Tech in 2020: Standing on the shoulders of giants

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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?

Stupid

Exciting!

Boring

Smart Phones
And we ask what the next S Curve will be

What is the next generational change?

Stupid

Exciting!

Boring

Smart Phones

?
The tech industry has had a new centre roughly every 15 years because that’s been the model for 50 years.

- **Mainframes** (IBM, Big companies)
- **PCs** (Microsoft / Intel, All companies)
- **Web** (Google / FB / Amazon, Middle-class families)
- **Smartphones** (Apple / Google, Everyone)
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

New possibilities at new scale

Density & penetration

Consumer expectation

Platforms
“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 $500bn

US ecommerce sales ($bn, 2019 dollars)

Source: US Census
But still ‘only’ 15% of addressable retail

$500bn is a big number, but US addressable retail is $3.6tr

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

Books, commodities → Anything

One model → Many models

Capital → Platforms
Powering the ‘D2C’ explosion...

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

Source: IAB
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, @BenedictEvans
Meanwhile: Amazon!

Amazon’s revenue continues to grow at 30% 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

Amazon GMV ($bn)

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

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

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?

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

2019: there are 175 online mattress companies

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 time that retail has a new 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

Source: JP Morgan, Netflix
And TV is changing a lot faster than retail
US cord-cutting percentage has passed ecommerce percentage 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

**US teen daily video consumption share**

- **Pay TV**
- **Netflix**
- **Youtube**

Source: Piper Jaffray
Begun, the content wars have

A third of US 2019 content spending came from streaming companies

US annual content budgets, 2019 ($bn)

- Disney
- Comcast/NBCU
- Netflix
- ViacomCBS
- Warner
- Amazon
- Fox
- Sony
- Discovery
- Apple

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

Source: FX Networks Research
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?

Source: JP Morgan, Nielsen, FX Networks, Zenith
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

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

Source: Piper Jaffray for US teenagers in 2019
Today, anyone does anything online

In 2017, 40% of Americans met their partners online

US heterosexual couples who met online, by year of meeting

Source: Stanford/GfK, 1995-2017
I went on the @bumble dating sight and they closed my account. 😳 italiani
Some users reported that it couldn’t possibly be me!
Hey @bumble, is being me exclusionary? 😆
Don’t shut me out of the hive 🐝

12:38 am · 30 Dec 2019 · Twitter for iPhone

4K Retweets  43.1K Likes
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
Example: expanding the ‘two-sided marketplace’ model

A model that only worked for narrow segments a decade ago now expands 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)

- RoW
- US

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?

Global installed base, 2019 (bn)

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

- Hate speech
- Encryption
- Filter bubbles
- Political advertising
- Abuse of market power
- CSAM
- Face recognition
- AI Bias
- Ride share
- Radicalisation
- Fake News
- Elections
- Privacy
- Elections
- CSAM
- Political advertising
- Abuse of market power
- Hate speech
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- AI Bias
- Ride share
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- Fake News
- Encryption
- Filter bubbles
- Every month there’s something else to worry about
- Now we have issues.
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
Coverage of real issues is accompanied by a steady flow of stories that don’t stand up to scrutiny

Also included: a classic moral panic

‘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'

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

Source: Companies, Zenith, @BenedictEvans
Amazon has a third of ecommerce, but is that really the competition?

What’s Amazon’s market share: 35% or 5%?

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
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.

More competition in the ad market

Split apart Instagram or YouTube

Little impact on network effects or product competition
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.

US Federal industry-specific regulation index, 2014

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

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

- Retail deposits
- Public securities markets
- Insider trading
- Credit cards
- Pensions
- Capital adequacy
- Mortgages
- Futures & options
- And so much more…
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
- Catch state ‘bad actors’
- Empower competitors
- Trustworthy information
- Moderate ‘bad’ content
- Secure, private, minimal data collection
All of these are trade-offs

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

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

Benedict Evans — January 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.

Source: Alex Stamos
What does ‘bad’ mean?

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

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

Do we know what we want?

- Innocuous
- Rude?
- ???
- Offensive?
- Illegal

Totally public

???

 Totally private
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
- Rude?
- ???
- Offensive?
- Illegal

Totally public

???

Totally private

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Jeremy Corbyn
@jeremycorbyn

A man was murdered by British Police in Broad daylight.

#LondonBridge
14:45 · 29 Nov 19 · Twitter for Android
China, digital sovereignty and digital extraterritoriality
“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

Smartphone users, June 2019 (bn)

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
There will be many more TikToks

The US can no longer assume that every hot new thing will be made in the US
China and the NBA...
And every other brand

‘Don’t forget Taiwan is part of China’
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
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?
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 tech gets industry-specific regulation

Railways → Industrial food → Ships, aircraft, cars, databases... → Internet
Tech has changed its attitude...

The ideology of tech has changed, and AI has changed what’s possible, but some things remain impossible

“Censorship is bad”

Yes to moderation...
But whose decision is it?

“We can’t moderate 100bn messages a day”

AI changes this...
If we also hire 30k human moderators

“You can’t build a secure platform with a back door”

You can’t build a secure platform with a back door
Regulating tech is complex and full of tradeoffs. But, this is true of all regulation – law and policy are the art of the possible.

And this also needs new understanding in policy...

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
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

Benedict Evans
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