The end of the beginning
The end of the beginning

Global adult penetration

Source: Apple, Google, a16z, TMW, ITU, World Bank

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The end of the beginning

Global penetration

Source: Apple, Google, a16z, TMW, ITU, World Bank
Most people are online...
But most of the money is not

New problems
Tackling harder markets and changing them more

New structural layers
After search & social, now ML and Crypto
Market sizes
Ecommerce is big in dollar terms

Quarterly US ecommerce revenue ($bn)
But still only just reaching 10% of US retail spending

US retail spending, 2017 ($tr)
Now add restaurants....

US retail spending, 2017 (tr)

- Bars & restaurants: 6 tr
- Physical retail: 5 tr
- Ecommerce: 1 tr

Source: BLS
And think about what happens to gas stations

US retail spending, 2017 ($tr)

Source: BLS
And the $1.2tr spent on cars

US retail spending, 2017 ($tr)
Meanwhile, there’s more than just retail

US spending, 2017 ($tr)

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Source: BLS
What's the opportunity?

US spending, 2017 ($tr)

Retail: 4%
Digital advertising also looks big...

Global advertising, 2018 dollars ($bn)

Source: Zenith
Internet is now the largest segment of US advertising...

US advertising, 2018 ($bn)

Source: Zenith
And advertising doesn’t change much

US advertising as % US GDP

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Source: Gelb
But what about marketing?

US advertising and marketing, 2018 ($bn)

Source: Zenith
But what about marketing?

US advertising and marketing, 2018 ($bn)

Source: Zenith
Reaching customers
Old definitions, new use cases

Pay for placement on Amazon
“Advertising”

Pay for placement in Walmart
"Marketing"
And what do you really pay to reach a customer?

US budgets, 2018 ($bn)
Globally, $1tr is spent on “what should I buy?”

Global sales & marketing, 2018 ($tr)

- Internet: 0.25
- Print: 0.50
- TV: 0.50
- Other advertising: 0.25
- Direct: 0.75
- Events: 1.00

Source: GroupM
And where else is the opportunity?
The spread of industrialisation

Global manufacturing production

<table>
<thead>
<tr>
<th>Year</th>
<th>UK</th>
<th>USA</th>
</tr>
</thead>
<tbody>
<tr>
<td>1830</td>
<td>0%</td>
<td>0%</td>
</tr>
<tr>
<td>1860</td>
<td>0%</td>
<td>25%</td>
</tr>
<tr>
<td>1913</td>
<td>50%</td>
<td>75%</td>
</tr>
</tbody>
</table>

Source: WTO
The spread of industrialisation

Global manufacturing production

- 1830: UK
- 1860: UK, USA
- 1913: USA
- 2015: UK

Source: WTO
The spread of industrialisation

Global manufacturing production

USA

UK

1913

2015

0%

25%

50%

75%

Source: WTO
The spread of industrialisation

Global manufacturing production

- United States (USA)
- United Kingdom (UK)
- China

1913:
- USA: 75%
- UK: 25%

2015:
- China: 75%

Source: WTO
The spread of computers

Global installed base

- Computing capacity, 1993
  - USA: 75%
  - Europe: 25%

- Smartphones, 2018
  - USA: 0%
  - Europe: 75%
The spread of computers

Global installed base

Computing capacity, 1993

- USA: 25%
- Europe: 50%
- China: 75%

Smartphones, 2018

- USA
- Europe
- China

Source: IMD, WEF, CNNIC, q16x
The spread of use

Mobile data traffic (exabytes/month)

North America

Western Europe

APAC

All other

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Source: Ericsson
The spread of spending power

Global middle class* (billions of people)

Source: OECD. *Global middle class defined as daily expenditures between $10 and $100 per person in PPP.
And the spread of spending online

Global ecommerce ($tr)

<table>
<thead>
<tr>
<th>Region</th>
<th>2005</th>
<th>2016</th>
</tr>
</thead>
<tbody>
<tr>
<td>USA</td>
<td>0.1</td>
<td>0.7</td>
</tr>
<tr>
<td>Western Europe</td>
<td>0.3</td>
<td>0.6</td>
</tr>
<tr>
<td>China</td>
<td>0.2</td>
<td>1.2</td>
</tr>
<tr>
<td>All other</td>
<td>0.1</td>
<td>0.6</td>
</tr>
</tbody>
</table>

Source: McKinsey
USA in the middle of the pack

Ecommerce share of retail spending, 2017

Source: Goldman Sachs, ONS
Global company creation

- Google
- Apple
- Facebook
- Amazon

TTM Revenue growth vs. TTM Revenue ($bn)

Bubble size = users

Source: Bloomberg, companies
Global company creation

TTM Revenue growth

Bubble size = users

Google

Facebook

Netflix

Amazon

Apple

Source: Bloomberg, companies
Global company creation

Bubble size = users

TTM Revenue growth

TTM Revenue ($bn)

- Google
- Amazon
- Apple
- Tencent
- Facebook
- Baidu
- Netflix
- Alibaba

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Source: Bloomberg, companies
Unicorns are born outside Silicon Valley!

Last reported valuation ($bn)

- Bytedance
- Meituan
- Didi
- Chuxing
- Lufax
- Spotify
- Flipcart
- DJI
- Grab
- Ola

Source: Press reports, companies, Bloomberg
Venture spreads outside the USA
Share of venture investment by value

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Source: CAE, Pitchbook
What’s the opportunity?

Market size, 2017 ($tr)

US ecommerce  US retail

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Source: BLS
What’s the opportunity?

Market size, 2017 ($tr)

- US ecommerce: $450bn
- US retail: $10bn
- Retail: $20bn
- Consumer spending: $40tr

Source: BLS, World Bank

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New problems
From easy to hard?

First 20 years

- Things that work with low penetration and little capital
  - Low touch goods
  - Selling tools
  - Information arbitrage

Next 20 years

- Things that need high penetration and lots of capital
  - High touch goods
  - Full stack
  - Information businesses
New problems: restaurant listings to restaurant delivery

Low capital needs
Selling tools
Information arbitrage

High capital needs
Building the full stack
Information as system
New problems

Global consumer spending

- Housing
- Transport
- Food
- Entertainment
- Household
- Clothes
- Health

$40tr

Source: World Bank, UN
New problems

First 20 years

- Symptoms
- Mail-order books
- Tickets
- Listings, mortgage comparison

$40tr

Next 20 years

- Editing DNA
- Netflix
- Grocery delivery
- Airbnb, autonomy
- Mortgages, houses, liquidity

Global consumer spending

Source: World Bank, UN
Two models of retail

Packets versus preference

Retail as logistics
Sears, Walmart

Retail as tastemaker
Boutiques, big cities
So far, the internet has mostly tackled logistics

Packets versus preference

Retail as logistics
Sears, Walmart
Amazon

Retail as tastemaker
Boutiques, big cities
New waves of logistics

Packets versus preference

Retail as logistics
  + Same day delivery
  + Free delivery
  + Groceries

Retail as tastemaker
And pushing into new kinds of decision

Packets versus preference

Retail as logistics

Retail as tastemaker
(All of which will affect the USA more than most...)

Retail square feet per capita, 2017
“Ecommerce is asset-light”
Amazon business plan, 1994:
“No warehouses, no stock, no shipping”
“Ecommerce is asset-light”
New problems: groceries

US market size, 2017 ($tr)

Groceries breaks the Amazon model, and the whole ecommerce mode can’t be bolted onto a commodity logistics platform.

Needs a whole new platform.

But so big it’s worth it.
(And the USA is behind, again)

Online groceries, 2018 ($bn)

Source: ISD
(And the USA is behind, again)
Online groceries, 2018

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More interesting: changing groceries

Items stocked (000)

Different buying journeys mean different baskets

Different brands, SKUs and SKU counts

Shift from advertising to marketing?

Source: efgz, Walmart
New kinds of decision

Packets versus preference

Retail as logistics

Retail as tastemaker
The internet lets you buy anything you could buy in New York.

It doesn’t let you shop the way you can shop in New York.
Bringing tastemaking to the internet

Instagram & YouTube + Rental, subscription, delivery, returns, AR/VR + “Rent is the new CAC” + Machine learning
Things that shouldn’t work

**Fashion**
“Online? Really?”

**Warby Parker**
“Glasses? Showrooms?!”

**Cosmetics**
“Makeup you haven’t tried?!!”
New problems?
What have we really done so far?

First 20 years

- Ecommerce
- Advertising

Next 20 years

- Everything else
What’s the opportunity?

Market size, 2017 ($tr)

- US ecommerce: 0
- Global GDP: 75
Tesla eats cars?

Quarterly unit deliveries (000)

Model 3
Models S & X

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Source: Tesla
Tesla eats cars?

Q3 2018 US car sales (000)

- Tesla
- Lexus
- Mercedes
- BMW
- Audi
- Lincoln
What’s the real opportunity?

Q3 2018 US car sales (m)

Source: Autonews, Tesla
More interesting: software and silicon eat cars

Component cost share

<table>
<thead>
<tr>
<th>Component</th>
<th>Chevy Bolt</th>
<th>Forecast 2025 battery cost decline</th>
<th>Generic ICE car</th>
</tr>
</thead>
<tbody>
<tr>
<td>Battery (LG)</td>
<td>0%</td>
<td>25%</td>
<td>50%</td>
</tr>
<tr>
<td>Powertrain (LG)</td>
<td>25%</td>
<td>50%</td>
<td>75%</td>
</tr>
<tr>
<td>Tier 1s</td>
<td>50%</td>
<td>75%</td>
<td>100%</td>
</tr>
<tr>
<td>OEM</td>
<td>75%</td>
<td>100%</td>
<td></td>
</tr>
<tr>
<td>Raw materials</td>
<td>100%</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Forecast 2025 battery cost decline
More interesting: changing what cars are
Software and batteries are unbundling cars and car journeys
Software eats TV?

Non-sports programming spend, 2017 ($bn)
Is Netflix a threat?

“Is the Albanian army going to take over the world?”

- Jeffery Bewkes, CEO Time Warner, 2010
More interesting: what is TV?

Global audience, 2018 (m)

- Youtube Games
- Twitch
- Netflix
- HBO
- ESPN
More interesting: what’s an ‘opening weekend’?

Record global opening weekend sales (\(\text{\$m}\))

- Red Dead Redemption 2
- Avengers 3
- Fast and the Furious 8
- Star Wars 7
- Jurassic Park 4

Source: Rockstar, boxofficemojo
E-sports are big...

Annual viewers, 2017 (m)
But the money is not, yet

Annual viewers and revenue, 2017

<table>
<thead>
<tr>
<th>Sport</th>
<th>Annual viewers (m)</th>
<th>Revenue (RH, $bn)</th>
</tr>
</thead>
<tbody>
<tr>
<td>E-Sports</td>
<td>150</td>
<td>1</td>
</tr>
<tr>
<td>NFL</td>
<td>250</td>
<td>10</td>
</tr>
<tr>
<td>NBA</td>
<td>200</td>
<td>5</td>
</tr>
<tr>
<td>MLB</td>
<td>100</td>
<td>2</td>
</tr>
<tr>
<td>NHL</td>
<td>50</td>
<td>1</td>
</tr>
</tbody>
</table>

Source: Newzoo, Goldman Sachs
And where is that viewing going?

Average daily minutes of consumption per person, USA
Software eats money?

$33bn of investment in fintech startups in H1 2018

Old: price comparisons (lightweight, information arbitrage)

New: credit scores (information processing, full stack)

Just scratching the surface

Source: Deloitte
What’s the real opportunity?

Global market size, 2017 ($tr)

- Payments: 2
- Retail banking: 2.5
- Insurance: 4.5

Source: McKinsey, BCG
There’s a lot of money in money

Global market size, 2017 ($tr)

- Payments
- Retail banking
- Insurance
- Housing

And yet lots of people untouched

Global population, 2017

Different customers, different needs

Totally new models to address these people

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Source: FDIC, World Bank
And yet lots of people untouched

Global population, 2017

Different customers, different needs

Totally new models to address these people

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Source: FD/C, World Bank
(and the USA is behind)

Mobile payment penetration, 2018

- USA: 25%
- China: 100%

Mobile payment value, 2017 (tr)

- USA: 0 tr
- China: 12 tr

Source: PwC, CNNIC, eMarketer, MIIT
New kinds of solution

- Vastly more data
- Different consumer expectations
- Unbundling
- Machine learning
Software eats death?

Drug discovery
$75bn

Machine learning transforms discovery

Social and wearables transform trials

Programming genes and cells means new kinds of cure
What’s the real opportunity?

Annual spending, 2017 ($tr)

- Drug discovery: $75bn
- Drug market: $1tn
- Global health insurance: $2tn
- US healthcare: $3tn
- Global healthcare: $7.2tr

Source: W-0, a16z
More interesting: software changes what bio can address

$75bn

Creation
New ways to discover drugs

$7.2tr

Diagnosis
Diagnose at earlier stages, saving lives and money

Prevention
Whole-life tracking, management and health

?
$7.2tr is spent on healthcare

But what’s the total cost of being sick?

And what’s the value of not getting sick?
New layers
Organising the internet

AOL
‘Information superhighway’
Interactive TV

Internet and the web

Google
Facebook
Organising the internet

- Google
- Facebook

- Centralised
- Capture intent, meaning and value
- Highly abstracted
Organising the internet

- AOL
  ‘Information superhighway’
  Interactive TV

- Internet and the web

- Google
  Facebook

- Machine learning
  Crypto
What is this?
Old: abstraction and extrapolation

Google
It’s on pages that say “Wishbone” and “Hans Wegner”

Facebook
People who like furniture shared links to this

Amazon
It's a SKU. I don’t understand the question
New: levels of meaning

It’s a chair!

It’s a modern Scandinavian design classic

OK, we won’t show you any more Disney Cruises ads
And not just about consumer

This X-Ray shows early-stage cancer

This pattern of 400 metrics suggests an imminent heart attack

Change your behaviour or you risk a heart attack within a year
Machine learning as tools to scale people

**Scaling people**

“A million interns to look at a million pictures”

**Superpower**

"One intern looks at a million pictures"
Crypto?
1993: “Why does ‘the internet’ matter?”

Distributed, decentralised, permissionless network where anyone can build applications
Early share in tools and application layers did not last

What applications?

- Sun
- Mac
- Windows
- Linux (9%)
- FTP
- Telnet
- Usenet
- E-Mail
- Gopher
- WWW (3%)

Web servers, 1995

Internet traffic, 1993

Source: MSNW, Microsoft
2018: “Why does ‘crypto’ matter?”

Distributed, decentralised, permissionless network where anyone can build applications

With native trust, value exchange and payment
Organising the internet

- **AOL**
  - ‘Information superhighway’
  - Interactive TV

- **Google**
  - Facebook

- **Machine learning**
  - Crypto
New organising layers

- Machine learning
- Crypto

New ways to find meaning and intent

New ways to build networks connecting desires, behaviour and value

Decentralised and permissionless

(And a market reset)
The end of the beginning
“I sell books”
“I sell books”  “I sell whatever I want”
Thank you