Algorithmic Democracy: Opportunity or Threat?

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Orwell vs. Huxley

"In **1984** people are controlled by inflicting pain. In **Brave New World**, they are controlled by inflicting pleasure." (N. Postman)

Outline

1. The economy of «big data»

2. Social consequences of «big data» economy

3. Consequences for freedom and democracy

4. Is there a solution to these problems?

5. Concluding remarks: Orwell or Huxley?

The economy of «big data»

29 October 2019

3,516,939,503
Videos viewed today
on YouTube

41,122,973
Photos uploaded today
on Instagram

69,561,075
Tumblr posts today

2,344,888,246
Facebook active users

756,490,716
Google+ active users

353,102,743
Twitter active users

259,624,442
Pinterest active users

180,996,377
Skype calls today

68,902
Websites hacked today

https://www.internetlivestats.com/

4,376,144,621
Internet Users in the world

1,724,567,956
Total number of Websites

128,363,795,158
Emails sent today

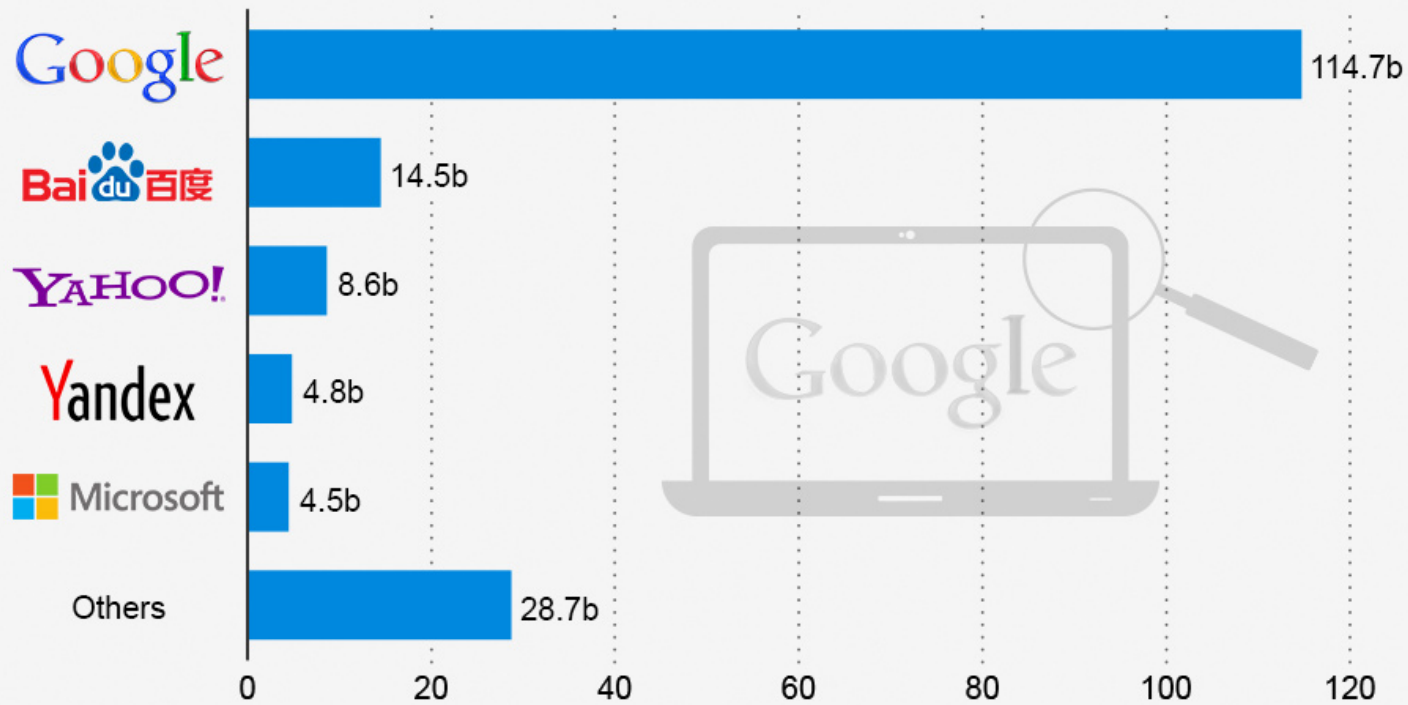3,386,578,602
Google searches today

3,228,354
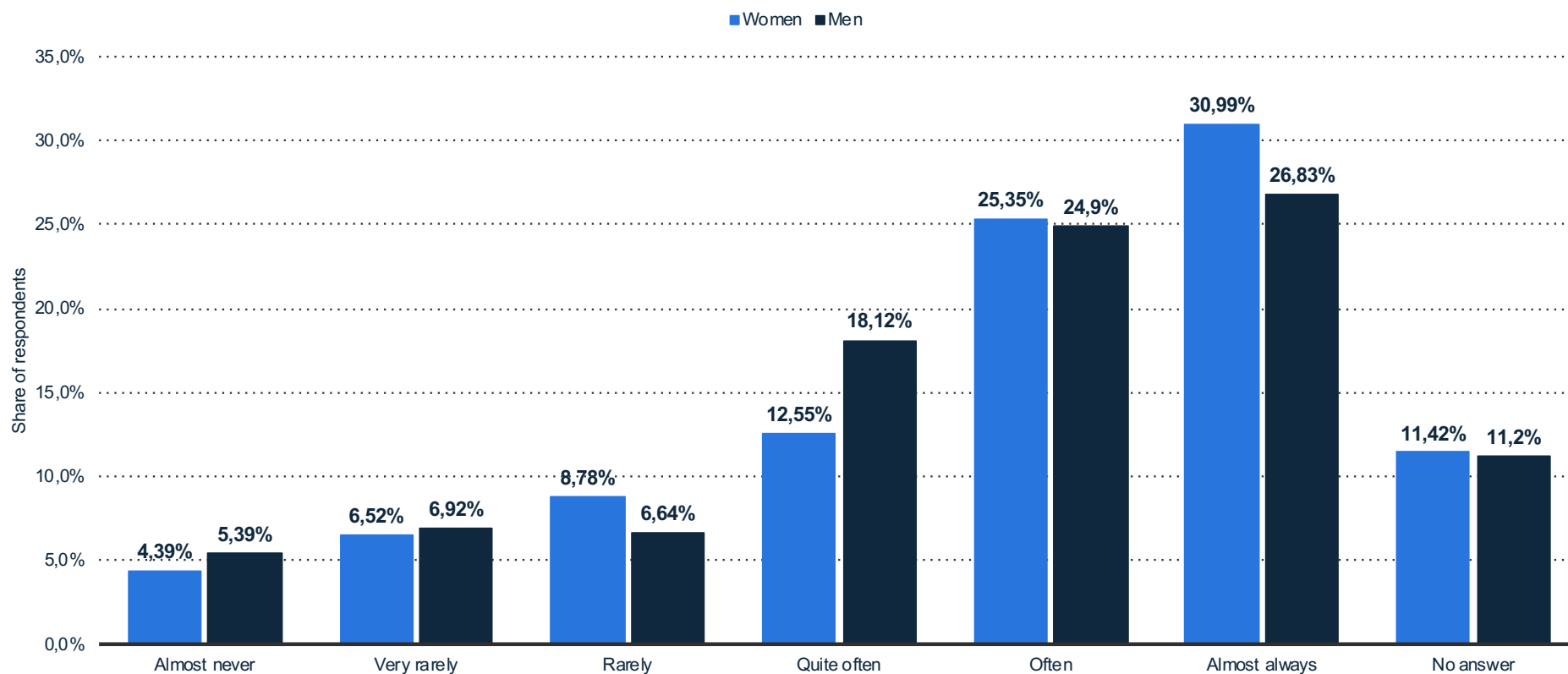Blog posts written today

377,253,952
Tweets sent today

Google Handles 115 Billion Searches a Month

Number of searches handled by search engines worldwide in December 2012 (in billions)

Share of individuals using search engines as information source in Italy in 2018, by gender

■Women ■Men

	Almost never	Very rarely	Rarely	Quite often	Often	Almost always	No answer
Women	4,39%	6,52%	8,78%	12,55%	25,35%	30,99%	11,42%
Men	5,39%	6,92%	6,64%	18,12%	24,9%	26,83%	11,2%

Share of respondents

Global active usage penetration of leading social networks as of February 2019

Share of respondents

Facebook	64%
WhatsApp	45%
Facebook Messenger	37%
Instagram	32%
Twitter	21%
Snapchat	12%

0,0% 10,0% 20,0% 30,0% 40,0% 50,0% 60,0% 70,0%
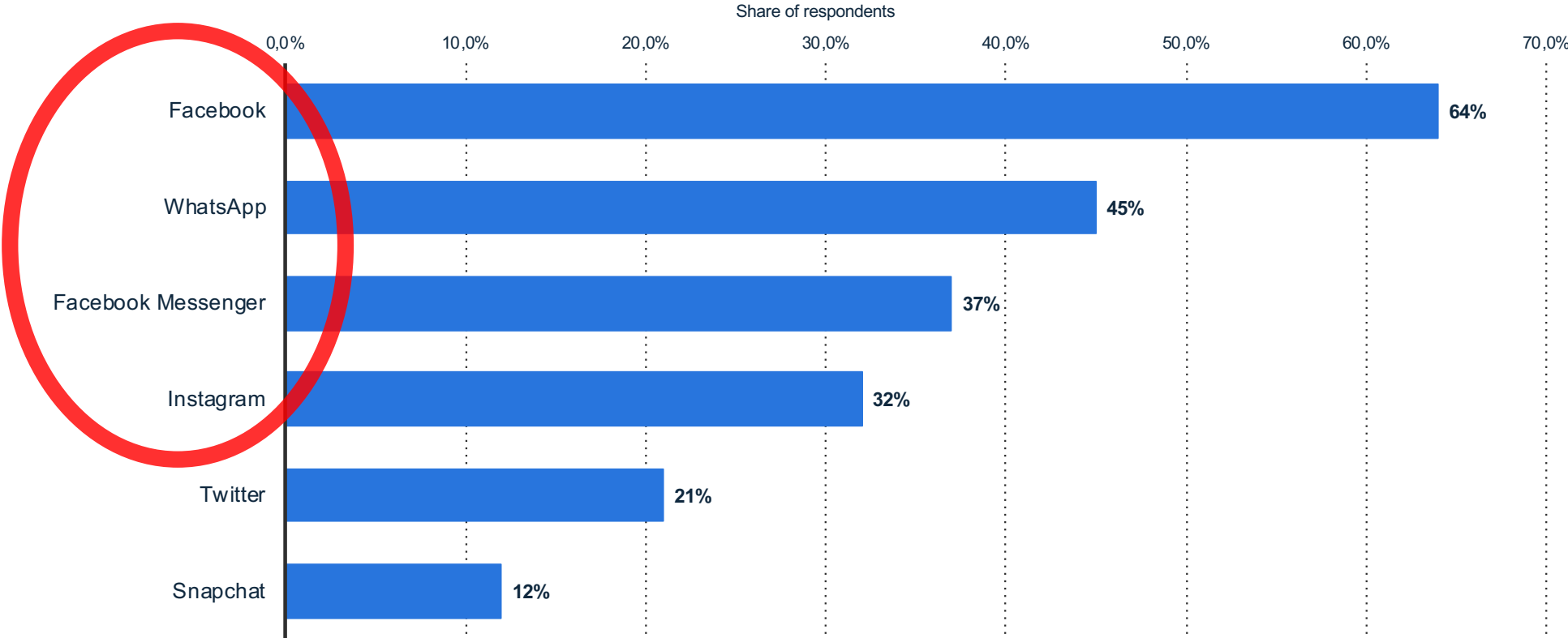
Note: Worldwide; January to February 2019; 24,735 Respondents; used for any purpose last week
Further information regarding this statistic can be found on page 8.
Source(s): Reuters Institute for the Study of Journalism; YouGov; ID 274773

Global digital population as of July 2019 (in millions)

Worldwide digital population as of July 2019

Note: Worldwide; July 2019
Further information regarding this statistic can be found on page 8.
Source(s): We Are Social; DataReportal; Hootsuite; ID 617136
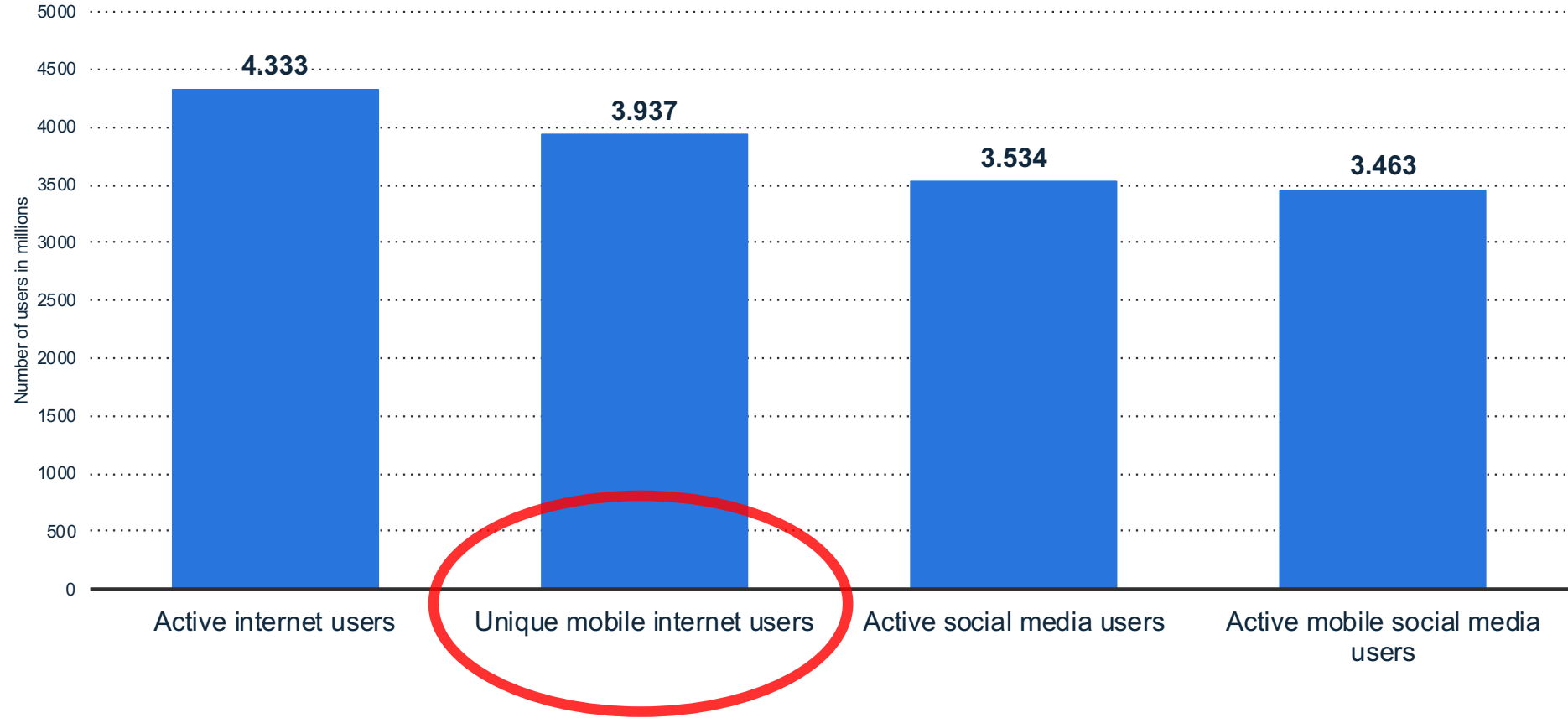
Number of social network users worldwide from 2010 to 2021 (in billions)
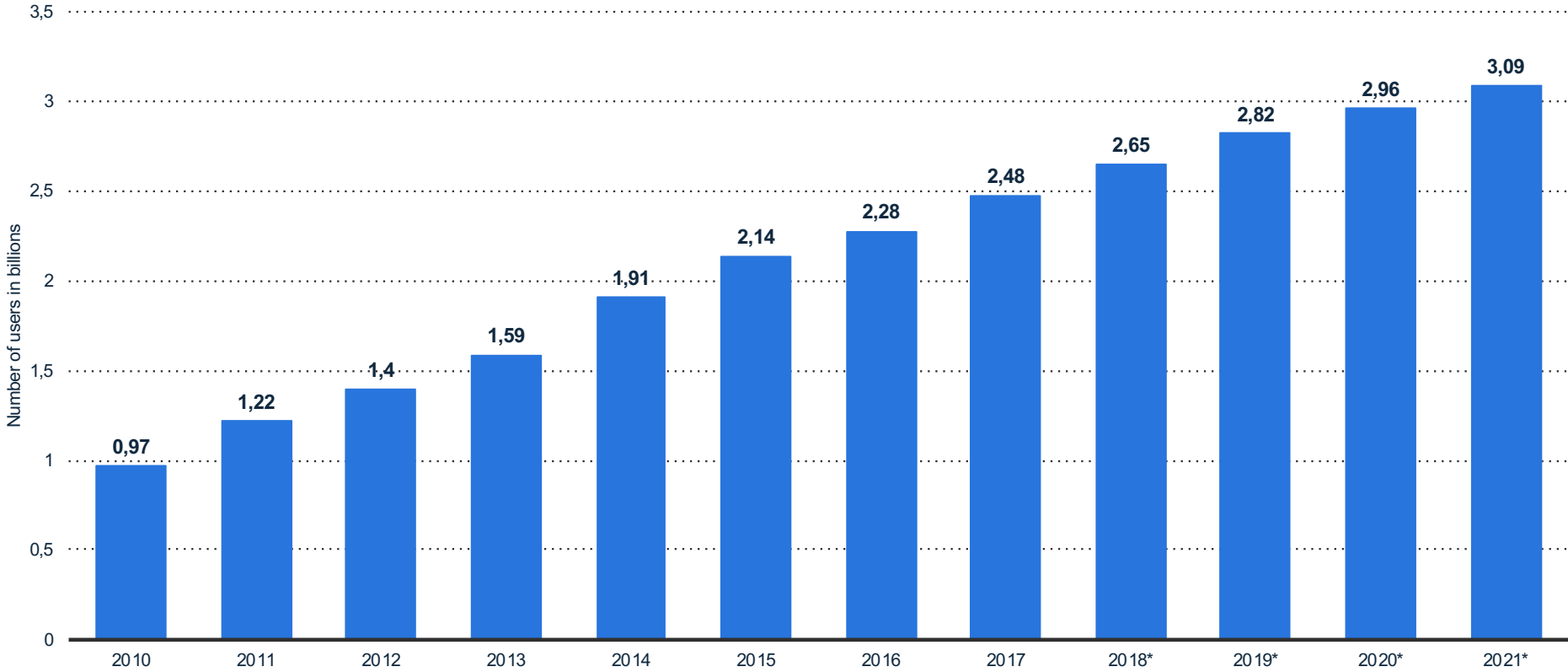
Note: Worldwide; 2010 to 2017
Further information regarding this statistic can be found on page 8.

2

12

Leading countries based on number of Facebook users as of July 2019 (in millions)

Countries with the most Facebook users 2019

Number of Facebook users in millions

Country	Users
India	270
United States	190
Indonesia	130
Brazil	120
Mexico	82
Philippines	68
Vietnam	58
Thailand	46
Egypt	38
Turkey	37
United Kingdom	37

Share of individuals who used online social networks every day or almost every day in the European Union (EU 28) from 2011 to 2017

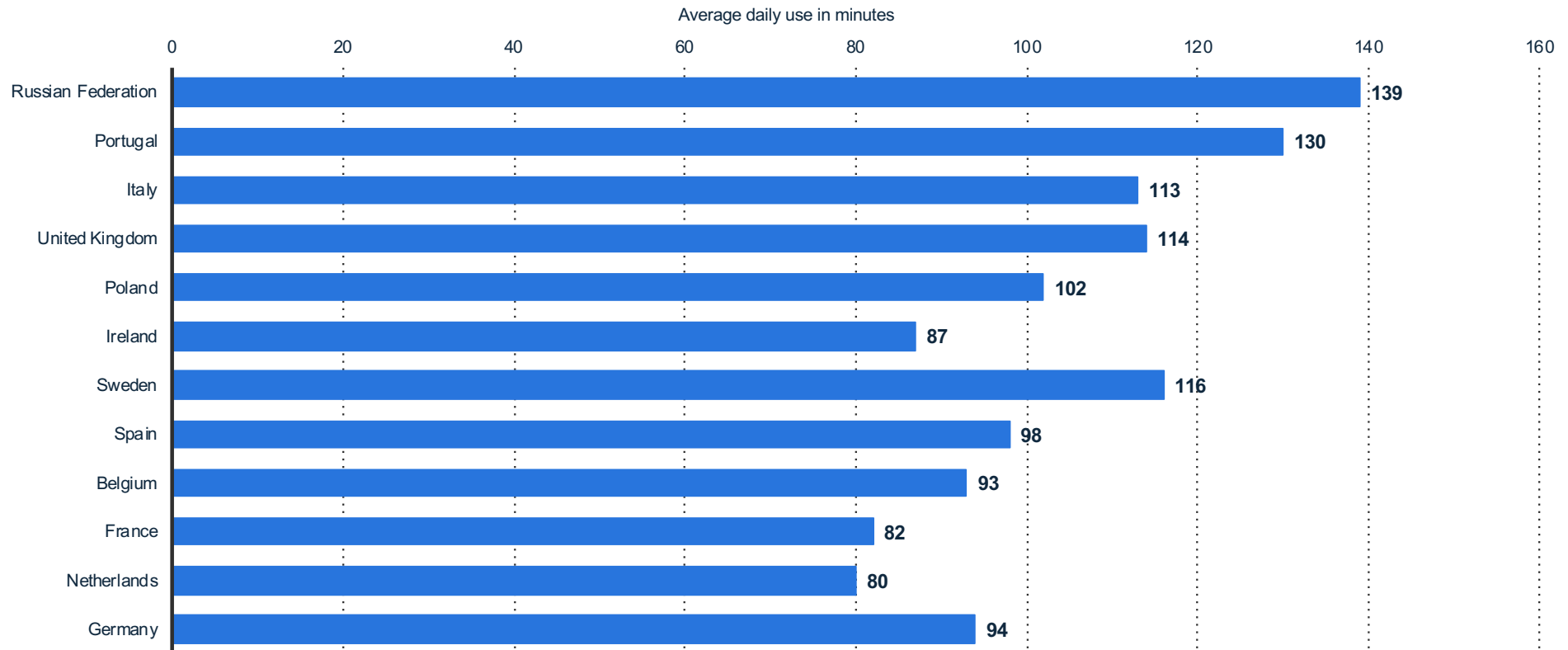Penetration of daily online social network consumption in Europe 2011-2017
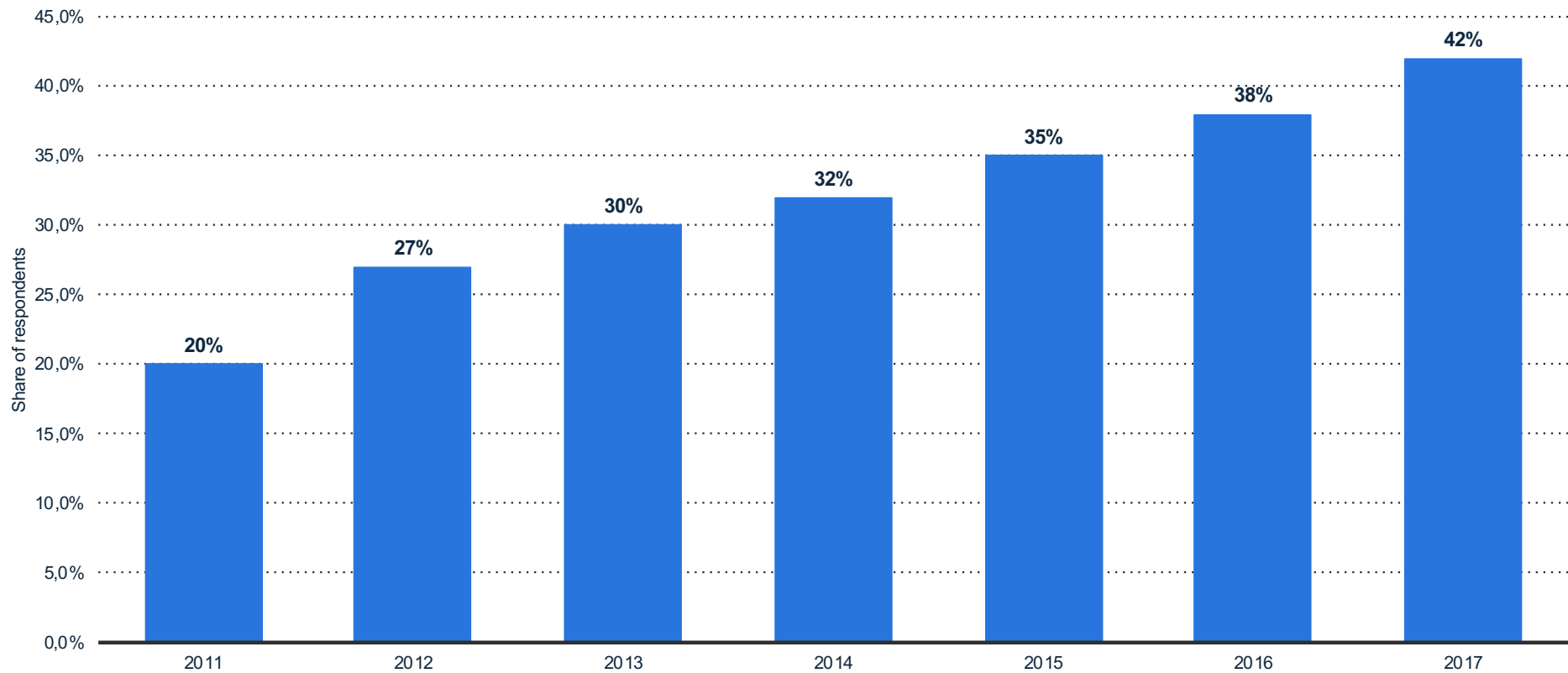
Average daily social media use via any device in selected European countries in 2017 (in minutes)

Average daily social media use in selected European countries 2017

Average daily use in minutes

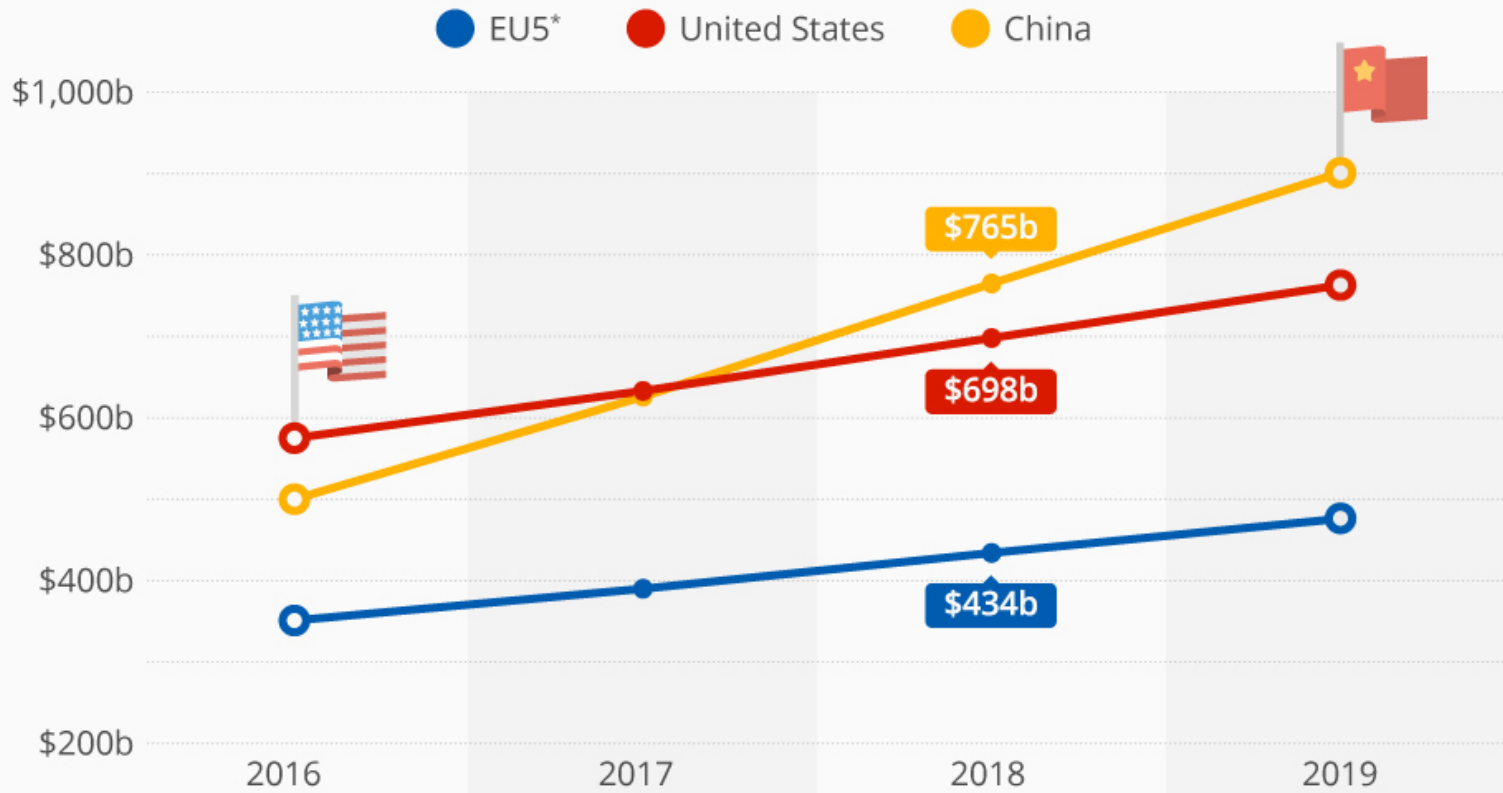| Country	Minutes
Russian Federation	139
Portugal	130
Italy	113
United Kingdom	114
Poland	102
Ireland	87
Sweden	116
Spain	98
Belgium	93
France	82
Netherlands	80
Germany	94

Note: Belgium, France, Germany, Ireland, Italy, Netherlands, Poland, Portugal, Russia, Spain, Sweden, United Kingdom; 2017; 16-64 years; internet users.
Further information regarding this statistic can be found on page 37.

China Will Be the World's Largest Digital Market by 2018

Digital B2C market revenue forecast (e.g. e-commerce, e-travel and digital media)

● EU5* ● United States ● China

$1,000b

$765b

$800b

$698b

$600b

$434b

$400b

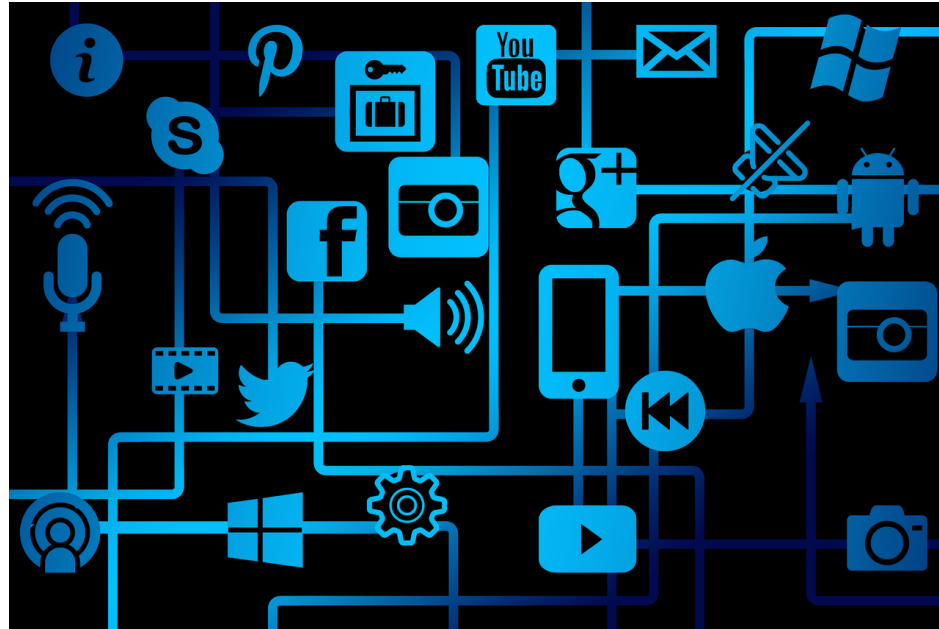$200b

2016 2017 2018 2019

* Germany, France, UK, Italy, Spain
@StatistaCharts Source: Statista Digital Economy Compass

statista

16

Conclusions: a rising-up economy!

Social consequences of "big data" economy

In the Middle of a Technological Upheaval

- Wiener's prophecy: "controlling economy and society by the means of suitable feedbacks"

- **Google Hadoop (2007): "**datification".

- Everything is becoming intelligent: artificial intelligence and big data

- From "automation of production" to "automation of society"

- Singapore's example: a data-controlled society

- We are waiting for supercomputer, yet non-supercomputers are already doing much of the work.

- Opportunities and risks: **manipulation; totalitarianism.**
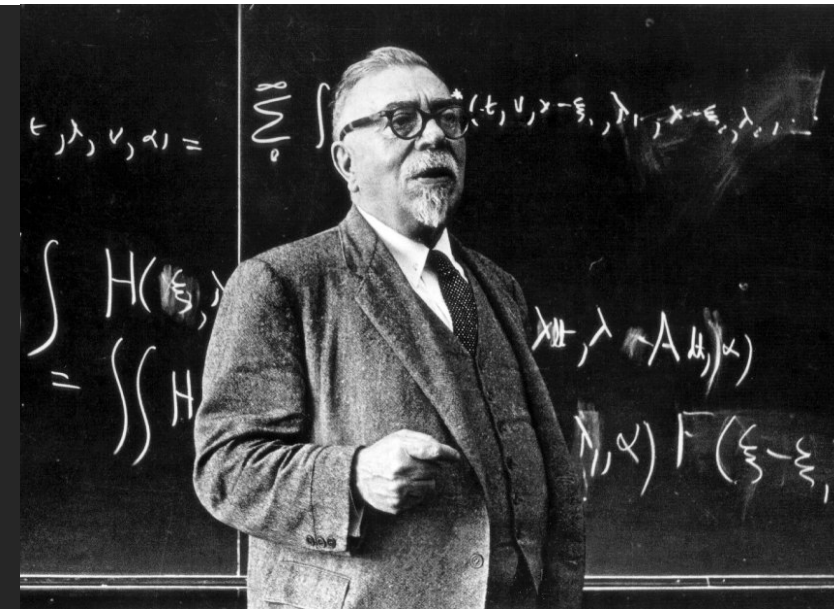
Futurism

SUPERCOMPUTERS
To Moore's Law and Beyond

19

Attention economy

How can I induce you to do what I want?

Those who manage information have the strongest hold on the economy—and the social order.

These operators have another problem: to catalyse human attention.

(Every economy has a scarce resource.)

If you don't pay for the product, you are the product! (Which part of you?)

Attention is the commodity, and engagement is the currency.

If you don't pay for the product, YOU are the product.

Everything Started Quite Harmlessly...

- Optimization of GOOGLE algorithm: help in finding the content mostly relevant among the noise capturing your attention.

- Personalized suggestions for products and services: relevance; "automated profiling"; filtering tools (comfort zone).

- BUT: mass consumerism means mass **surveillance** – (E. Morozov; S. Zuboff)

- The magic wand: "**Inferred data**" (S. Calzolaio).

- The result: "From programming computers to programming people".

- Nudging and Hyper-nudging (choice architects).
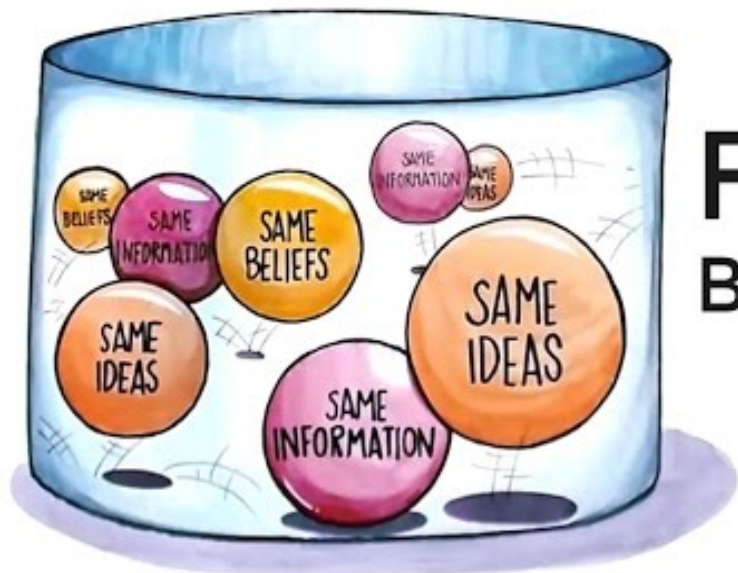
Filter Bubbles

«Filter bubbles» or «Echo chambers effect»

What is a filter bubble?

A side effect or something made by purpose?

Increasing social polarization

This destroys "social cohesion"

Digital bubbles are digital prisons for our thinking

Sociodiversity like biodiversity (resilience)

Kurzweil's prophecy: reversing the concept of search.

Social media do not work the way people think: they are "Weapons of Math Destruction"

- All started with an experiment in 2010 (K. O'Neill's description)
- Digital gerrymandering (later)

- Micro-targeting in political campaigns
- Monopoly of information
- Disinformation
- Manipulation

- "Cambridge Analytica": Brexit and 2016 US presidential elections

Information gerrymandering

Cognitive traps (R. Thaler)

Game theory (strategic behavior)

Each individual has a preferred outcome, but all individuals prefer consensus.

Notwithstanding connections that each individual has, networks can be rewired in ways that lead some individuals to reach misleading conclusions about community preferences.

a **Random network**

Prefers blue

Reciprocal social connection

Prefers orange

b **Filter bubble**

Each participant is influenced by:

4 blue

3 blue, 1 orange

3 orange, 1 blue

4 orange

c **Information gerrymandering**

Each participant is influenced by:

3 blue, 1 orange

4 orange
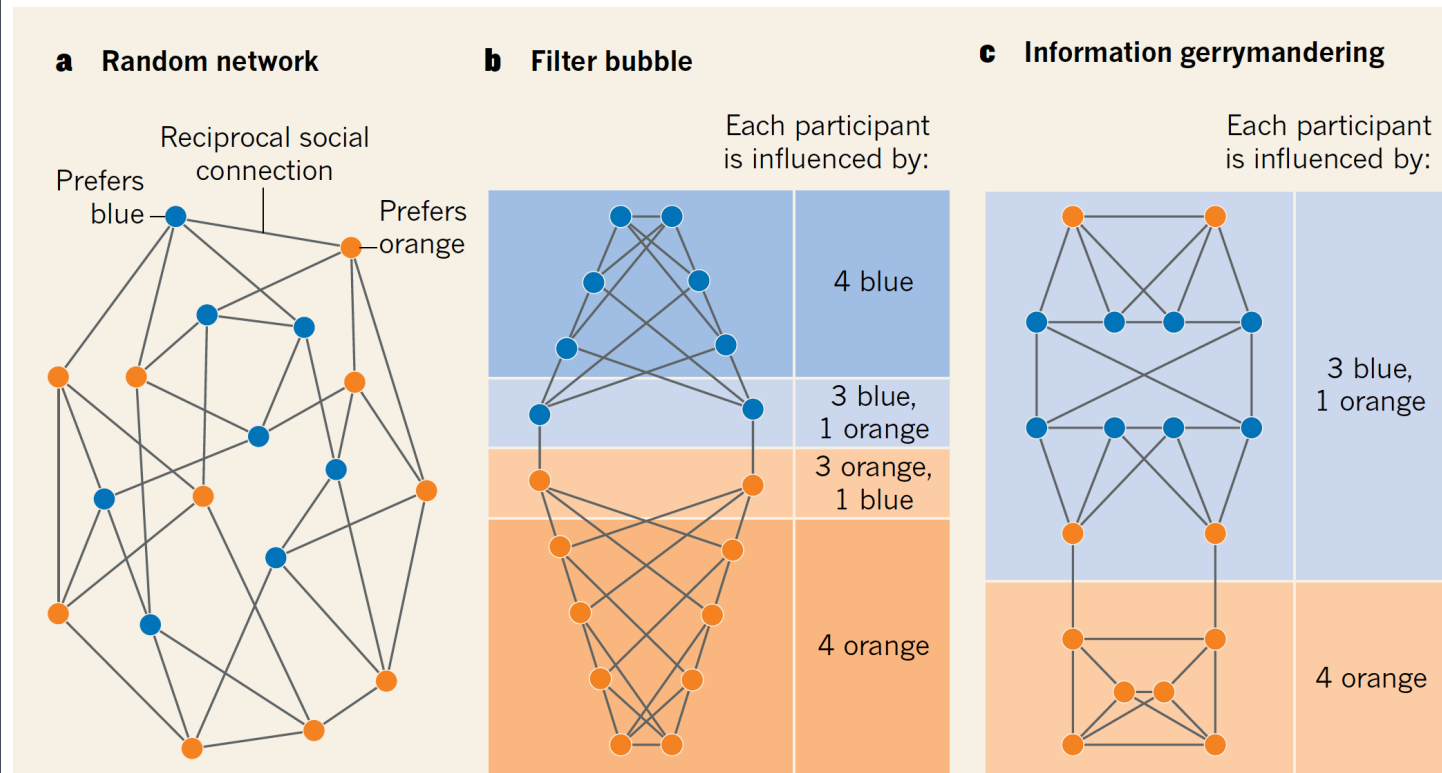
Source: A.J. STEWART, et al., *Information Gerrymandering and Undemocratic Decisions*, in *Nature*, 7772, 2019, 117-121.

Memefication (E. Morozov)

- Google's auto complete
- Twitter Trends
- Facebook's News Feed
- YouTube's Trending videos

- Trolls
- Social bots
- Fake news

The rhetoric on democratization of public discourse…is (quite) gone away

"Eventually, we may reach a point where anyone anywhere can go online anytime, not only to get the information they need but also to actually receive services, complete transactions, communicate with their elected representatives and even to vote." (D. Verton)

➢The idea of "daily-me" (Negroponte)

➢Arab spring: Twitter can bring the revolution.

➢Net-neutrality
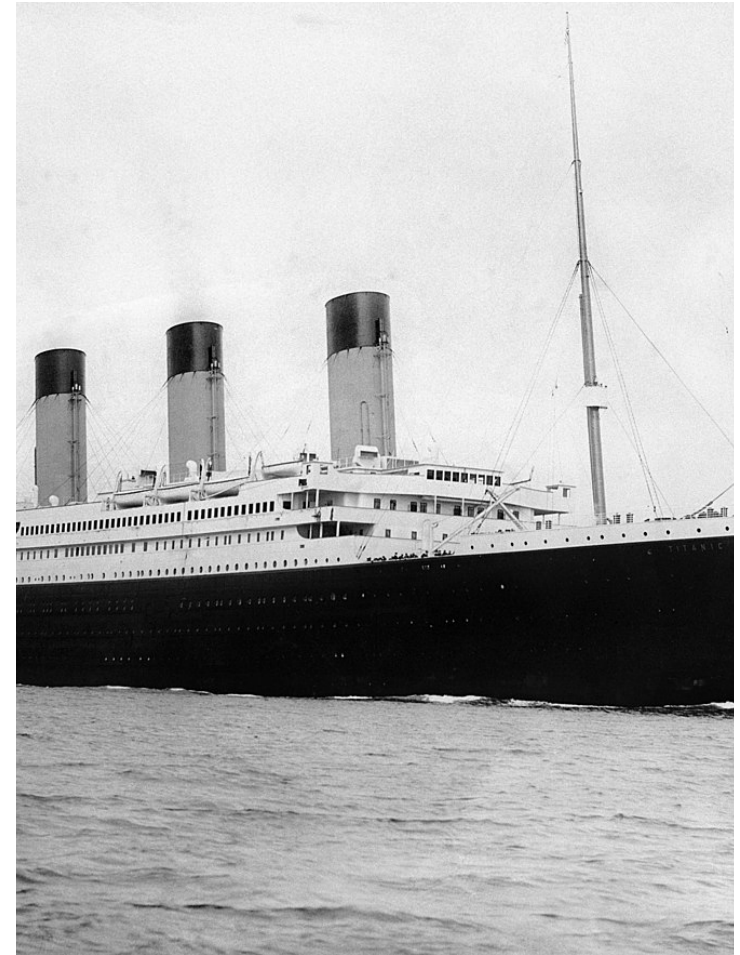
Consequences for freedom and democracy

How freedom is affected by data economy?

Restriction of the "freedom of choice"

We would execute decisions made by others becoming "digital slaves"

"…the system of free expression must do far more than avoid censorship; it must ensure that people are exposed to competing perspectives." (C. Sunstein)

A new idea of interfering with individuals (not an external but an internal power) which is not external but internal to the person (A. Simoncini). This could undermine the basis of "collective intelligence"

The current widespread collection and processing of personal data is not always compatible with data protection laws applicable in EU

Most of the experiments and acts of manipulation before mentioned (e.g. nudging) are made without informed consent or approval by ethics committees

Another (related) set of problems

• Algorithms are not perfect (bias)

• Who really knows how the digital magic wand would function?

• Systemic complexity (such as climate change) is increasing faster than data volumes and ability to process them.

• The Google version of us is very different than the Facebook version. The "multiple" versions of us. (E. Pariser)

• Human behaviour is sometimes unpredictable.

➢ How can we fix it?

➢ How can we assess algorithmic legality?
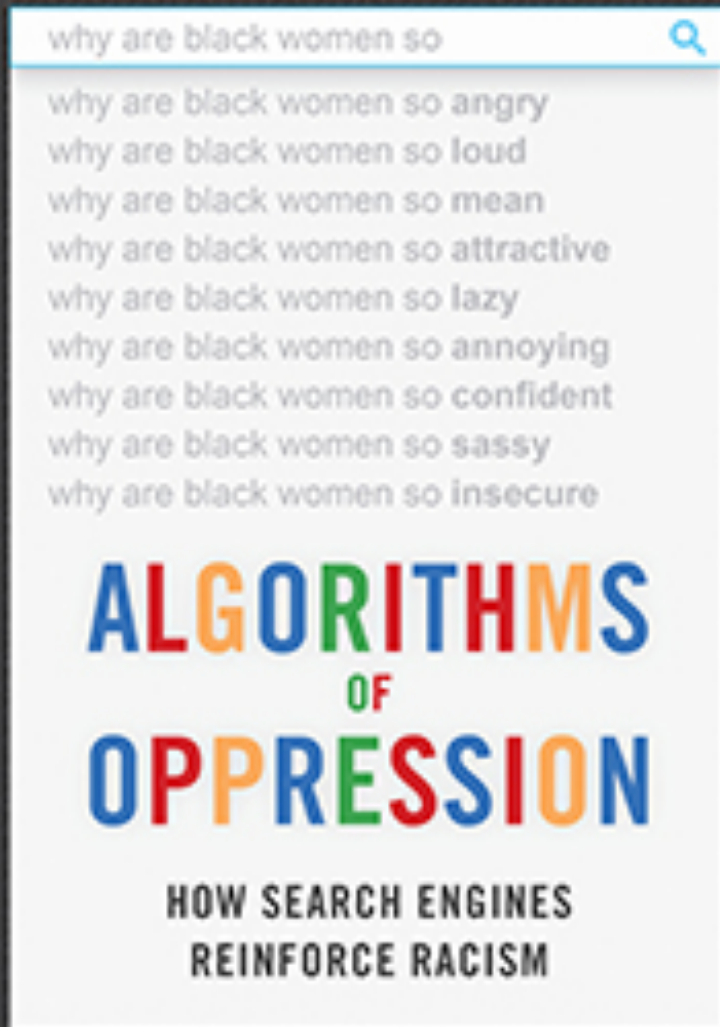
The competition of **techno-politics**

Techno-politics interrogates how technologies are expanding or reinforcing existing horizons of possibility.

It takes seriously the need to critically investigate how different forms and instances of governance exploit technologies - both scientific and social - and to what socialising and political ends.

The prospect of such disruptive 'techno-politics' is particularly important during times of social and economic uncertainty and **crisis** (A. Gramsci).

In this moment technologies are likely to be politically **disruptive**.

➢ ALL THIS CAN BE USED TO EXPLORE AND EXPLAIN THE RISE OF **TECHNO-POPULISM**
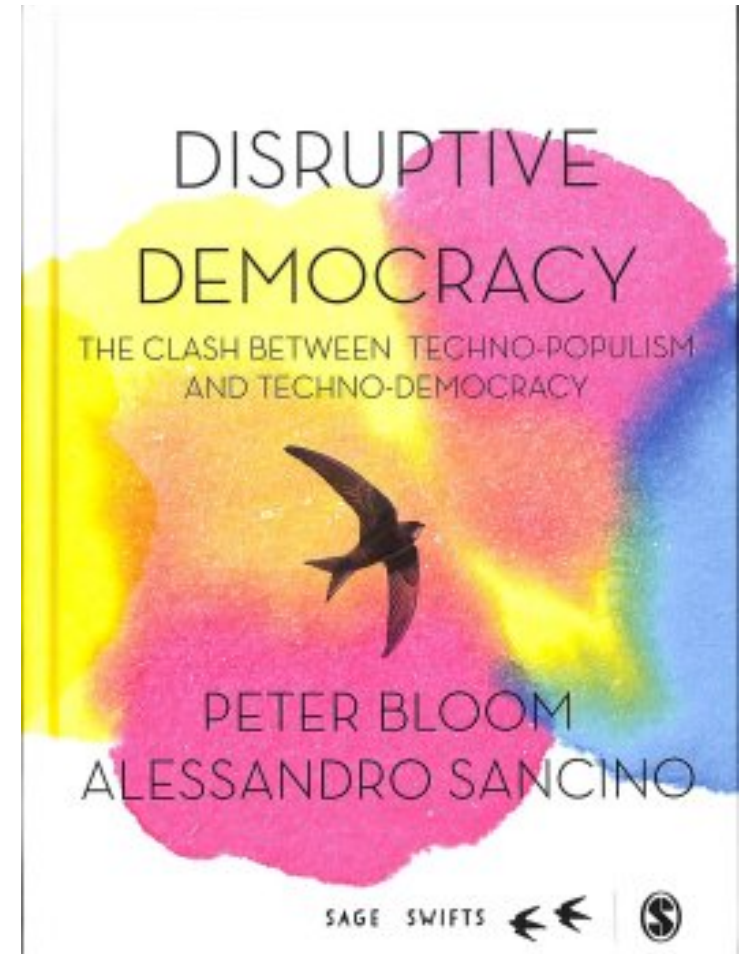
China's «Credit Score»: big data meets Big Brother

«Imagine a world where many of your daily activities were constantly monitored and evaluated: what you buy at the shops and online; where you are at any given time; who your friends are and how you interact with them; how many hours you spend watching content or playing video games; and what bills and taxes you pay (or not) ... now imagine a system where all these behaviours are rated as either positive or negative and distilled into a single number, according to rules set by the government.»

R. BOTSMAN, *Big data meets Big Brother as China moves to rate its citizens*, in Wired UK, 21 October 2017.

How is democracy affected?

▪At the core of democracy there is the capacity and facility for **CHOICE**.

▪Choice needs freedom from monitoring, scrutiny, interference, and categorization by others: **AUTONOMY**.

▪Autonomy concerns not just one's actions, but also the independence and authenticity of the **DESIRES** (values, emotions, etc.) that move one to act in the first place.

▪Desires are vital to the development of **INDIVIDUALITY** and CONSCIOUSNESS of persons' life and choices.

▪Democracy needs meaningful autonomy, which is the capacity and ability for choice (deliberative democracy) as well as **SELF-DETERMINATION** (information and privacy).

34

Threat for self-determination and autonomy

- Freedom of expression
- Free speech
- Intellectual privacy (N. Richards)
- Associational freedoms

- Privacy
- Data protection
- Right to explanation
- Lack of transparency and accountability
- Surveillance
- Independence
- Authenticity

Social sorting and discriminatory practices

➢ SOCIAL SORTING: "obtaining personal and group data in order to classify people and populations according to varying criteria, to determine who should be targeted for special treatment, suspicion, eligibility, inclusion, access, and so on" (D. Lyon)

➢ DISCRIMINATION: Inequality will grow exponentially (E. Morozov).

Conflicts of interest

➢ Google as gatekeeper of information vs. Google as company based on advertising revenues made using us (H. Nissembaum)

➢ Acting as information fiduciaries, online service providers need to take on some responsibility for ordering Internet choices (F. Pasquale).

➢ Lack of transparency.

IS THERE A SOLUTION TO THESE PROBLEMS?

Automated decision-making and personal profiling in the GDPR: "A blunt weapon"
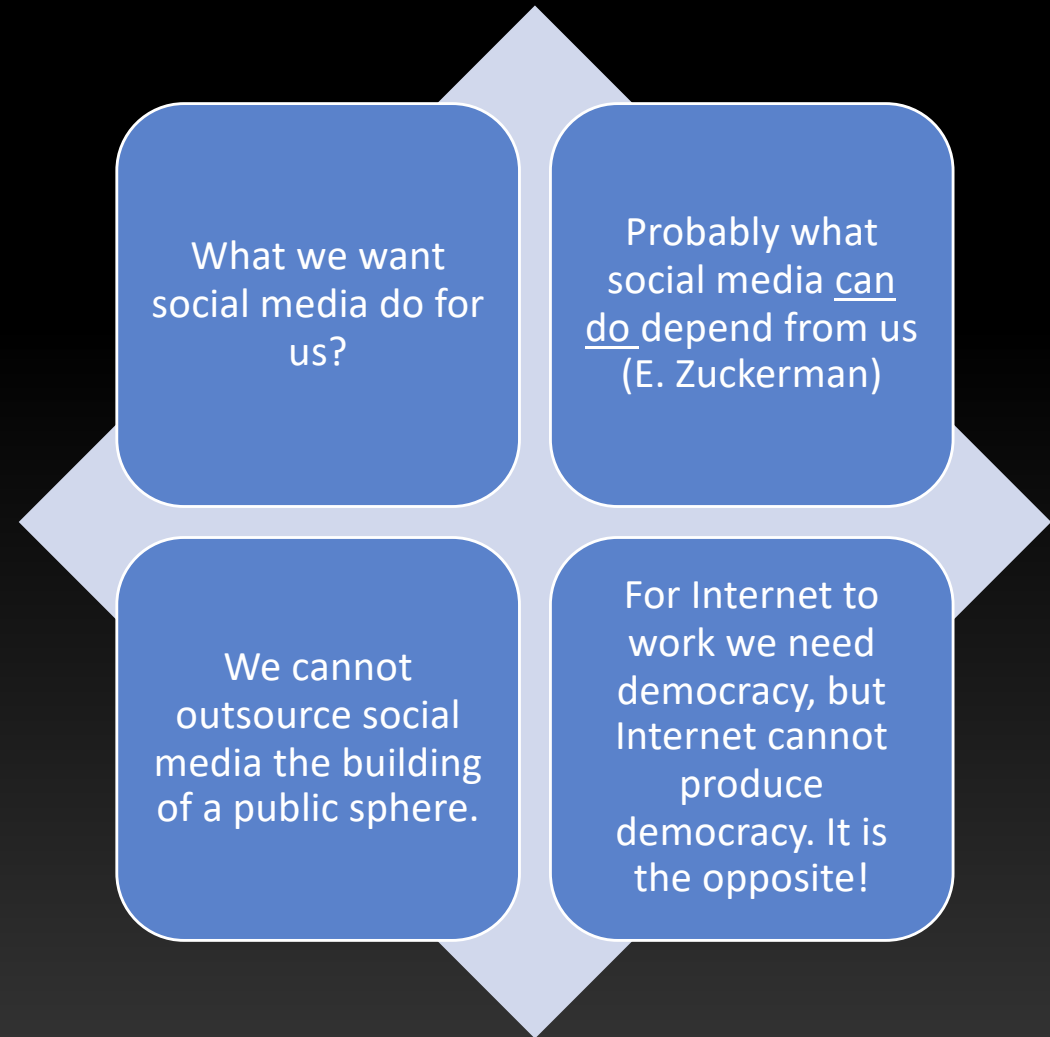
- **GDPR (Europe)**
  - Transparency: only "*ex ante* explanation" (Art. 13.2, 14.2 and 15.1 of the GDPR).
  - "Right not to be subject to a decision based <u>solely</u> on automated processing, including profiling, which produces legal effects…" (Art. 22 GDPR).
  - No right to an "*ex post* explanation" (no transparency?)
  - What is a "<u>decision based solely on automated processing</u>"?
  - What are "legal effects"?
  - Trade secrets, Intellectual property rights, software copyright (Recital 63 GDPR)

- **However**
  - Openness and transparency would be not enough -> We cannot understand how algorithms work unless we don't know how algorithms are trained (and also this is not enough…)

How these tools can return to society's good graces?

What we want social media do for us?

Probably what social media can do depend from us (E. Zuckerman)

We cannot outsource social media the building of a public sphere.

For Internet to work we need democracy, but Internet cannot produce democracy. It is the opposite!

Blockchain

HOW DOES BLOCKCHAIN WORK?

One party requests a transaction.

Requested transactions are funneled into a P2P network and broadcast to each individual computer (or node).

Individual nodes recieve the request and validate the transaction using an algorithm.

Once the block is added to an existing chain, transactions are complete and permanent.

Approved transactions are represented as blocks and added to a public ledger.

G2 CROWD

➢**Problems**
  ➢ Centralized, top-down control is a solution of the past (low complexity).
  ➢ Supporting informational participation.
  ➢ Creating public sphere in an era of algorithms.
  ➢ Reducing distortion and pollution of information.

➢**Solutions**
  ➢ Hyper-democracy and Trust.
  ➢ Blockchain and Disintermediation.

➢**Is this enough?**
  ➢ Utopia?
  ➢ Decentralization with the danger of having "trust without people".

Concluding remarks: Orwell or Huxley?

How not to be manipulated in the way the two authors expressed many years ago?

What law can do to prevent this?

- GDPR (Art29WP)
- New solutions? (e.g. EU Code of Practice on Disinformation)
- F. Pasquale: Federal Search Commission
- J. Balkin: "Information fiduciaries"
- Other solutions…?

• We need a strong legal solution that prevent social media to subtly and sneaky interfering with the democratic process.

• In the meantime:

- We need more *analogic* behaviour and when possible avoid *sneaky*, *free* services.
- Democracy needs informed voters.

• After 50 years, the Internet still remains an "aristocratic" system (by design).