Tech in 2020: Standing on the shoulders of giants

Benedict Evans
February 2020
www.ben-evans.com
We connected (almost) everyone

There are 5.5bn adults on earth, 5bn have a phone and 4bn have a smartphone

Source: World Bank, GSMA, Apple, Google, CNNIC, ITU, @BenedictEvans
New technologies come in S Curves

New tech generally goes from stupid to exciting to boring
And smartphones reached ‘boring’ (mostly)

As the product matures, the easy and obvious things have been done and marginal improvement tends to slow
At this stage, we ask how we can use it...

What becomes possible now that smartphones are mature and widely deployed?
And we ask what the next S Curve will be

What is the next generational change?

Stupid
Exciting!
Boring

Smart Phones

?
Because that’s been the model for 50 years

The tech industry has had a new centre roughly every 15 years
So, two conversations today

What now and what next?

What happens when everyone is online?

What are the next S Curves?
So, two three conversations today
Connecting the world has had consequences far outside tech

What happens when everyone is online?
What are the next S Curves?
Regulation and policy
What happens when everyone is online?
Standing on the shoulders of giants

Density & penetration

Consumer expectation

Platforms

New possibilities at new scale
“Every failed idea from the dotcom bubble would work now”

- Marc Andreessen
Front of mind: ecommerce
Front of mind: ecommerce is big...

US ecommerce is now over $600bn

Source: US Census
But still ‘only’ 16% of addressable retail

$600bn is a big number, but US addressable retail is $3.8tr

Source: US Census

*Addressable retail = ex. cars, car parts, gasoline, restaurants & bars
Globally, the USA is in the middle of the pack

China leapfrogged physical retail, while the UK and SK are also far ahead of the USA

Source: McKinsey, BLS
Expanding what ecommerce means

Ecommerce has evolved past commodity products in brown cardboard boxes

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<th>Books, commodities</th>
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<td>One model</td>
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Powering the ‘D2C’ explosion...

Several hundred (at least) new online-only or online-first brands

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[Diagram of various brand logos]
And huge new ecommerce platforms

Independent ecommerce is now so big that the enabling platforms are worth tens of billions

Shopify market cap is $46bn

Stripe valued at $35bn

Instagram, YouTube...

Source: Bloomberg, Companies
Shopify has come from nowhere to $60bn of GMV

$60bn of sales on the platform, with over a million merchants, from the long tail to Unilever and Pepsico

Source: Shopify
Meanwhile: Amazon!

Amazon’s revenue continues to grow at 20% a year

Source: Amazon
Though only half is direct ecommerce

But it has become about more than just plain ecommerce

Source: Amazon
Platforms for others are now a third of Amazon revenue

Amazon is building growth by leveraging its platforms for other companies

Source: Amazon
Amazon is a platform for others

60% of sales on Amazon are through the third party marketplace

Source: Amazon, @BenedictEvans
Amazon is now taxing product search

Amazon has built a $10bn+ ‘search ad’ business – retailers just call this marketing

Amazon ‘Advertising & other’ revenue ($bn)

Source: Amazon
New retailing means new taxes

If you’re not paying rent for a store (or in one), how do people hear about you?

Amazon sells placement for $10bn

Booking & Expedia pay Google $10bn

Source: Companies
New retailing means new taxes

If you’re not paying rent for a store (or in one), how do people hear about you?

Amazon sells placement for $10bn
Booking & Expedia pay Google $10bn
But Macy’s & Walmart did this too

Source: Companies
Unless you have a new route to awareness

If you’re not paying rent for a store (or in one), how do people hear about you?

Amazon sells placement for $10bn
Booking & Expedia pay Google $10bn
But Macy’s & Walmart did this too
Kylie Jenner’s make-up business: $1.2bn

Source: Companies
Get it wrong? Go to the mattresses

A vacuum-packed mattress was a brilliant idea until everyone else did it

Source: GoodBed.com
Is that a ‘tech’ company?

Or is it a mattress company with a website?
Welcome to retail

The internet is not the first new retail format

Source: US Census
“Over half of our store sales involve an online journey, and over a third of our online sales involve a store experience”

- Erik Nordstrom
Retail isn’t as binary as ‘online’ and ‘offline’

Online, yes, but also rent, distance to customer, service, selection, staff costs, urgency, margin, inventory, etc, etc

Source: US Census, @BenedictEvans

*Addressable retail = ex. cars, car parts, gasoline, restaurants & bars.
Is that a ‘tech’ company?

Or is it a retailer using a new channel?
Front of mind: TV
Front of mind: unbundling TV

YouTube launched in 2004 – a decade later, US TV finally unlocked

Annual change in US pay TV subscriptions

Source: JP Morgan
US pay TV subs down 20% and falling

For generations, most of the US was sold a big and expensive pay TV bundle - this is now breaking apart
And TV is changing a lot faster than retail

US cord-cutting % has passed ecommerce % in just 5 years

Source: US Census, JP Morgan, @BenedictEvans
Teen share down by half

Pay TV share of US teen viewing hours is down by half in three years

Source: Piper Jaffray
Begun, the content wars have

A third of US 2019 content spending came from streaming companies

Source: UBS
Streaming is a third of US TV production

A third of original series in the USA are now from Netflix, Amazon and other new entrants
Now what?

Old model is gone, but not yet clear what the new equilibrium will look like

- Subs down 20%
- Teen viewing share down 50%
- Show count has doubled, and costs...

Ad budgets flat to up?
New forms of video emerging

Twitch (90% of live games viewing) hit 1bn monthly hours in Q3 2019

Source: Twitchmetrics
Twitch is already/only the size of a UK TV channel

Glass half empty, or half full?

Source: Ofcom/ONS, Netflix, Twitchmetrics, @BenedictEvans
Meanwhile, global effects from the US streaming war

US budgets were always bigger, but they sold the shows abroad: Netflix goes direct

Source: Netflix, UBS, Ofcom/IHS Markit
Netflix is the UK’s biggest TV channel

Netflix is the UK’s biggest TV channel for 18-34s, and YouTube is even bigger

**Video minutes per person per day, UK 18-34s, 2018**

Source: Ofcom
Unbundling countries, not just cable

More than half of Netflix’s base and most of the user growth is now outside the USA

Source: Netflix
“In business, there are two ways to make money. You can bundle, or you can unbundle.”

- Jim Barksdale
Now: the great unbundling. Next: the great rebundling

For TV and retail, the old bundles are going, but we will get new ones

New distribution channels break apart old aggregation models

Everyone wants to unbundle and go direct

But!

There can only be so many brand relationships

Aggregators exist for a reason

Many big brands are actually B2B businesses anyway

Lots of rebundling coming
Is that a ‘tech’ company?

Or is it a TV company using a new channel?
OK, ecommerce and TV. But what else?
“Remember, most people don’t have that”

For 25 years, we’ve had to remind ourselves that most people are not early adopters

Most people don’t have broadband

Most people don’t have 3G

Most people don’t have smartphones

83% of US teenagers have an iPhone*

* Source: Piper Jaffray
Today, anyone does anything online

In 2017, 40% of Americans met their partners online

Source: Stanford/GfK
I went on the @bumble dating sight and they closed my account. 🙄🙄
Some users reported that it couldn’t possibly be me! 😳
Hey @bumble, is being me exclusionary? 🤔
Don’t shut me out of the hive 🐝
Models for market expansion

Penetration and consumer acceptance drives expansion

**Vertical integration**

The full stack’ model: from booking.com to Airbnb

**Horizontal expansion**

Taking established online models to new segments
Old models, new targets

Internet models that only worked for narrow segments a decade ago now expand into the whole economy

**Rigup**
Oil field workers

**Honor**
Home help for the elderly

**Incredible Health**
Nursing
Is that a ‘tech’ company?

Or is it a travel / insurance / employment / taxi / dating / banking / restaurant company using a new channel?
Growth and global diffusion

More and more investment in company creation around the world

Venture capital investments ($bn)

Source: NVCA
Expanding software and tools from work to everyday life

Software, automation, workflow, and tools...

From work and big business to everyone’s lives

From mainframes, to LinkedIn, to Tinder and Rigup
The next S Curves
What’s the next generational change in scale?

The tech industry has had a new centre roughly every 15 years

Mainframes  PCs  Web  Smartphones  ?
Can there be another massive increase in scale?

Once you’ve connected everyone, how do you create a bigger market?

Source: UN, GSMA, ITU, Apple, Google, CNNIC, @BenedictEvans
And is this the new thing, or part of the old thing?

Smartphones began as a PC accessory, but now PCs are a smartphone accessory.
Lots of new things going on, but which is THE thing?

Many new things happening, but what’s their scope?

**Frontier tech**
Quantum, new battery chemistry, neural interfaces, autonomy, AR optics

**Important but narrow**
Drones, IoT, voice, wearables, robotics, esports, 3D printing, VR, micro-satellites

**Structural layers**
Machine learning
Crypto?
(3G/4G/5G)
(Cloud, still)

**The next platform?**
AR glasses?
Tech for the 2020s

A lot of innovation is happening inside tech, but that’s no longer the only focus

- Machine learning is the new database
- Crypto is the new open source (?)
- AR is the next smartphone (?)
- Regulation
The Next Big Thing?
Regulation and policy
Governments of the Industrial World, you weary giants of flesh and steel, I come from Cyberspace, the new home of Mind. On behalf of the future, I ask you of the past to leave us alone. You are not welcome among us. You have no sovereignty where we gather.

- John Perry Barlow, 1996
Then we connected everyone, including the bad people.

There are 5.5bn adults on earth, 5bn have a phone and 4bn have a smartphone.

Source: UN, GSMA, ITU, Apple, Google, CNNIC, @BenedictEvans
Which also meant creating huge, scary companies

7 of the 10 largest global companies by market cap are tech
Now we have issues. So many issues

Every month there’s something else to worry about
And this won’t get simpler

None of these people exist: these faces are algorithmically generated by a machine learning system.
Naturally, there must be a simple answer

Every complex question has a simple answer

Break them up
‘Break them up’ – the Brexit of tech

Every complex question has a simple answer

Break them up

Into what?

And which problems would that solve?

Brexit
Also included: a classic moral panic

Coverage of real issues is accompanied by a steady flow of stories that don’t stand up to scrutiny

‘Google makes $4.7bn from Google News!’ Extrapolated from a 2008 guess of ‘$100m?’

‘The NHS gave Amazon our health data!’ Alexa can read bits of the public website to you

‘Amazon has private label!’ Like all retailers for a century
Moral panic: Amazon does private label

'Well done – you just discovered retail'

Private Label as % revenue, 2018

Source: Morgan Stanley, Euromonitor
But panics have causes, and consequences

“Industrial food is a good thing, but what’s in the sausages?” - The Jungle, 1906

Maybe we should break up ‘the beef trust’...

But we also need an FDA, ingredient lists, veterinary inspections, hygiene rules...
So, which problem are you trying to fix?

Different types of problem have fundamentally different solutions

Tech companies being bad to other companies
Search, app stores, ad pricing

Tech companies being bad to us
Privacy, security (but not pricing)

Bad people using tech
Abuse, fake news, elections...
Anti-trust: Mostly beside the point
Google and Facebook clearly have market dominance

Google and Facebook clearly have dominance in major markets: the question is what (if anything) to do

**Market share, global ex-China, 2019**

Source: Companies, Zenith, @BenedictEvans
What’s Amazon’s market share: 35% or 5%?

Amazon has a third of ecommerce, but is that really the competition?

Source: @BenedictEvans, Amazon, Walmart, US Census

Addressable retail = ex. cars, car parts, gasoline, bars & restaurants
What’s Apple share? Depends which regulator you ask

Apple is the minority player globally, but has 100% of the market for ‘iOS app stores’

Source: Apple, Gartner, Operators, @BenedictEvans, Piper Jaffray
Market definition is everything

Regulators make their own decision on what the ‘relevant market’ is for anti-trust purposes.

IBM had 100% of the IBM mainframe market.

Apple has 100% of the iPhone app store market.
What could feasibly be split apart?

Coherent case that YouTube, Instagram & WhatsApp, and AWS are viable stand-alone businesses

Google
- YouTube
- Android? Gmail?
- Display ads?

Facebook
- Instagram & WhatsApp
- Oculus?

Amazon
- AWS (cash cow, but not the only one)

Apple
- Content stores?
- Music?
But what kinds of competition would breakups affect?

Breakups would affect ad competition, but not product competition – unlikely to create a flood of YouTube alternatives.
And...

Do people worry about ‘big tech’ because Google & Facebook might be overcharging WPP, and Apple is mean to Spotify?

Or are the real concerns elsewhere?
Which problem are you trying to fix?

Few of the issues that make people worry about ‘big tech’ relate to anti-trust

- Tech companies being bad to other companies
  - Solved by anti-trust: either breakups or conduct regulation

- Tech companies being bad to us
  - Limited anti-trust relevance

- Bad people using tech
  - No anti-trust relevance
Regulation: Boring, complex, somewhat effective
‘Tech’ becomes a regulated industry

Lots of industries are subject to specific, technical regulation, and tech will become one of them.

Source: Al-Ubaydli and McLaughlin
We don’t actually regulate ‘banks’, or ‘money’

We won’t regulate ‘tech’ – we’ll have lots of different regulation for different issues and companies

‘Regulate the banks’

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<th>Retail deposits</th>
<th>Public securities markets</th>
<th>Insider trading</th>
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<td>Credit cards</td>
<td>Pensions</td>
<td>Capital adequacy</td>
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<td>Mortgages</td>
<td>Futures &amp; options</td>
<td>And so much more...</td>
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Is this a ‘tech’ problem?

Is this a new problem, or an old problem expressed in a new way?

Old issues, old solutions
Online-only banks

Old issues, new questions
Uber

New issues, new solutions
Airbnb, Facebook
Is that a ‘tech’ company?

Or is it a bank, but with a website?
Where is the liability?

In a massively disaggregated industry, there are many parties that might touch a problem at some point:

- Landlord
- IRS
- Market counterparties
- Auditor
- Microsoft Excel
- SEC
- Phone company
- Suspicious peers

Bernie Madoff
Presume complexity, across domain and country

The reality of regulation is complex and multimodal
Do we know what we want?
Where to start? We have a wish list...

- Police access
- Open platforms
- Secure, private, minimal data collection
- Catch state ‘bad actors’
- Empower competitors
- Trustworthy information
- Moderate ‘bad’ content
All of these are trade-offs

Do we want platforms to know and control what happens on their networks, or not? Or both?

- Secure, private, minimal data collection
- Police access
- Empower competitors
- Catch state ‘bad actors’
- Open platforms
- Trustworthy information
- Moderate ‘bad’ content

Benedict Evans — February 2020
Case study: content moderation

Easy to say, but do we know what we want?

There’s bad stuff on your platform – take it down
What does ‘take down’ mean?

‘Social networks’ are a mix of many publishing forms with different speech and distribution models.
What does ‘bad’ mean?

It’s not just ‘China’ - liberal democracies have widely varying attitudes to free speech

Percentage believing that people should be free to:

- Offend minorities
- Offend religion
- Be sexually explicit

Do we know what we want?

We lack consensus on what’s bad enough to ‘take down’, and on what ‘take down’ even means

- Innocuous
- Offense?
- Totally public
- Totally private
- Rude?
- Illegal
China, digital sovereignty and digital extra-territoriality
“War is God's way of teaching Americans geography.”
The end of the American internet

China and India have 5x more smartphones than the USA

Source: Apple, Google, CNNIC, @BenedictEvans
The end of the American internet

China and India use more mobile data than the rest of the world combined

Mobile data, June 2019 (EB)

Source: Ericsson
The end of the American internet

40% of global ecommerce value is in China

Source: McKinsey, eMarketer
American companies, global reach

“But the US constitution says!” is no longer an adequate answer

Source: Companies, @BenedictEvans
Regulatory competition?

At least three jurisdictions competing, with different politics but also different regulatory cultures

USA
EU
China
California, Singapore, UK, etc
Digital extraterritoriality

How do you apply domestic laws to a global medium, and to citizens who may be abroad?

Austria
EU court holds that an Austrian libel take-down order applies globally

Singapore
State’s right-of-reply must be applied to posts seen in Australia

GDPR & CCPA
Laws apply to EU/CA citizens wherever they are
Global reach means a lowest common denominator

Extra-territorial regulation means companies start complying with the harshest rule that applies, wherever it is
Tiktok: not just your standards?

When the community standards being enforced may not be your community’s standards
China’s global content moderation

‘Don’t forget Taiwan is part of China’
There will be many more TikToks

The US can no longer assume that every hot new thing will be made in the US

Venture capital investments ($bn)

Source: NVCA
From sovereignty (or protectionism) to extraterritoriality

Again, how do local rules apply to global systems?

Old
Store your data in our country

New
Follow our rules in our country

Future
Use our country’s rules outside our country

Benedict Evans — February 2020
The future – compliance and moderation as a service?

GCP/AWS/Azure all now rolling this out (will Facebook join them?)

Enhanced Content Moderation is now available for Amazon Rekognition Video

Amazon Rekognition Video is a deep learning-based video analysis service that can identify objects, people, text, scenes, and activities, as well as detect unsafe content. Content Moderation for Amazon Rekognition Video can identify various types of explicit and suggestive content, as well as timestamps for where such content appears during the video. Amazon Rekognition Video now comes with an enhanced moderation model that reduces false positive rates by 40% on average without any reduction in detection rates for truly unsafe content. Lower false positive rates imply lower volumes of flagged videos to be further reviewed by human moderators, leading to higher efficiency and more cost savings. Moreover, Amazon Rekognition provides a hierarchical set of moderation labels that can be used to create business rules to handle different geographic and demographic requirements. For more details on supported labels, please see this page. No machine learning experience is required to get started.
But what will happen when regulators conflict?

When local regulators assert global coverage and make incompatible demands, who yields first?

Secure, private, minimal data collection

- Police access
- Open platforms
- Trustworthy information
- Empower competitors
- Moderate ‘bad’ content
- Catch state ‘bad actors’

Secure, private, minimal data collection

- Police access
- Open platforms
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- Catch state ‘bad actors’
And this may get even more complicated

Part of the point of crypto is to remove central control – and hence sovereignty

Old
Mark Zuckerberg won’t come to Parliament

New
Will the CEO of Tiktok come to Congress?

Next
A distributed Blockchain system that has no CEO?
The only certainty: regulation as a regressive tax

Much of regulation is a fixed cost that affects new entrants disproportionately

**Mean compliance costs at US financial institutions by size**

Source: Dahl, Meyer and Neely 2016
Conclusion:

welcome to the world
Software ate the world, so all the world’s problems get expressed in software

(We connected everyone, including the bad people)
What’s the next cycle?

Tech has become part of the world, so it gets regulated as part of the world

- **Mainframes** Big companies
- **PCs** All companies
- **Web** Middle-classes
- **Smartphones** Everyone

**Systemically important part of society**
Worrying about tech isn’t new

The late 70s and early 80s saw another wave of concern around computing and automation.
Every wave of tech changes the world, and gets regulated

Every important industry gets industry-specific regulation
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<td>“Censorship is bad”</td>
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<td>“We can’t moderate 100bn messages a day”</td>
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<td>“You can’t build a secure platform with a back door”</td>
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Some regulation is binary
- Ban tobacco ads
- Open banking APIs

Most is ‘best reasonable effort’
- Try to prevent fraud
- Try to block CSAM

Some things are just not possible
- Ban inflation
- Block all bad content instantly

And this also needs new understanding in policy...

Regulating tech is complex and full of tradeoffs. But, this is true of all regulation – law and policy are the art of the possible.
The growth chart for the 2020s
Welcome to a regulated industry

Pages of rules related to Dodd-Frank banking regulation

Source: Davis Polk & Wardell LLP
Thank you