The Great Unbundling

Benedict Evans
January 2021
www.ben-evans.com
Welcome to 2021
What matters in tech?

- COVID acceleration
- The Great Unbundling
- Harder problems China
- Tech becomes a regulated industry
COVID acceleration
Shock

In the USA, employment fell over 20m, and is still down 9m from 2019

Net year-on-year change in the US labour force (m)
Ecommerce steps forward 5-10 years

Lockdown has pulled forward a huge amount of future adoption

Ecommerce as a share of addressable retail*

* Excluding cars, car parts, fuel, bars & restaurants. Seasonally adjusted

Source: ONS, US Census
The ecommerce reset

UK ecommerce is now 40% of retail revenue, excluding grocery (which needs a different supply chain)

UK retail sales* excluding grocery (average weekly by month, £bn)

Source: ONS
* Excluding cars, car parts, fuel, bars & restaurants. Seasonally adjusted
Online grocery sales have doubled

Forced adoption, forced experiment

Source: ONS
Forced experiment, forced adoption

Breaking habits - everyone is forced to try things for the first time

Growth of grocery delivery during Covid

Source: McKinsey
Video broke through
UK video call adoption doubled during lockdown

Source: Ofcom
Forced experiment: working from home?
What happens once the novelty wears off? What works better and what get broken?

Maximalists
‘Global distributed company’

Moderates
3-4 days a week in the office?

Questions
Collaboration?
Social capital?
Training?
What does WFH mean for retail? Office rents?

WFH for a day a week means 20% less footfall. What does that do?

Source: BLS
How much business travel stays on Zoom?

Short trips for one meeting with someone you know are dead - but what else?

Business travel volume, 2018

Source: Expedia
Cambrian explosion in remote tools
How do collaboration and social capital work remotely? No, not just another video call

Zoom
$110bn

Hopin
$2bn in 18 months

And hundreds of others
Towards an exit...

There is announced supply for 8bn vaccinations in 2021, if they can be administered

Announced 2021 vaccination supply (bn)

Source: Companies
A decade in a year
Towards a ‘new normal’

- Macro, political, social, cultural, fiscal shock
- Forced acceleration, forced experiment
- Broken habits
The Great Unbundling
“I’m a terrified dinosaur...

I’ve been living in this cozy world of old brands, big volumes, nothing changing very much, and you could just focus on being very efficient and you’d be okay, and all of a sudden we are being disrupted in all ways”

Jorge Paulo Lemann, Kraft Heinz
2018
$25tr - and nobody knows anything

Every part of the retail and media journey is being unbundled
The traditional view of ecommerce

There's retail, and some of that goes online, and some already has. Simple...

Source: US Census
But is that a useful split?

‘Ecommerce’ penetration is spread so widely in different categories that aggregate numbers don’t mean much.
Much more useful: ecommerce as logistics

Cardboard boxes versus hand delivery, trucks and bikes

US retail revenue by delivery model, 2019 ($bn)

Source: US Census
Much more useful: ecommerce as logistics
Cardboard boxes versus hand delivery, trucks and bikes

US retail revenue by delivery model, 2019 ($bn)

Source: US Census
Parcels: Amazon replaces the post office

A third of all US parcels are now delivered by Amazon’s own logistics network

US parcel deliveries, July 2020

Source: ShipMatrix
Delivery: how many logistics models?

General ecommerce is almost all shipped by parcel, but half of food is collected or delivered.

Source: IRI
Restaurants - arbitrage

Delivery cost versus labour and rent efficiency (dark kitchens) - if the density, food model and experience make sense

US restaurant spending, 2019 ($bn)

Source: Technomic, Company Data, Morgan Stanley, NRA
Delivery employment already has doubled
Rebalancing and unbundling the logistics model - the USA added 225k delivery drivers in 2020

Source: BLS
Oh yes - what about Amazon?

Amazon’s revenue grew 37% in 2020

Source: Amazon
Ecommerce as logistics

What’s Amazon’s market?

Source: US Census
Ecommerce as logistics

What’s Amazon's market?

US retail revenue by delivery model, 2019 ($bn)

- Could be parcels
  - Amazon
  - Other ecommerce

- Could be custom delivered or collected

Source: US Census
Ecommerce as logistics

Amazon has 35-40% of US ecommerce, but what’s the real market?

Source: US Census
Meanwhile - bundling and unbundling

Amazon Marketplace is now ~60% of ecommerce GMV

Third party as share of Amazon GMV

Source: Amazon, @BenedictEvans
Chinese supply chain bundles and unbundles?

Chinese suppliers use Amazon (and other marketplaces) to go direct to the end customer

Source: Marketplace Pulse
But who needs Amazon? Shopify goes direct

Shopify has come from nowhere (well, Canada) to over $100bn of GMV in 2020

Source: Shopify
Why does Shopify matter?
A software tool that rides a structural shift in the market

“No-one can compete with Amazon”

“Wasn’t this already solved?”

Brands and consumers ready to go direct
Lockdown drives a wider funnel
Consumers are broadening online shopping behaviour

US online product search by channel

Source: Activate
As the internet moves up the funnel
From price comparison to expertise and recommendation

Source: Google Trends
Accelerate the inevitable

The US is massively over-stored - Latam is massively under-stored

Source: Costar
Brands go digital, or go direct

B2B businesses learning new channels, and learning B2C

Ecommerce as % sales, 2020

Source: Companies
Nike goes direct

Nike has the brand, product and scale to go direct to its customers

- Left Amazon in 2017 after a 2 year trial
- 40% revenue is D2C and 22% is Nike.com
- #1 global fashion site with 150m uniques

Source: Nike, Similarweb
The ecommerce margin question

Ecommerce changes retail and brand leverage

**Retailer**
Fulfilment is an extra cost added to the fixed cost of stores

**Big brand**
Fulfilment is cheaper than a retailer’s 50% margin

**New brand?**
Marketing + fulfilment versus marketing + retailer margin

?
How do you reach your customers? Why?

US brands & retailers spend $7-800bn to reach their customers

**Logistics**
“How do I get it?”

- Retail rents?
  - $250bn
- Parcels?
  - $130bn
- Advertising?
  - $200bn
- Marketing?
  - $200bn
- Returns?
  - 25-50%

**Discovery**
“What do I want?”

Source: Pitney Bowes, Zenith, Costar
Disrupted retail, meet disrupted advertising
Reshaping advertising and marketing

Yes, print and internet - but look at the top line

Source: McCann, Zenith, BLS, @BenedictEvans
Does ‘online advertising’ really exist?

Platforms give efficient proprietary targeting. And then there’s everything else...

Source: Company data, Zenith, GroupM, @BenedictEvans
Does ‘online advertising’ really exist?

Platforms give efficient proprietary targeting. And then there’s everything else...

Source: Company data, Zenith, GroupM, @BenedictEvans
Amazon’s sales tax

Amazon has built a $15bn+ ‘search ad’ business (retailers just call this marketing)

Source: Amazon
(Yes, these are big questions for ad agencies)

Source: AMC
The ‘cookie apocalypse’

The basis of aggregated interest targeting for 20 years is going away, with no clarity on a replacement.

- EU/CA + Apple & Google limit cookies
- Privacy! But also: less relevance less ad revenue
- Many proposals but no clarity on what comes next
The problem with cookies

No-one would really defend the cookie model today. But...

| Source: ISBA/PwC |

<table>
<thead>
<tr>
<th>Sector</th>
<th>Ad spend</th>
<th>Agency</th>
<th>DSP</th>
<th>Demand side tech</th>
<th>'Unknown'</th>
<th>SSP</th>
<th>Supply side tech</th>
<th>Publisher revenue</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Ad spend</strong></td>
<td>100%</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Agency</strong></td>
<td>7%</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>DSP</strong></td>
<td></td>
<td>8%</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Demand side tech</strong></td>
<td></td>
<td></td>
<td>10%</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>'Unknown'</strong></td>
<td></td>
<td></td>
<td></td>
<td>15%</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>SSP</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>8%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Supply side tech</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1%</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Publisher revenue</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>8%</td>
</tr>
</tbody>
</table>
A ‘winners take most’ market?
Unclear how advertising will function outside of top sites and platforms

Platforms
Google/FB/Amazon can target internally

Big publishers
1st party data: New York Times has the scale to track internally

Independents
No cross-site aggregation = much less money?
If you even need advertising...

Old: leverage celebrity with endorsements. New: found a company

Kylie Cosmetics
$900m valuation

Fenty Beauty
$600m sales in 15 months

Tesla
No ad budget, but...

Source: Companies
“Well, at least we have TV”
TV is dead, long live TV

US pay TV penetration is down a third from the peak

Source: Company data, FCC, US Census, Netflix, @BenedictEvans
Show me the money

New entrants outspending most legacy content manufacturers

Source: Morgan Stanley
Lockdown accelerates the change

Netflix and YouTube are each bigger than total UK live TV, for 16-24s

Source: Ofcom
Netflix - a $5bn swing

Surge in lockdown subscriptions has taken Netflix to breakeven after years of heavy content investment

Free cash flow ($bn)

Source: Netflix
Netflix breaks 200m subs (mostly outside the USA)

Unbundling the old geographic rights model as well as the cable model

Source: Netflix
Disney breaks in

Disney+ signed up close to 90m subscribers in the first year

Source: Netflix, Disney
(And takes over the movie business)

Disney movies took more than half the revenue from the top 25 releases in 2019

Source: IMDB
“There are two ways to make money. You can bundle, or you can unbundle”

- Jim Barksdale
The great unbundling

Everyone wants to go direct. Not all will succeed

All the old value chains break up
Everyone wants to go direct

But most consumer brands are B2B businesses

Now everyone wants customer relationships
And DATA
Is that a tech company?

Or a TV / retail / consumer / fashion / CPG company - on the internet?
What’s the real opportunity?
In 1980, IBM was a $80bn company*. Now the opportunity is, well, everything.

*1980 revenue in 2020 dollars

Source: World Bank, Zenith, @BenedictEvans
Harder problems
Let’s look at that consumer spending

Circa $50bn of global consumer spending in 2019 (i.e. pre-Covid)
Moving to harder problems

First 20 years: information arbitrage.

First 20 years
Tickets, listings, price comparison

Global consumer spending
From selling data to changing industries

First 20 years: information arbitrage. Second 20 years: change entire industries with software

First 20 years
Tickets, listings, price comparison

Second 20 years
Netflix, AlphaFold, Uber, Tesla, Airbnb

Global consumer spending
Software eats cars?

Tesla’s market cap is now close to the entire auto industry (!)

Source: Bloomberg

* Top 40 OEMs and suppliers by market cap (EV is higher)
The root cause - collapsing battery costs

EV battery prices have fallen 89% in a decade, driven by volume

Source: Bloomberg NEF
All cars will be electric. But...

Everyone in the auto industry agrees the market is switching. Less clear what that means

5-10x fewer moving parts

(Battery prices still need to fall by another third)

Then - is this software, or scale manufacturing?
Not just cars

The Bastø Electric carries 600 passengers and 200 cars

4 MWh battery system

Norway will have 58 electric ferries by the end of 2021

Source: Bastø Fosen
Equally, collapsing solar costs

Solar PV prices have fallen 82%

Source: IRENA
And wind

Onshore wind prices fall 40% in a decade - offshore (with less leverage) down 30%
Putting it on commercial terms with fossil fuel

From science project to product

Energy cost (LCOE, 2019 USD/kWh)

Source: IRENA
Becoming real
Global installed base share of solar PV + wind has increased 4x since 2010

Global electricity generation capacity

Source: IRENA, IEA
(Tech won’t save the world, but…)

A third of emissions come from sectors where tech is changing things

Source: UN

Global greenhouse emissions, 2017
Plant-based meat?  
Leather?
Moonshots?

SpaceX has cut launch costs by at least 5x

Source: Jones/NASA
From rockets to HAL9000

2010: “Machine learning is a dumb idea from the 80s - don’t bother.”

Source: Stanford AI index
None of these people exist

These faces are algorithmically generated by a machine learning system

Source: ThisPersonDoesNotExist
Computational biology

How many places does ‘find patterns in data’ solve new problems?

Source: Pubmed, stateof.ai
And one more thing

China is both the largest investor in renewables and the largest emitter of greenhouse gasses.

Source: IEA
China and the end of the American internet
What does ‘China’ mean for tech?

A Rorschach Blot for the 21st century

Geopolitics

Geopolitics and tech

China as a new centre of innovation?
Geopolitics and superpowers

China is on track to become a bigger industrial economy than the USA (or thinks it is)

Source: World Bank
Americans worried about Japan once...

But in the Great Japan Panic of the 1980s, Japan was a pacifist democracy with only half the USA's population

Source: World Bank
Geopolitics and tech

China already the centre of the tech supply chain

Source: UN Comtrade
“China has all the AI!”
China is producing a high volume of research papers...

Source: Elsevier
Where is the research that matters?

However, it’s less clear what their real value is

Source: Elsevier
Huawei and the supply chain question

Ignoring ‘5G’ hype - should you depend on the goodwill of today’s Chinese state for any basic infrastructure?

Source: Company data, Morgan Stanley
But elsewhere, market share or value share?
iPhones are made in China, but most of the components come from elsewhere

Source: MGI, BarCap
Chips with everything
Semiconductors have been a Chinese policy focus for a decade, but with little to show so far

Global semiconductor demand, 2018

- Chinese chips
- Chinese companies, foreign chips, Chinese manufacturing
- Foreign companies, foreign chips, Chinese manufacturing
- Demand outside China

Source: SMIC
Tech sovereignty?

Semiconductors have been a Chinese policy focus for a decade, but with slow progress

Source: SIA
Moving up the value chain?

Takes time and money, but rarely impossible

Chinese smartphone panel shipment share

Source: IHS

Benedict Evans — January 2021
“Who was that transistor salesman?”

Charles de Gaulle, President of France, after meeting Hayato Ikeda, Prime Minister of Japan, 1962
Meanwhile - a market with 1bn users

The end of the ‘American’ internet

Source: Apple, Google, CNNIC, @BenedictEvans
Meanwhile - a market with 1bn users

(Which ‘China’ are we talking about?)

Source: Apple, Google, CNNIC, @BenedictEvans
Very different market structure

Far more overlap, far more copying, different bases of competition

US model: Vertical category winners

China model: Conglomerates compete on everything

Leapfrog 20th century infrastructure

Ferocious competition, copying and creation
Big market = (very) big companies

A law of large numbers

Source: Companies, Goldman Sachs
Leapfrogging 20th century infrastructure
Ecommerce, payments, entertainment, financial services, credit scoring...

Chinese consumption payments (RMB tr)

- Fintech
- Bank card
- Cash

Source: Goldman Sachs
Remember restaurant delivery?

410m Chinese people used restaurant delivery in 2020

Source: Companies, CNNIC
Yes, but why do we care?

Conquest, copying, learning? Chinese companies (mostly) don’t go global, so far, but ideas do

Does WeChat go global? (No)

Can Messenger copy WeChat and be a ‘super-app’? (No)

Spread of tipping, short video, live streaming, app integrations...
Where do ideas come from? Where are companies built?

With 4bn+ people connected, where do new ideas come from?

Smartphone users, 2020 (bn)

Source: Apple, Google, CNNIC, @BenedictEvans
90% of Facebook’s daily users are outside the USA

India, not the USA, is Facebook’s biggest market by users

Source: Facebook
The end of the American internet

China and India each have more mobile data traffic than the USA and Europe combined

Mobile data consumption (EB/month)

Source: Ericsson, CNNIC
The India take-off

The state of internet adoption in 2020

- 450m smartphones
- 400m video viewers
- 100m online shoppers
- 25m online food delivery customers

Source: TRAI, company data
India: cheapest data and highest use on earth

The Jio effect

Source: Nokia, Ericsson
A wave of unicorns

India has a word for entrepreneur

Top 10 Indian startups by value ($bn)

Source: Bloomberg, press reports
And then there’s Indonesia

More markets, more people, more creation

- 4th largest internet population on earth
- 200m+ smartphone users
- 4 hours+ a day in apps
- 50% ride share penetration

Source: ITU, company data, AppAnnie, @BenedictEvans
And Latam...

650m people, 90%+ smartphone penetration, 5% ecommerce penetration...

Source: Mercado Libre
Even... Europe?!

Over 120 new $1bn+ tech companies have emerged in Europe in the last decade, today worth $600bn+

Source: Dealroom, company announcements, Mosaic Ventures
Where do you go to see the future?

‘The future is here, but it’s unevenly distributed’

1995
Finland
Mobile

2000
Japan
Mobile web

2010
San Francisco
Smartphones

China?
India?
Brazil?
Tech becomes a regulated industry
Tech was very small until very recently

Tech was exciting and interesting, but wasn’t part of most people’s daily lives

Source: Gartner, ITU, Apple, Google, CNNIC, @BenedictEvans
Welcome to 2021
Software ate the world, so all the world’s problems get expressed in software

And channeled, amplified and reshaped
All sorts of problems
Every month there’s something else to worry about
And some giant companies

In global, winner-takes-most markets with 4-5bn potential customers, winning creates a big company

Source: Bloomberg
(No, this has not killed startup creation)

Tech startup creation is up 3-4x in a decade, powered by a much larger market and the growth of enabling platforms

Source: NVCA
Every wave of tech changes the world, and gets regulated

Every important industry causes and expresses problems, and gets industry-specific regulation
But we don’t actually regulate ‘cars’

Lots of different regulation for different issues and companies

- Safety
- Emissions
- Supplier & dealer contracts
- Drink driving
- Speed limits
- Parking & congestion
- Urban planning
- Public transit
- And so much more...
Break up big auto!

Not everything is an antitrust problem - or an engineering problem

‘Regulate cars’

<table>
<thead>
<tr>
<th>Safety</th>
<th>Emissions</th>
<th>Supplier &amp; dealer contracts</th>
</tr>
</thead>
<tbody>
<tr>
<td>Drink driving</td>
<td>Speed limits</td>
<td>Parking &amp; congestion</td>
</tr>
<tr>
<td>Urban planning</td>
<td>Public transit</td>
<td>And so much more...</td>
</tr>
</tbody>
</table>
This was not an antitrust problem

Car companies could reduce emissions, but they couldn’t build cycle lanes

Source: Cornelia Dinca
Pattern recognition

What happens when you regulate natural monopolies, or just sue them? It’s complicated

**Mobile operators**
Regulating MTRs & roaming cut earnings by ~25%

**Broadband**
LLU gave up to half the market to new entrants

**Microsoft**
“Lawsuits failed, but slowed it down”
(Much disputed)

Regulate adtech? Store commissions?
Wholesale access to Google search data?
How many lawsuits?
Yes, but what actually changes?

If you don’t own stock in Google or Spotify, the big change will be the shift to a regulated world.

- Google / FB ad business gets hammered
- Competitive search?
- Ex ante rules
- Regulation, cost and compliance
The only certainty: regulation as a regressive tax

Regulation tends to be good for incumbents

Mean compliance costs at US financial institutions by size

Source: Dahl, Meyer and Neely 2016
Conclusion:
The next 50 years
The first 707... Where did it all go wrong?

Design, technology and speeds unchanged since 1958

And the experience...

The death of innovation?
But something has changed

In 1958, a PanAm New York - London economy return cost $4,100 in 2020 dollars

Source: IACO
Better and cheaper (if not faster)

Airline fatality rate per mile was 200x higher in the 1970s

Source: IACO, ASN
And the same for cars

Cars have looked much the same for 50 years, but they’ve become vastly safer, more efficient and less polluting.

Source: NCHS
First 50 years, second 50 years

Cars created far more billionaires outside the car industry than in it

First 50 years:
How do planes work?  How do cars work?

Second 50 years:
What happens when everyone has this?

Walmart, McDonalds, suburbia, freeways, global travel (the good & bad)
First 50 years, second 50 years

Tech used to sell accounting tools to big companies - now it’s part of our life

Mainframes
Big companies

PCs
All companies

Web
Middle-classes

Smartphones
Everyone

Systemically important part of society
Thank you

Benedict Evans
January 2021
www.ben-evans.com