing loop. A second is **scale**: a single click can make a tweet or a video visible to the world. A third is **fidelity**: the ten-thousandth person to retweet a gif will pass along the same one as the first, which brings a measure of **coherence** to a meme. A fourth is **accessibility**: almost anyone with Internet access can cheaply and easily post, which means that billions of people are potential creators. And a fifth is **personalization**: by presenting each user with content they are more likely to find appealing and share, a platform helps memes achieve critical mass in a localized community of interested users, like the reflector around a nuclear reactor bouncing neutrons back into the radioactive core.

### 5.2 1c. algo consequences for information: StayPuft

- Recommendation engines may only “supply” car crashes in the sense of suggesting that since you looked at that last one, **here’s another one** you may be interested in watching. But in a world where **attention is money** and platforms find and focus attention, that’s enough to **incentivize**

**others** to go out and **crash cars**. Complaining about it doesn't help, either. **Hate clicks are still clicks**. The new virality machines can see inside your head, and they will make whatever it is you can't help thinking about. The Stay Puft Marshmallow Man comes for us all.

### 5.3 1c. algo consequences for information

- thin lines among thing, parody of thing, satire of thing
- kayfabe politics: violence of thing, parody of thing, satire of thing, and kinetic



Figure 6: 1894

### 5.4 1c. algo consequences for disinformation, a la DiResta (formerly OATV)

3 curatorial functions (algorithms)

- search
- trending
- recommendation

### 5.5 1c. algo consequences for disinformation, a la DiResta

- 1) epistemology: “black is white is trending” it’s true that it’s trending
- 2) lose-lose for fact-based MSM: cover or not?
  - cover w/o fact check: amplify

- cover w/fact check: amplify to personalized, untrusting/conspiracy counter-narrative
- don't cover: create personalized, conspiracy counter-narrative

## 5.6 1c. algo consequences for disinformation, a la DiResta

- **Advertisers and platforms** alike drove the arms race of engagement tactics, pioneering clickbait and testing ever more innovative ways of targeting audiences to interact with ads. Through the power of analytics, the platforms and advertisers came to learn that content with high **emotional** resonance—including anger or outrage—performed better. . . . Eventually the ads became indistinguishable in form from the rest of the content on the platforms, and the **views—clicks—actions tracking** became increasingly more refined. **Lookalike audiences** appeared, based on an algorithm that ran correlations between people with overlapping interests and proclivities; they eliminated the need for advertisers to create their own demographic or interest-based targeting criteria.

## 5.7 1c. algo consequences for persuasion: 2012

In an op-ed in the New York Times soon after the reelection of Obama in 2012, Ethan Roeder concluded with a celebration of the individual at the heart of the Obama's campaign's data strategy.

Campaigns are moving away from the meaningless labels of pollsters and newswEEKlies — “Nascar dads” and “waitress moms” — and moving toward treating each voter as a separate person. In 2012 you didn't just have to be an African-American from Akron or a suburban married female age 45 to 54. More and more, the information age allows people to be complicated, contradictory and unique. New technologies and an abundance of data may rattle the senses, but they are also bringing a fresh appreciation of the value of the individual to American politics.

## 5.8 1c. algo consequences for persuasion: 2012

In 2008, Rayid Ghani, then an employee at Accenture Technology Labs, described an “Intelligent Promotion Planning system.”

In addition to using newspapers, in-store displays, and endcaps to highlight their products and run promotions, retailers can influence individuals in a vastly different way using individual consumer models. These capabilities create the need for systems that can take high-level business goals and apply them at an individual customer level. The system proposed involves producing ‘individual models of consumers’—individual behavioral models that can be pitched to in ways appropriate to each person. This technology allows every

company to target every customer as a separate person, not just a representative of a statistical category. Just such targeting is at the heart of marketing, political campaigns, and, in the near future, highly tailored medicine for those who can afford it.

### 5.9 1c. algo consequences for persuasion: 1920s

Before Bernays was honing the message for tobacco, however, he was shaping public perception in politics. In 1924 he arranged for a group of popular celebrities to appear with the “practically inarticulate” president Coolidge to improve his image. Today, aspiring politicians benefit from the same statistical methods as marketers, leveraging digital tools for market surveys to craft campaigns and messages as well as to target the optimal message to the optimal user.

### 5.10 1c. algo consequences for persuasion: 2018 (ZT)

- The few companies that control our digital public sphere — Facebook, Google, and Twitter — are all driven by the same fundamental **business model**, and it has only grown more pernicious over time. To **microtarget** individuals with ads, today’s platforms massively **surveil** their users; then they use engagement-juicing **algorithms** to keep people onsite as long as possible. By now it’s clear that this system lends itself to authoritarian, manipulative, and discriminatory uses: hiding job openings from minorities and older people; discouraging certain groups from turning out to vote; and allowing anyone with even a small budget to find audiences that are, say, anti-Semitic. It also creates an environment conducive to viral misinformation and hate speech.

### 5.11 1c. algo consequences for persuasion: 2018 (ZT)

As for dissidents: Yes, online platforms offer important alternatives to censored mass media across the globe. But authoritarians have figured out how to defang most of these benefits for activists, while adroitly using social media for their own ruthless purposes. Like other politicians and world leaders, Filipino strongman Rodrigo Duterte has received guidance from Facebook’s staffers on how to get the most out of the platform. He has also made an art of using Facebook to viciously hound and harass his opponents. -Tufekci, 2018

### 5.12 Reminder of Tufekci’s earlier readings (week 2)

### 5.13 Engineering consent: PR and politics

“The rise of broadcast media altered dynamics of politics in fundamental ways. Public relations pioneer *Edward Bernays* explained the root of the problem in his famous “Engineering of consent” article where, discussing the impact of



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Engineering the public: Big data, surveillance  
and computational politics  
by Zeynep Tufekci

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Figure 7: Tufekci, week 2

broadcast on politics, he argued that the cliché “the world has grown smaller” was actually false (Bernays, 1947). The world is actually much bigger and today’s leaders, he pointed out, are farther removed from the public compared to the past. The world feels smaller partly because modern communication allows these leaders, potent as ever, to communicate and persuade vast numbers of people, and to “engineer their consent” more effectively.

#### 5.14 Engineering consent: Bernays warned us

“Bernays saw this as an unavoidable part of any democracy. He believed, like Dewey, Plato and Lippmann had, that the powerful had a structural advantage over the masses. However, Bernays argued that the techniques of “engineering of consent” were **value-neutral** with regard to message. He urged well-meaning, technologically and empirically enabled politicians to become “philosopher-kings” through techniques of **manipulation and consent engineering**.

- Arms race:

“The techniques can be subverted; demagogues can utilize the techniques for **antidemocratic** purposes with as much success as can those who employ them for socially desirable ends. The responsible leader, to accomplish social objectives, . . . must apply his energies to mastering the operational know-how of consent engineering, and to **out-maneuvering his opponents in the public interest**. (- B, 1947)

#### 5.15 Engineering consent: power, Tufekci warned us (2014)

“Such effects are real and surely they are part of the story of the rise of the Internet. *However, history of most technologies shows that those with power find ways to harness the power of new technologies and turn it into a means to further their own power (Spar, 2001)*. From the telegraph to the radio, the initial period of disruption was followed by a period of consolidation in which challengers were incorporated into transformed power structures, and disruption gave rise to entrenchment. There are reasons to think that the Internet’s trajectory may

have some differences though there is little reason to think that it will escape all historical norms.

- “These capabilities are changing faster than our norms, rules, and laws.” – Salganik, p 325

#### 5.16 Engineering consent: targeting, Tufekci warned us (2014)

- Unsurprisingly, *targeting individuals as individuals rather as members of broadly defined aggregates has long been the holy grail of political campaigns*. Such efforts have been underway for decades. Culling information from credit cards, magazine subscriptions, voter registration files, direct canvassing efforts and other sources, political parties, as well as private databases, have compiled as much information as they can on all individual voters. However, until recently, the collection of individual level data was messy and fragmented, and targeting was still on done by aggregate groups, which were simply based on richer individualized data than before. Much of this has changed with the rise of the *Internet*, which greatly increases the type and amount of individual data, and *computational analytics*, altering what information can be gleaned from these sources.

#### 5.17 Engineering consent: 2017



Nov 6 10:07a

## Cambridge Analytica CEO talks to TechCrunch about Trump, Hillary and the future

Figure 8: Nix



### 5.18 Engineering consent: 2017

There's no question that the marketing and advertising world is ahead of the political marketing the political communications world. And there are some things that I would definitely [say] I'm very proud of that we're doing which are innovative. And there are some things which is best practice digital advertising, best practice communications which we're taking from the commercial world and are bringing into politics.

Figure 9: Nix

### 5.19 Engineering consent: 2017

## 6 2. vc model: the disruptor

- vs the typical sociotechnical time scale
- VC+AI & data: the virtuous cycle

## 7 2a. VC timeline

- 1946 WWII Quartermaster General Georges Doriot (later, HBS) forms American Research and Development Corporation
- 1960s-1970s: microprocessors and memory (Intel)
- 1970s-1990s: personal computing (Apple)
- 1990s-2000s: e-business
- 2000s+: data driven attention economy
- technical risk: can i use technology to differentiate my product in the marketplace?
- market risk: is there demand in the marketplace for my product?
- monopoly risk: can i simply buy the marketplace?
- see Saxenian for more

## **Nix:**

There's no question that the marketing and advertising world is ahead of the political marketing the political communications world. And there are some things that I would definitely [say] I'm very proud of that we're doing which are innovative. And there are some things which is best practice digital advertising, best practice communications which we're taking from the commercial world and are bringing into politics.

Figure 10: Nix

### **7.1 2a. VC infographic**

- Zider, "How venture capital works" (1998)

### **7.2 2a. VC rise**

"New money committed per year rose 16x over five years" according to the investor Gerry Neuman (SEAS '88, '90), "from \$218 million in 1978 to \$3.6 billion in 1983."

### **7.3 2a. VC: good idea? Chart from Tim O'Reilly (OATV)**

### **7.4 2a. VC: engine not a camera**

- "In the short run the market is a voting machine. In the long run it's a weighing machine."
- venture capital *shapes* the future by making possible transformations in technology and in markets which existing constraints and limits might otherwise prevent.
- private investment in future revenue
- expectation of risk+long term payout

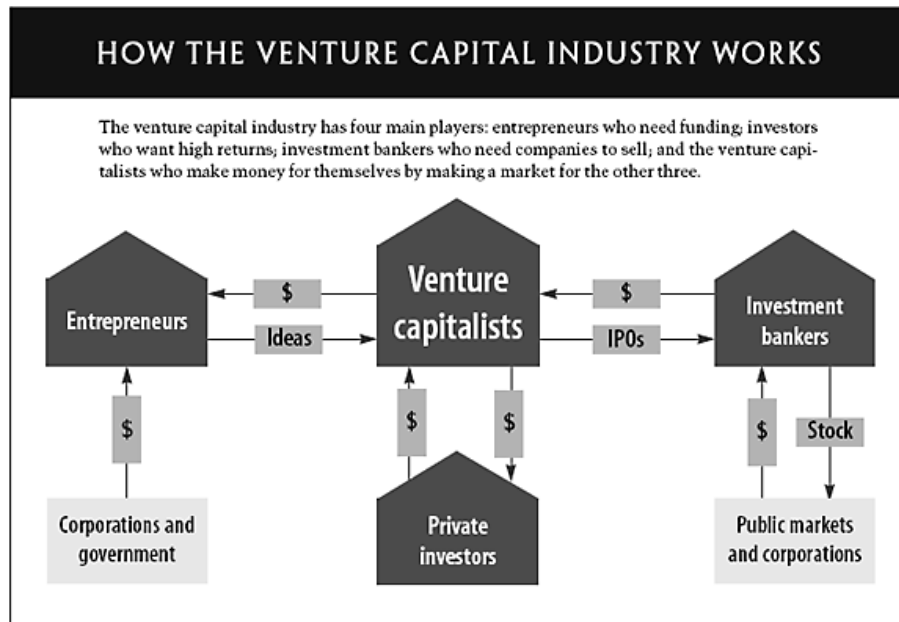


Figure 11: 1998 HBR: 1) pre-stonks 2) where are all the people?

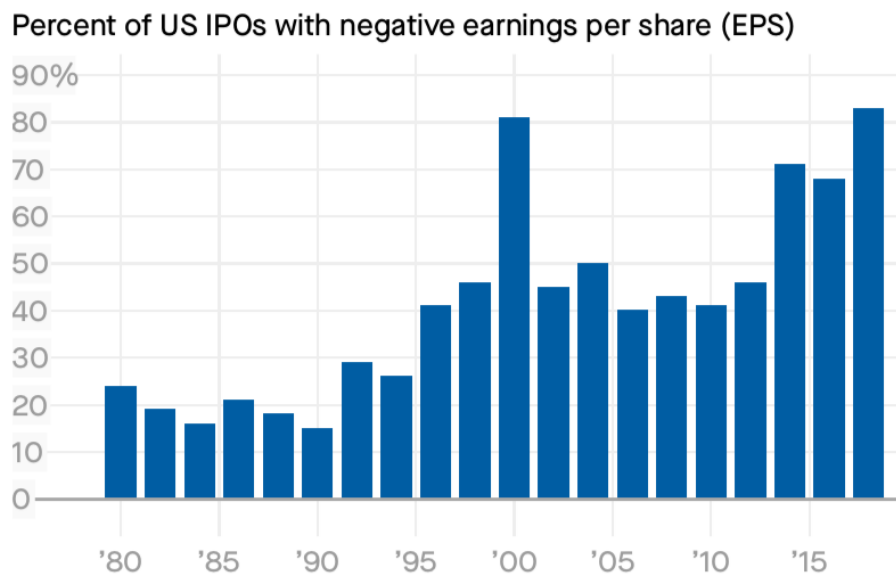


Figure 12: chart

## 8 2a. VC & AI

more data leads to better products, which in turn attract more users, who generate more data that further improves the product. That combination of data and cash also attracts the top AI talent to the top companies, widening the gap between industry leaders and laggards.

- Kai-Fu Lee (SEAS '83)

## 9 2b. VC & consequences: speed, scale, growth

### 9.1 2b. Centrality of fast growth

“Timely reminder that the VCs aren’t even in the home run business. They’re in the grand slam business.” i.e., designed to disrupt

- Bryce Roberts of indie.vc (formerly OATV)

### 9.2 2b. Growth at all costs, and CEO centrality

Founder culture — or more accurately, founder worship — emerged as bedrock faith in Silicon Valley from several strains of quasi-religious philosophy.

After Facebook went public in 2012, Zuckerberg maintained outsized influence due to a dual-class share structure [ed: pioneered by NYT, 1967]

- Isaac, from Super Pumped: The Battle for Uber (2019)

### 9.3 2b. Nicholas (HBS) on skew-in-returns and America

Final Thoughts . . . . The allure of the long tail represents the prospect of outsized re- turns with a right-sided skew that rarely materializes in reality. It signifies a cultural appetite for risk-taking that celebrates entrepreneurship’s spirit of adventure, that accepts unbridled avarice, and that encourages the insatiable pursuit of material financial gain. In many ways, the history of the venture capital industry is a window into the larger history of America.

Growth at all costs, free cash flow or consumer protection be damned (cf Uber, Airbnb, WeWork)

## 10 2b. VC & consequences: speed, scale, growth

There, in the back seat, Son took out an iPad and wrote out the terms for a \$4.4 billion investment in the company. He drew two

horizontal lines at the bottom, signed his name across one, and then handed the iPad to the then 37-year-old Neumann to scribble his name on the other. Neumann would keep a photo of the agreement on his phone. “When Masa chose to invest in me for the first time, he only met me for 28 minutes. Okay?” Neumann told me in January.

- FastCompany on WeWork

## 10.1 2b. VC here to save the world?

Can the VC industry reverse its abysmal record on diversity? This book’s narrative has been largely a story of white males. . . . A 2014 analysis of leadership in the US venture capital industry shows that, in the vast majority (52 percent) of top firms, women did not occupy any senior positions. . . . Black and Hispanic venture capitalists are vastly underrepresented in the industry.

In many respects, this lack of diversity is paradoxical because venture capital is based on the premise of financing radical, often revolutionary, change by non-incumbents. [possible] “taste-based discrimination” in favor of hiring men . . . what sociologists call homophily, or a preference for interacting with those “coming from the same group.”

## 10.2 2b. VC here to save the world?

From a societal perspective, keeping the startup sector vibrant is perhaps the most important function the VC industry performs. Venture capitalists generate private value in the form of fund-level returns, but the social value they create surely exceeds that.

cf:

Hooli is about innovative technology that makes a difference, transforming the world as we know it. Making the world a better place, through minimal message oriented transport layers.

- Silicon Valley, S1E1

# 11 3 Power

## 11.1 Algorithmically-empowered growth and information

“The ugly truth is that we believe in connecting people so deeply that anything that allows us to connect more people more often is de facto good. It is perhaps the only area where the metrics do tell the true story as far as we are concerned”

– Facebook VP Andrew Bosworth, 18 June 2016, as leaked to BuzzFeed

“Watch time was the priority...Everything else was considered a distraction.”

– (ex)-Google engineer Guillaume Chaslot, as quoted in the Guardian 2 Feb 2018, describing YouTube’s recommendation engine’s sole KPI

## 12 an “ethical” view

- rights
  - privacy consent harms
- harms (inc. societal harms)
  - privacy harms a la reveals
- justice (fairness+restorative)

## 13 ethics at scale: a consumer protection view

- vs the typical sociotechnical time scale; “These capabilities are changing faster than our norms, rules, and laws.” – Salganik, p 325
- growth at all cost: good for CEO, not always good for “the arena”
- checks on powers? Next week

## 14 Appendix

- 2021-01-12: intro to course
- 2021-01-19: setting the stakes
- 2021-01-26: risk and social physics
- 2021-02-02: statecraft and quantitative racism
- 2021-02-09: intelligence, causality, and policy
- 2021-02-16: data gets real: mathematical baptism
- 2021-02-23: WWII, dawn of digital computation
- 2021-03-09: birth and death of AI
- 2021-03-16: big data, old school (1958-1980)
- 2021-03-23: AI2.0
- 2021-03-30: data science, 1962-2017
- 2021-04-06: ethics
- 2021-04-13: present problems: attention economy+VC=dumpsterfire
- 2021-04-15: future solutions