

SciencesPo

Digital Culture

2022–2023

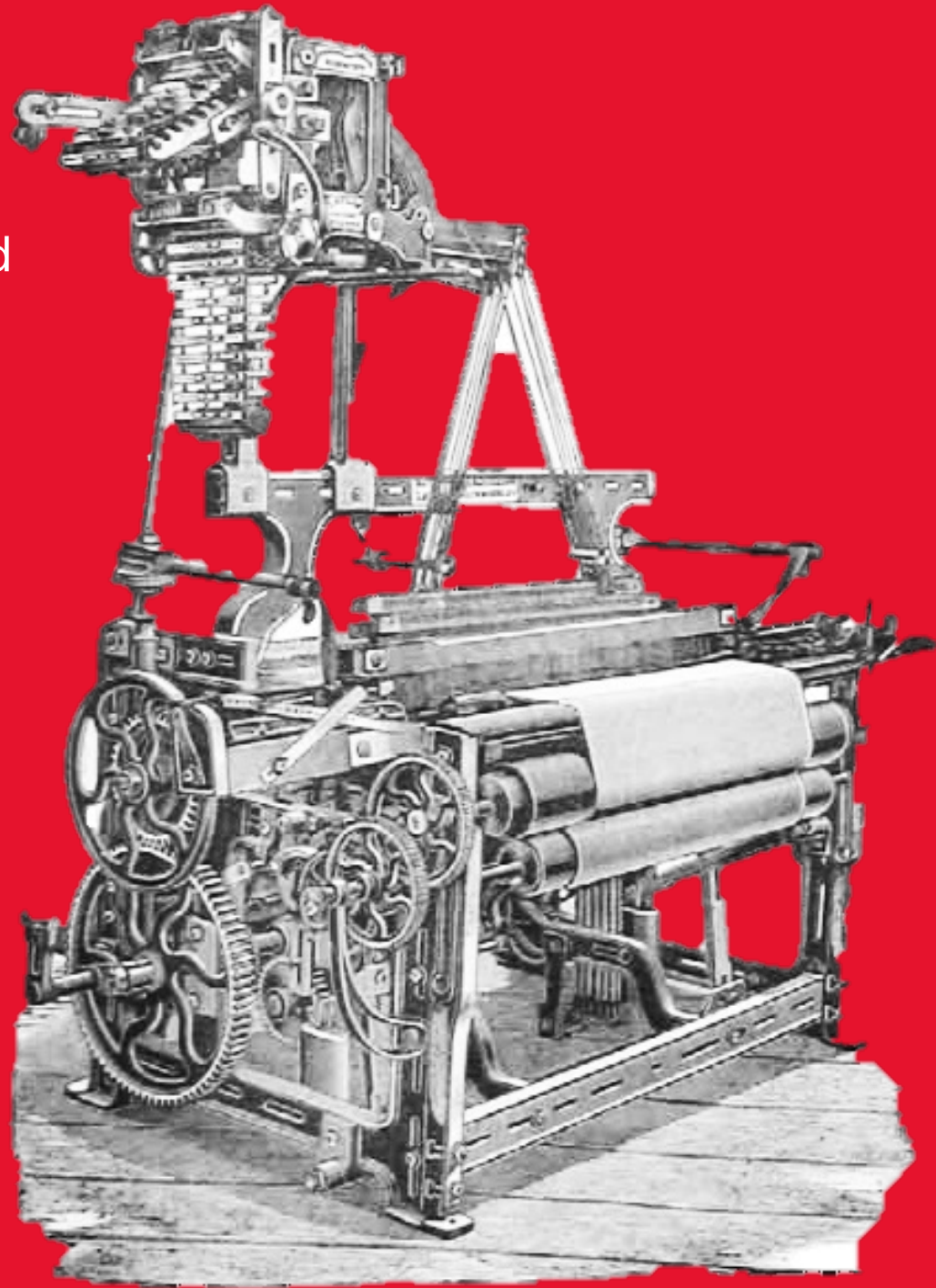
A Digital Transition

First Industrial Revolution

Through the introduction of mechanical production facilities and with the help of water and steampower

1769

First mechanical loom



1870

First assembly line



Second Industrial Revolution

Through the introduction of a division of labour and mass production and with the help of electrical energy

1969

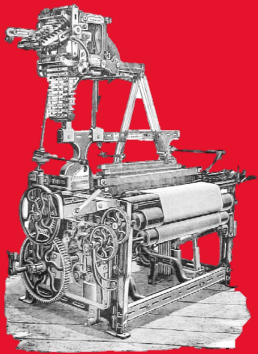
First ARPANET connection



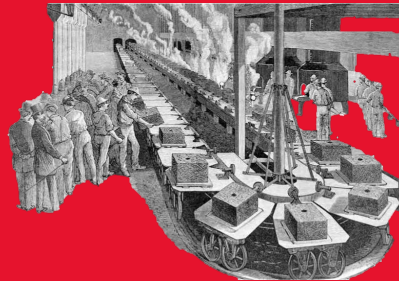
Third Industrial Revolution

Through the use of electronic and IT systems that further automate production and accelerate communications

1769



1870



1969

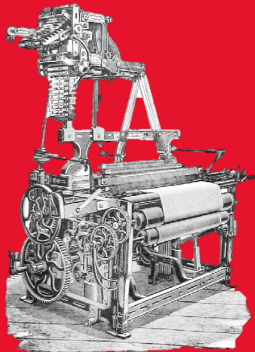


2022

?

We are still at the beginning of the great digital transition

1769



1870



1969



A Digital World

Penetration rate of digital technologies

JUL
2022

ESSENTIAL DIGITAL HEADLINES

OVERVIEW OF THE ADOPTION AND USE OF CONNECTED DEVICES AND SERVICES



TOTAL
POPULATION

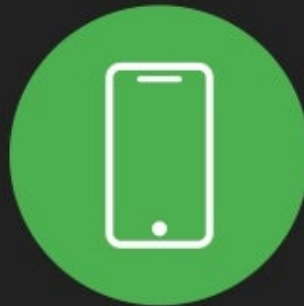


we
are
social

7.98
BILLION

URBANISATION
57.0%

UNIQUE MOBILE
PHONE USERS



5.34
BILLION

vs. POPULATION
66.9%

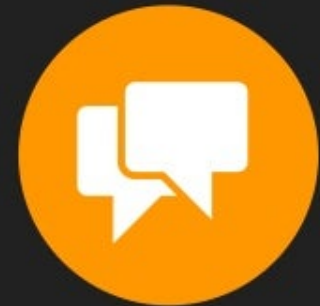
INTERNET
USERS



5.03
BILLION

vs. POPULATION
63.1%

ACTIVE SOCIAL
MEDIA USERS



4.70
BILLION

vs. POPULATION
59.0%

SOURCES: UNITED NATIONS; U.S. CENSUS BUREAU; GOVERNMENT BODIES; GSM A INTELLIGENCE; ITU; GWI; EUROSTAT; CNIC; ARII; CIA WORLD FACTBOOK; COMPANY ADVERTISING RESOURCES AND EARNINGS REPORTS; OECD; TECHRASA; KEPIOS ANALYSIS. **ADVISORY:** SOCIAL MEDIA USERS MAY NOT REPRESENT UNIQUE INDIVIDUALS. **COMPARABILITY:** SOURCE AND BASE CHANGES. THE U.N. REVISED ITS POPULATION DATA SINCE OUR PREVIOUS REPORT, WHICH MAY AFFECT ALL VALUES THAT COMPARE DIGITAL ACTIVITY TO POPULATION, AND MAY RESULT IN APPARENT DECREASES IN DIGITAL ADOPTION. HOWEVER, WE ADVISE CAUTION WHEN INTERPRETING ANY CHANGES IN THESE COMPARATIVE FIGURES, BECAUSE ANY SUCH CHANGE MAY BE SOLELY THE RESULT OF REVISIONS TO POPULATION DATA.

we
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social

Hootsuite

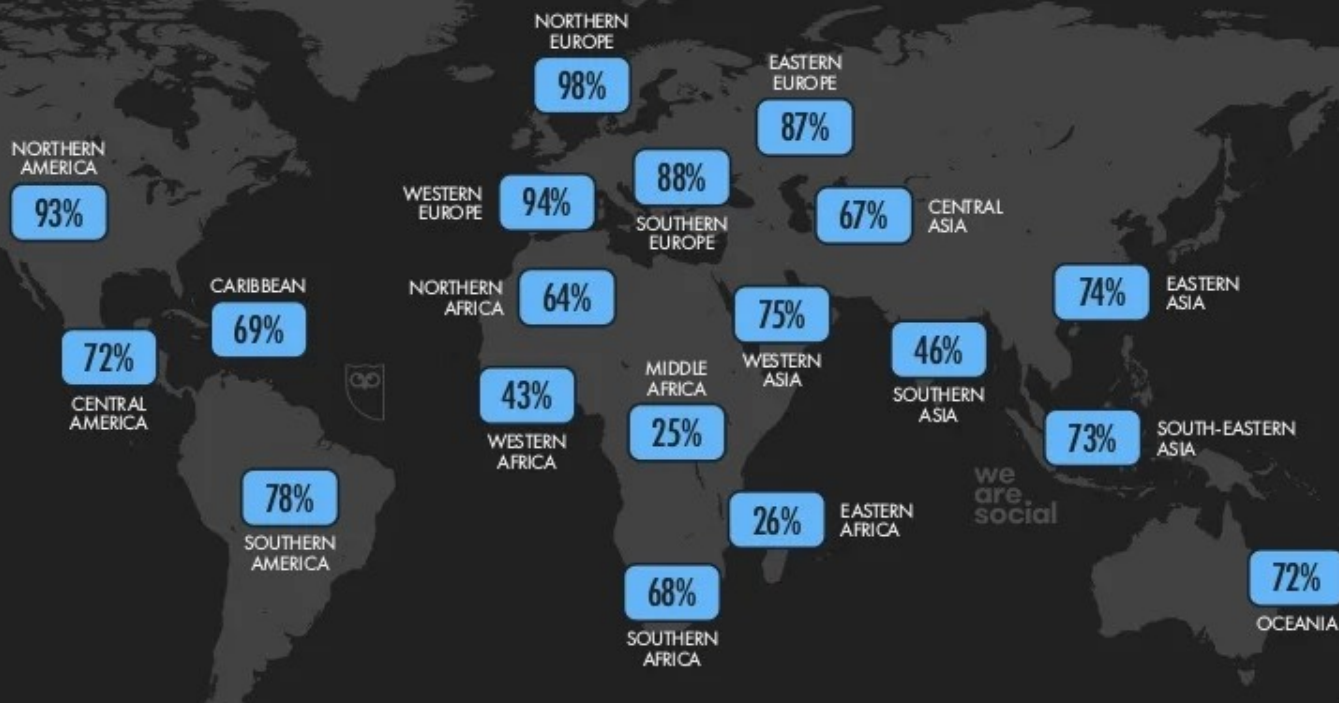
Percentage of individuals using the Internet

JUL
2022

INTERNET ADOPTION

INTERNET USERS AS A PERCENTAGE OF TOTAL POPULATION

GLOBAL OVERVIEW



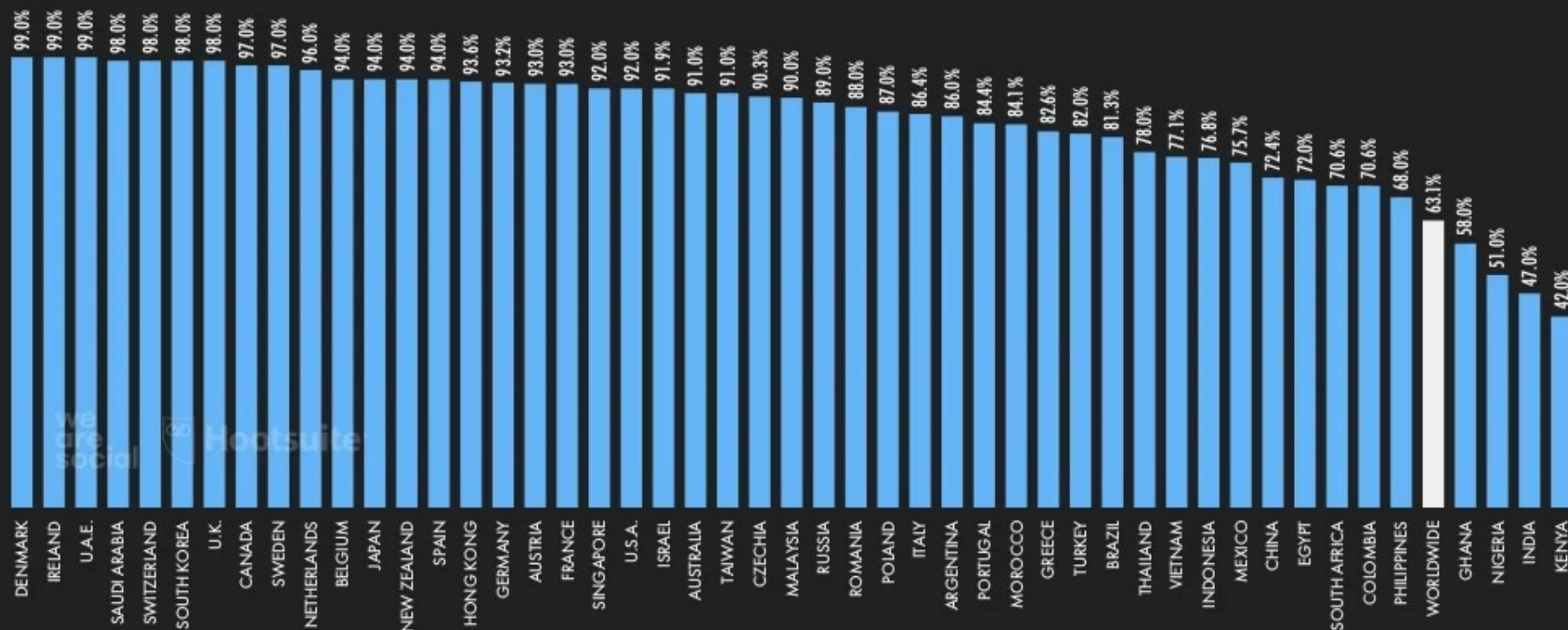
SOURCES: KEPIOS ANALYSIS; ITU; GSMA INTELLIGENCE; EUROSTAT; GWI; CIA WORLD FACTBOOK; CNNIC; APJII; LOCAL GOVERNMENT AUTHORITIES; UNITED NATIONS. **NOTE:** REGIONS BASED ON THE UNITED NATIONS GEOScheme. **COMPARABILITY:** SOURCE AND BASE CHANGES. THE U.N. REVISED ITS POPULATION DATA SINCE OUR PREVIOUS REPORT. THESE CHANGES MAY AFFECT ALL VALUES THAT COMPARE DIGITAL ACTIVITY TO POPULATION, AND MAY RESULT IN APPARENT DECREASES IN DIGITAL ADOPTION. HOWEVER, WE ADVISE CAUTION WHEN INTERPRETING ANY CHANGES IN THESE COMPARATIVE FIGURES, BECAUSE ANY SUCH CHANGE MAY BE SOLELY THE RESULT OF REVISIONS TO POPULATION DATA.

Percentage of individuals using the Internet

JUL
2022

INTERNET ADOPTION

INTERNET USERS AS A PERCENTAGE OF TOTAL POPULATION



21

SOURCES: KEPIOS ANALYSIS; ITU; GSMA INTELLIGENCE; EUROSTAT; GWI; CIA WORLD FACTBOOK; CNNIC; APJII; LOCAL GOVERNMENT AUTHORITIES; UNITED NATIONS. **NOTE:** VALUES HAVE BEEN CAPPED AT 99% OF THE TOTAL POPULATION. **COMPARABILITY:** SOURCE AND BASE CHANGES. THE U.N. REVISED ITS POPULATION DATA SINCE OUR PREVIOUS REPORT. THESE CHANGES MAY AFFECT ALL VALUES THAT COMPARE DIGITAL ACTIVITY TO POPULATION, AND MAY RESULT IN APPARENT DECREASES IN DIGITAL ADOPTION. HOWEVER, WE ADVISE CAUTION WHEN INTERPRETING ANY CHANGES IN THESE COMPARATIVE FIGURES, BECAUSE ANY SUCH CHANGE MAY BE SOLELY THE RESULT OF REVISIONS TO POPULATION DATA.

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Percentage of individuals using the Internet

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2022

UNCONNECTED POPULATIONS

COUNTRIES AND TERRITORIES WITH THE LARGEST UNCONNECTED POPULATIONS AND THE LOWEST LEVELS OF INTERNET ADOPTION



ABSOLUTE: LARGEST UNCONNECTED POPULATIONS

#	LOCATION	UNCONNECTED POPULATION	% OF POP. OFFLINE
01	INDIA	751,102,000	53.0%
02	CHINA	393,937,000	27.6%
03	PAKISTAN	151,525,000	64.3%
04	BANGLADESH	116,268,000	67.9%
05	NIGERIA	107,085,000	49.0%
06	ETHIOPIA	93,769,000	76.0%
07	DEM. REP. OF THE CONGO	81,813,000	82.6%
08	INDONESIA	63,916,000	23.2%
09	TANZANIA	51,088,000	78.0%
10	BRAZIL	40,172,000	18.7%

RELATIVE: LOWEST LEVELS OF INTERNET ADOPTION

#	LOCATION	% OF POP. OFFLINE	UNCONNECTED
233	NORTH KOREA ¹	>99.9%	[BLOCKED]
232	COMOROS	91.5%	766,000
231	ERITREA	91.5%	3,371,000
230	CENTRAL AFRICAN REPUBLIC	89.6%	4,999,000
229	SOUTH SUDAN	87.5%	9,548,000
228	SOMALIA	86.1%	15,159,000
227	NIGER	84.9%	22,261,000
226	BURUNDI	84.8%	10,931,000
225	DEM. REP. OF THE CONGO	82.6%	81,813,000
224	PAPUA NEW GUINEA	80.3%	8,142,000

SOURCES: ITU; GSMA INTELLIGENCE; EUROSTAT; GWI; CIA WORLD FACTBOOK; CNNIC; APJII; LOCAL GOVERNMENT AUTHORITIES; UNITED NATIONS. **NOTES:** FIGURES IN THE "% OF POP. OFFLINE" COLUMN REPRESENT THE PERCENTAGE OF THE POPULATION THAT DOES NOT YET USE THE INTERNET. ABSOLUTE VALUES HAVE BEEN ROUNDED TO THE NEAREST THOUSAND. (1) THE INTERNET (AT LEAST AS THE REST OF THE WORLD KNOWS IT) REMAINS BLOCKED FOR EVERYDAY CITIZENS IN NORTH KOREA. **COMPARABILITY:** SOURCE AND BASE CHANGES, REVISIONS TO THE U.N.'S POPULATION DATA IN JULY 2022 MAY HAVE RESULTED IN UNEXPECTED CHANGES TO FIGURES ON THIS CHART, BECAUSE INTERNET PENETRATION IS OFTEN REPORTED AS A PERCENTAGE OF POPULATION, RATHER THAN AS AN ABSOLUTE USER FIGURE.

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Hootsuite

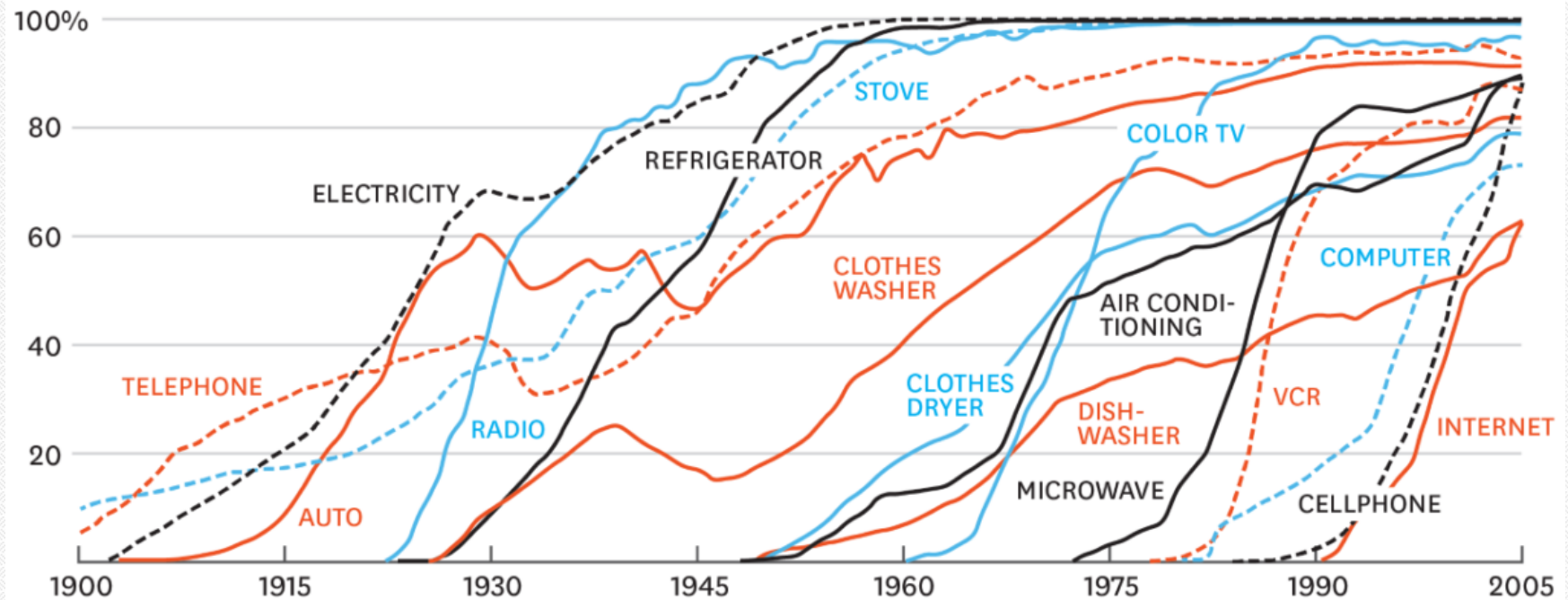
Question

What drives access to and use of the Internet?

Adoption rate of technologies

CONSUMPTION SPREADS FASTER TODAY

PERCENT OF U.S. HOUSEHOLDS



SOURCE NICHOLAS FELTON, THE NEW YORK TIMES

HBR.ORG

A Digital Economy

What is the digital economy?

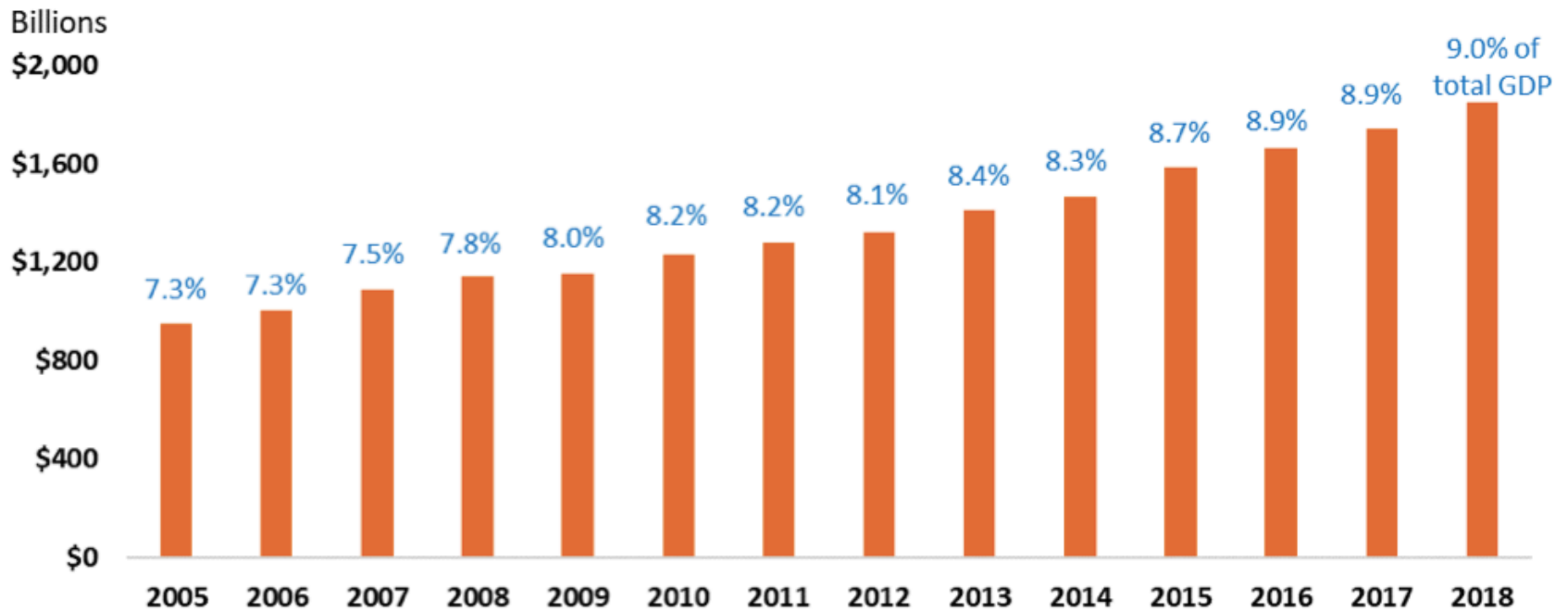
The digital economy consists of:

- all sectors making extensive use of digital technologies (i.e. their existence depends on digital technologies)
- as opposed to sectors making intensive use of digital technologies (i.e. simply employing digital technologies to increase productivity)

Bukht, R., & Heeks, R. (2017)

The digital economy in the U.S. GDP

Chart 2. Digital Economy Current-Dollar Value Added and Share of Total Gross Domestic Product



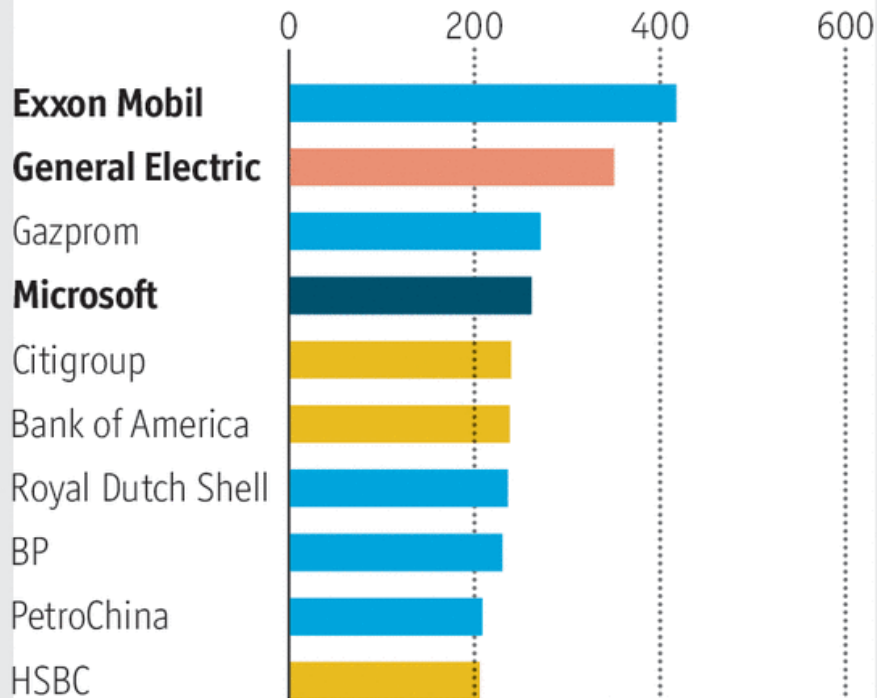
From oil giants to digital giants

A virtually new world

World, largest listed companies by market capitalisation, \$bn

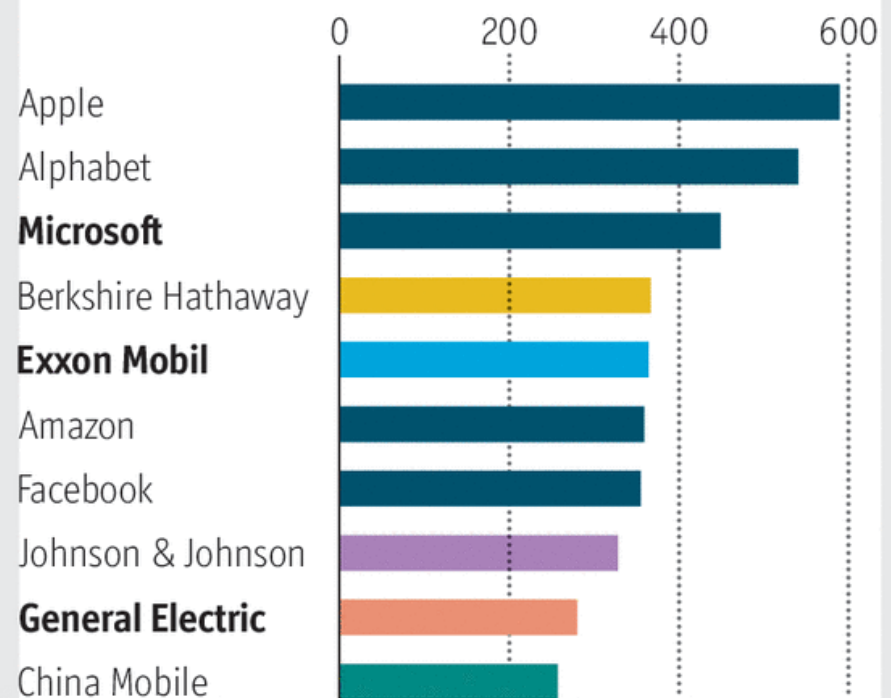
Sector: ■ Energy ■ Financials ■ Health care ■ Industrials ■ IT ■ Telecoms

End 2006



Source: Bloomberg

2016*



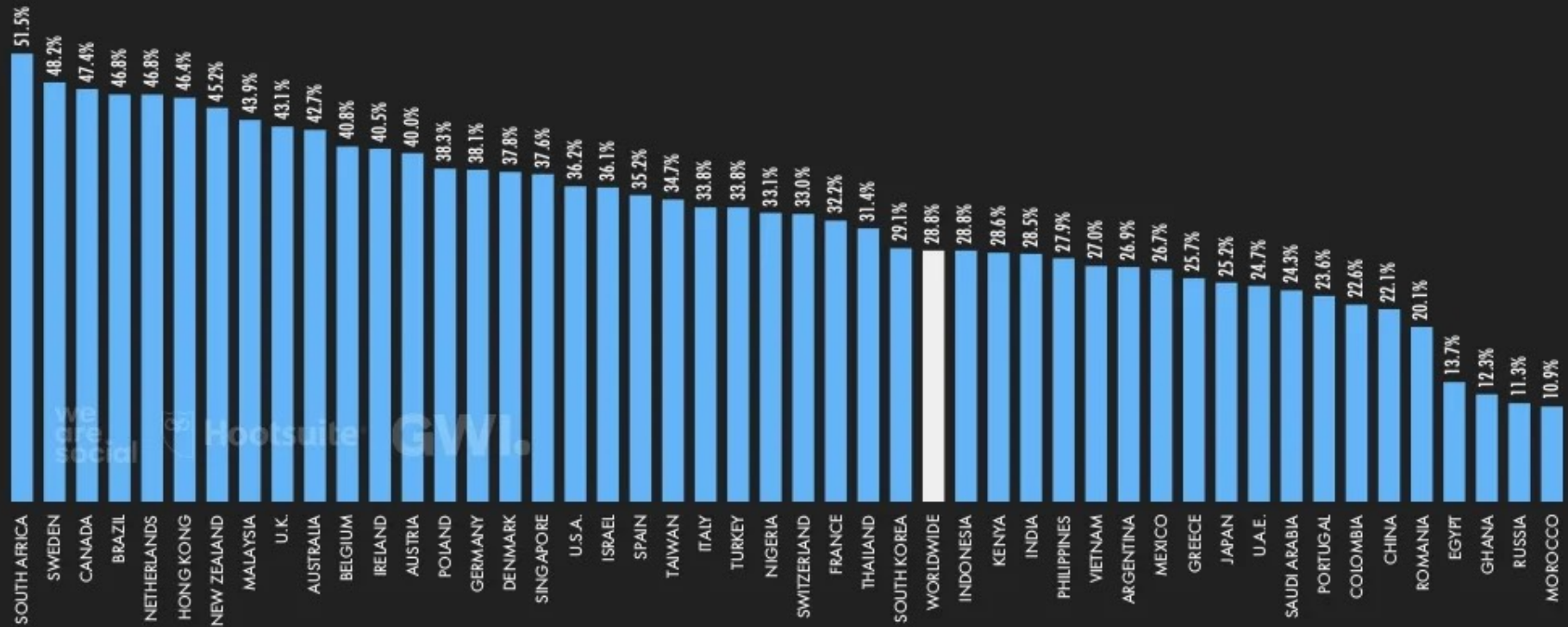
*At August 24th 2016

From oil giants to digital giants

JAN
2022

USE OF ONLINE FINANCIAL SERVICES

PERCENTAGE OF INTERNET USERS AGED 16 TO 64 WHO USE A BANKING, INVESTMENT, OR INSURANCE WEBSITE OR APP EACH MONTH



Question

How should we measure the digital economy?

To go further

Economics

How Should We Measure the Digital Economy?

Focus on the value created, not just the prices paid. by Erik
Brynjolfsson and Avinash Collis

From the Magazine (November–December 2019)



A Digital Life

Mean time of use of different media

JAN
2022

DAILY TIME SPENT WITH MEDIA

AVERAGE AMOUNT OF TIME EACH DAY THAT INTERNET USERS AGED 16 TO 64 SPEND WITH DIFFERENT KINDS OF MEDIA AND DEVICES



TIME SPENT USING
THE INTERNET



GWJ.

6H 58M

YEAR-ON-YEAR CHANGE
+1.0% (+4M)

TIME SPENT WATCHING TELEVISION
(BROADCAST AND STREAMING)



3H 20M

YEAR-ON-YEAR CHANGE
-2.0% (-4M)

TIME SPENT USING
SOCIAL MEDIA



GWJ.

2H 27M

YEAR-ON-YEAR CHANGE
+1.4% (+2M)

TIME SPENT READING PRESS MEDIA
(ONLINE AND PHYSICAL PRINT)



2H 00M

YEAR-ON-YEAR CHANGE
-1.6% (-1M)

TIME SPENT LISTENING TO
MUSIC STREAMING SERVICES



we
are
social

1H 33M

YEAR-ON-YEAR CHANGE
+2.2% (+2M)

TIME SPENT LISTENING
TO BROADCAST RADIO



GWJ.

1H 01M

YEAR-ON-YEAR CHANGE
[UNCHANGED]

TIME SPENT LISTENING
TO PODCASTS



0H 55M

YEAR-ON-YEAR CHANGE
+1.9% (+1M)

TIME SPENT USING
A GAMES CONSOLE



1H 12M

YEAR-ON-YEAR CHANGE
+1.4% (+1M)



Online shopping activities

JAN
2022

WEEKLY ONLINE SHOPPING ACTIVITIES

PERCENTAGE OF INTERNET USERS AGED 16 TO 64 WHO ENGAGE IN SELECTED ECOMMERCE ACTIVITIES EACH WEEK



PURCHASED A PRODUCT
OR SERVICE ONLINE



GWl.

58.4%

ORDERED GROCERIES
VIA AN ONLINE STORE



28.3%

BOUGHT A SECOND-HAND
ITEM VIA AN ONLINE STORE



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are
social

14.4%

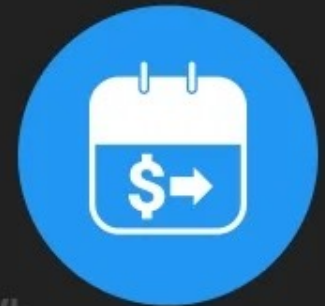
USED AN ONLINE PRICE
COMPARISON SERVICE



GWl.

24.6%

USED A BUY NOW,
PAY LATER SERVICE

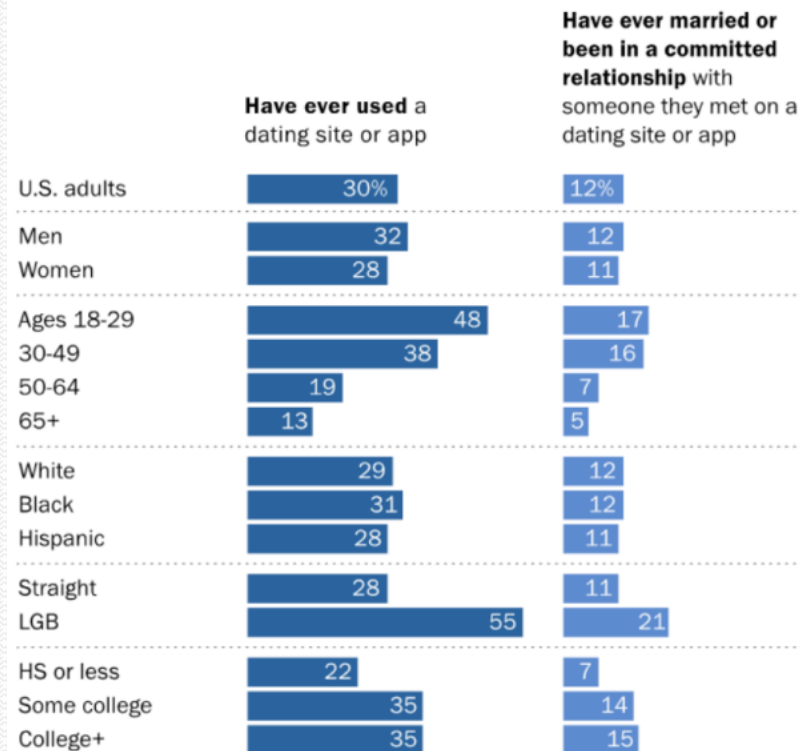


17.8%

Use of online dating services in the U.S.

Online dating and finding a partner through these platforms are more common among adults who are younger, lesbian, gay or bisexual

% of U.S. adults who say they ...



Note: Whites and blacks include only non-Hispanics. Hispanics are of any race. LGB indicates those who identify as lesbian, gay or bisexual. Those who did not give an answer are not shown.

Source: Survey of U.S. adults conducted Oct. 16-28, 2019.

"The Virtues and Downsides of Online Dating"

PEW RESEARCH CENTER

A Digital Culture?

Argument 1

We're living in digital culture and it's our own culture.
There's no point in learning it!

Argument 2

There is no such thing as a digital culture.
The digital world is not so specific.

Argument 3

Digital tools are too complex to be understood thoroughly.
It's better to leave this to experts.

Our principles in this course

- Digital culture is not just about manipulating apps
- Digital worlds have their own cultural specificities
- Understanding technologies is critical

Snapshots of Digital Culture

Alan Turing | 1912–1954



ON COMPUTABLE NUMBERS, WITH AN APPLICATION TO THE ENTSCHEIDUNGSPROBLEM

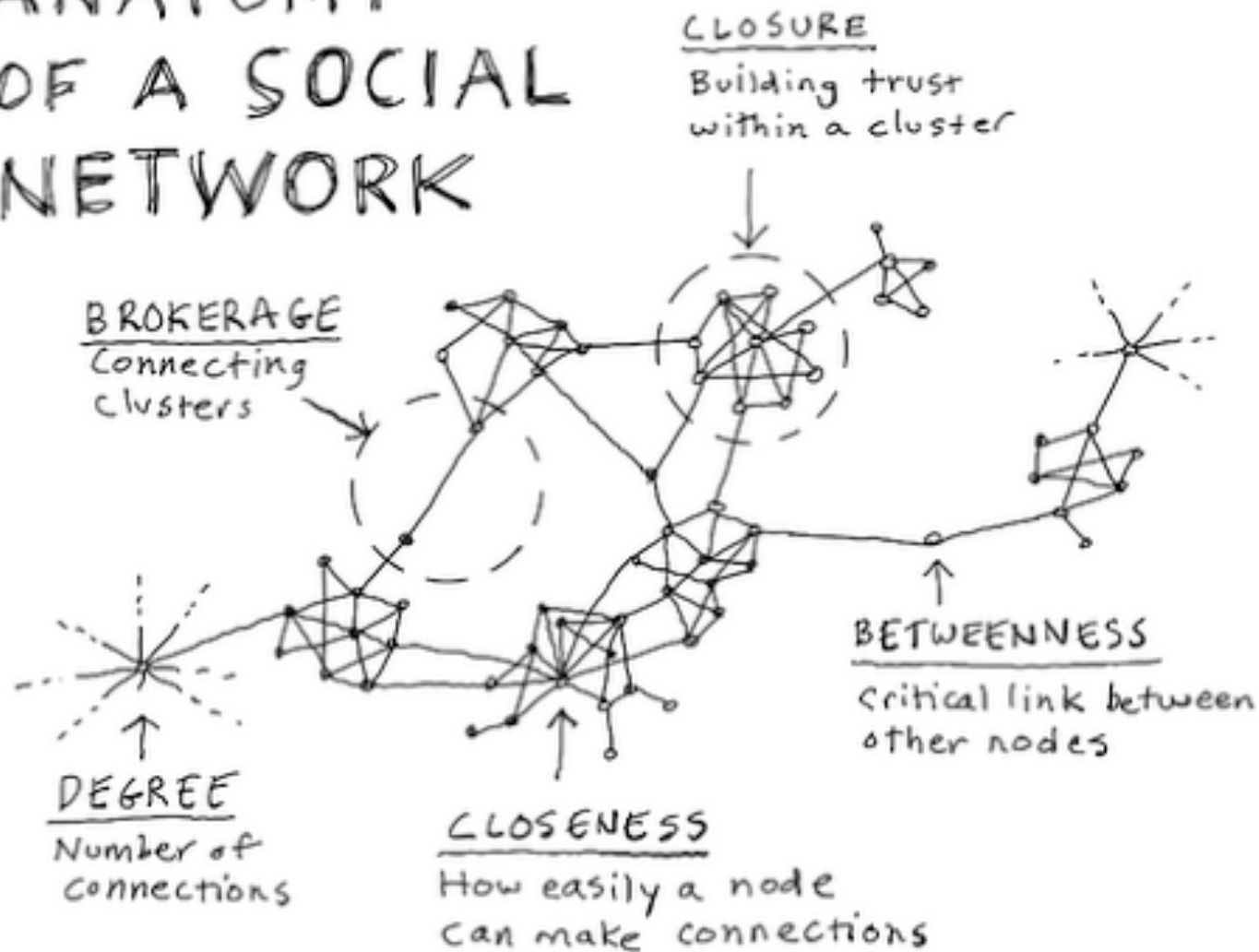
By A. M. TURING.

[Received 28 May, 1936.—Read 12 November, 1936.]

The “computable” numbers may be described briefly as the real numbers whose expressions as a decimal are calculable by finite means. Although the subject of this paper is ostensibly the computable *numbers*, it is almost equally easy to define and investigate computable functions

How to measure the characteristics of a social network?

ANATOMY OF A SOCIAL NETWORK



Economic models of large tech companies

FT Collections

The Economics of Big Tech

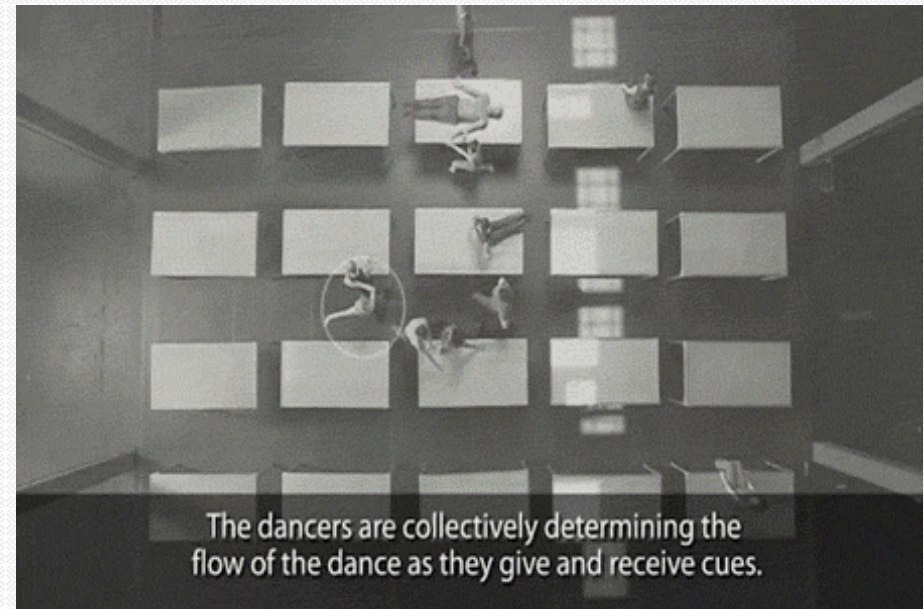
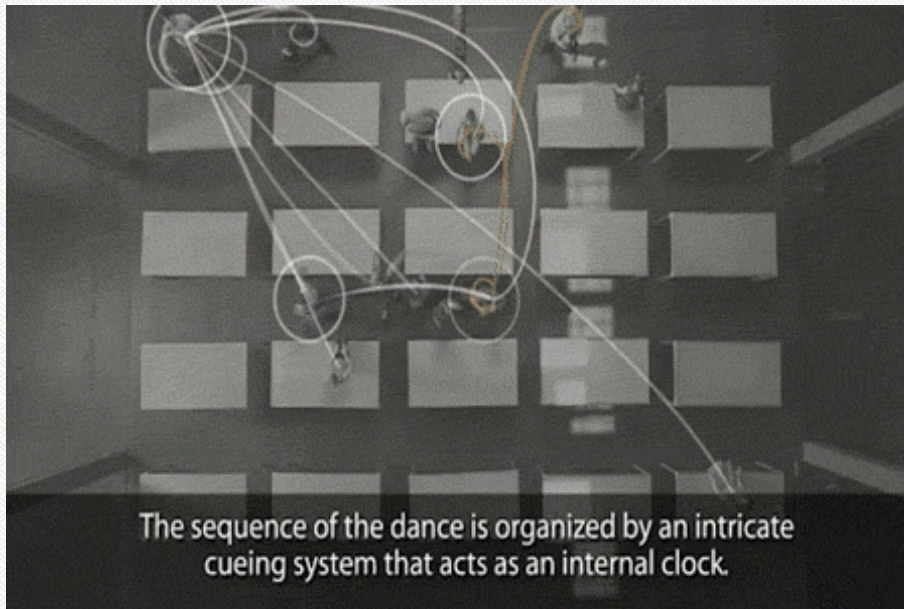
The dominance of Big Tech raises a series of concerns: Is their market power economically harmful? If so, what are the right policy remedies? Can big internet companies be taxed better? Should they be broken up, or should their conduct be constrained by public regulation? In a five-part series, Martin Sandbu's Free Lunch addresses these questions. Below you can read all the articles from the series as well as earlier pieces on the same topic.



Making art go digital



Making art go digital



Digital democracy

Liquid Democracy



The user votes for the proposal they want.

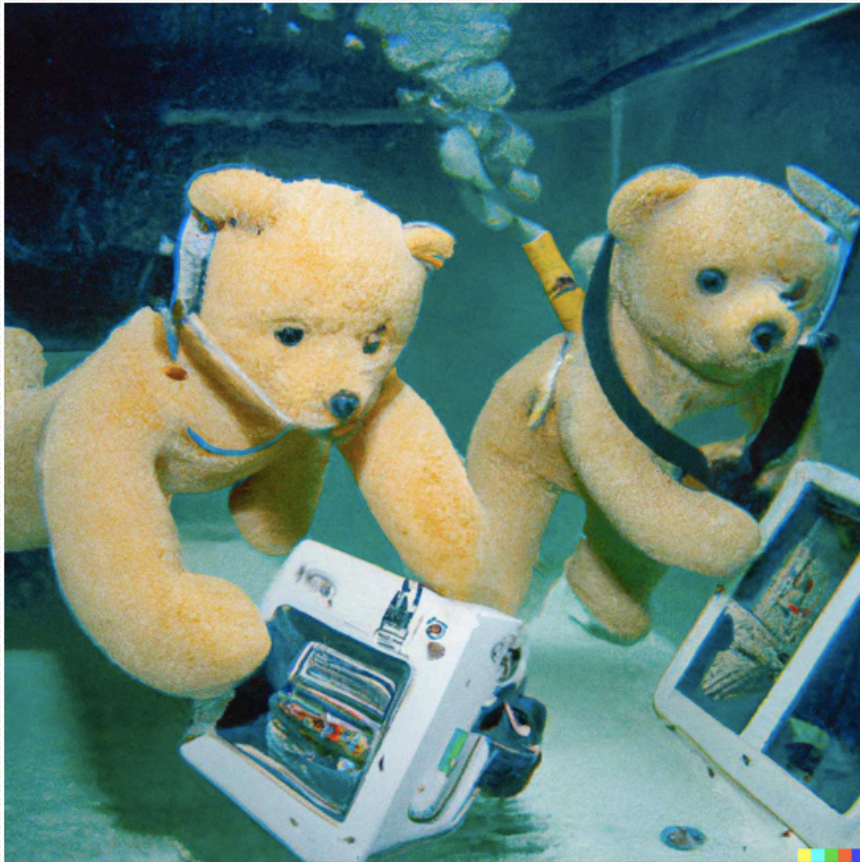


The user delegates their vote to someone who votes for them.

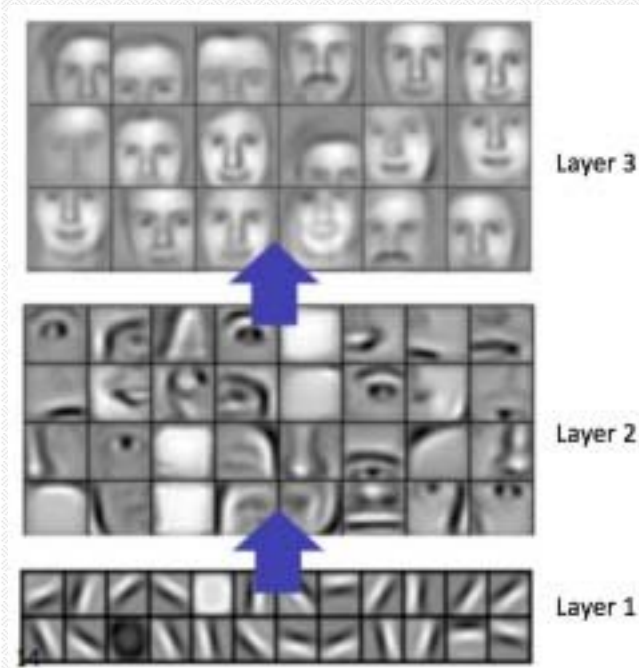


The user can override a delegate vote that they don't like.

Artificial Intelligence and Neural Networks



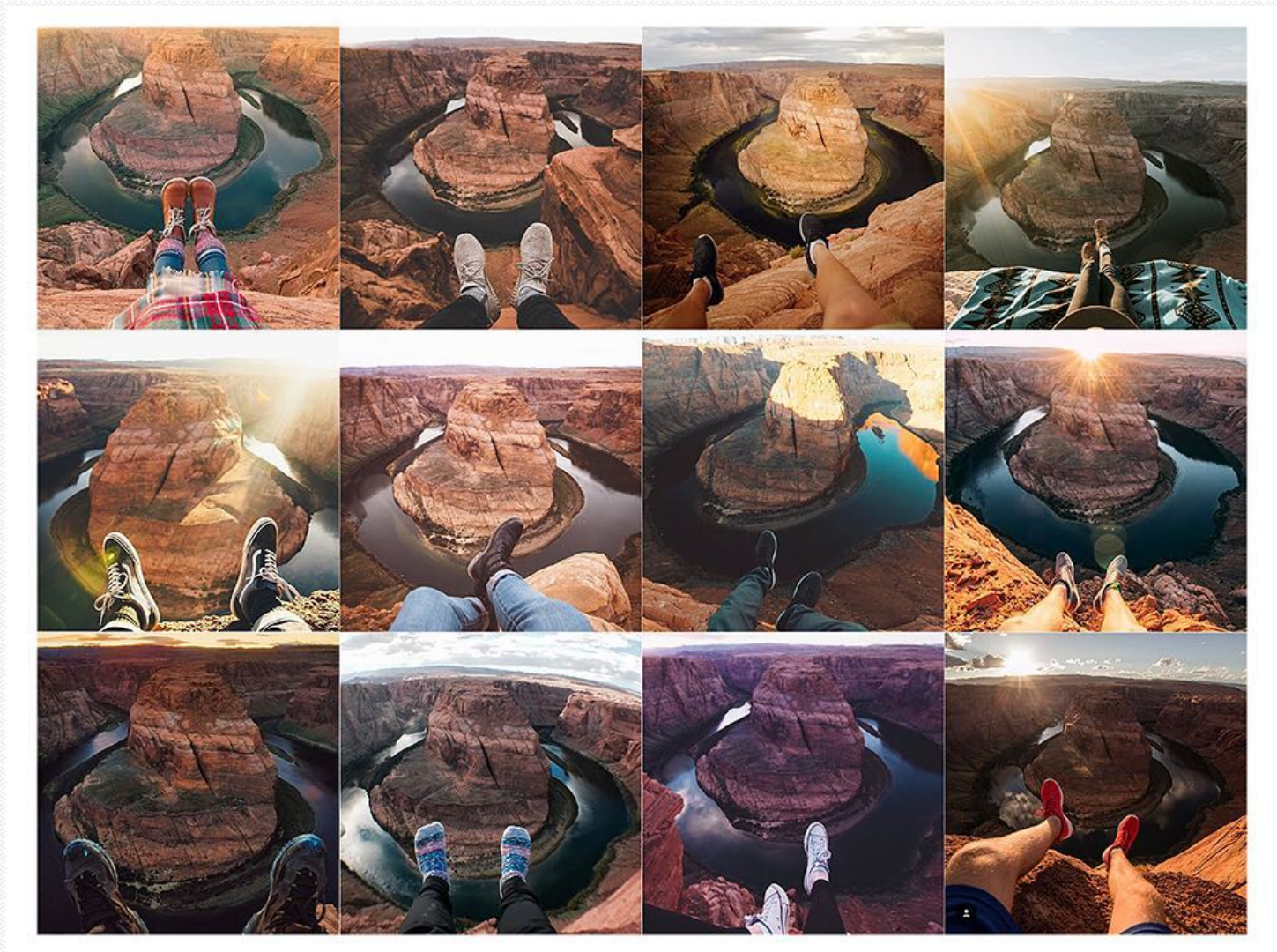
Can we interpret neural networks?



Question

How to combine ethics and AI?

Why do we all take the same pictures?



This course is at a disciplinary crossroads:

History

Economy

Geography

Political science

Cultural studies

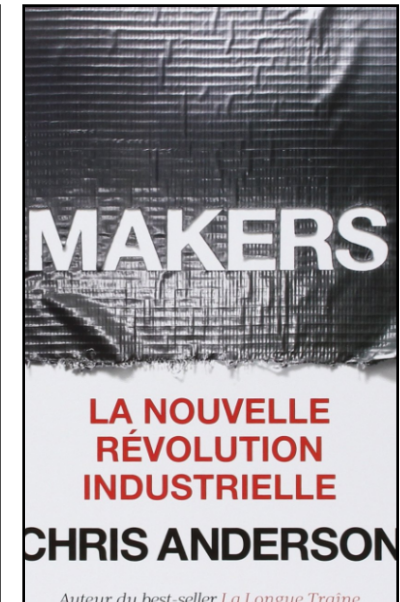
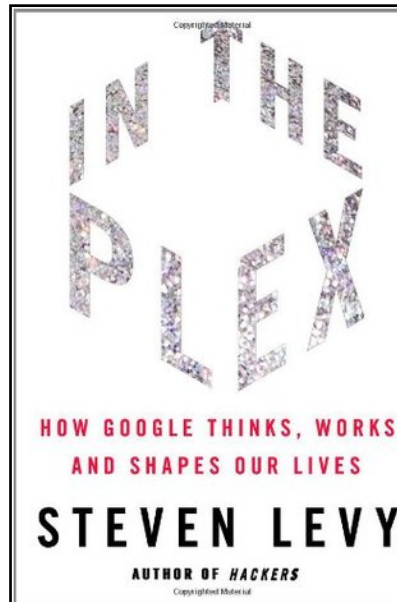
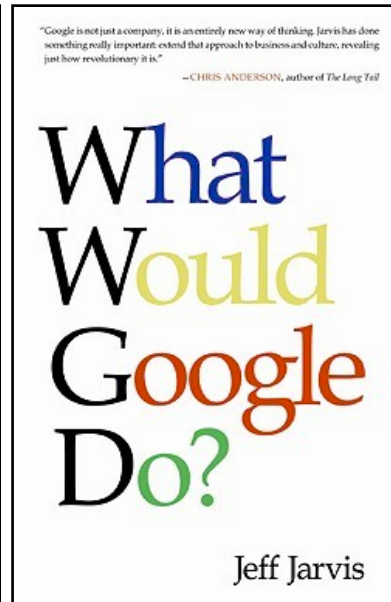
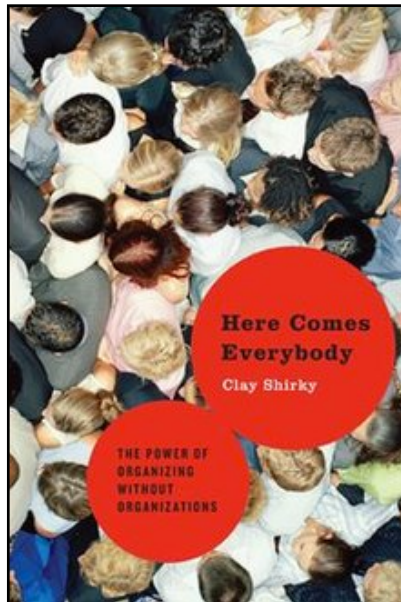
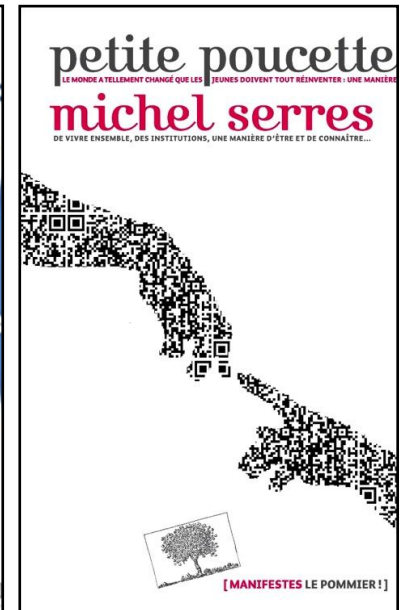
International relations

Design

Computer science

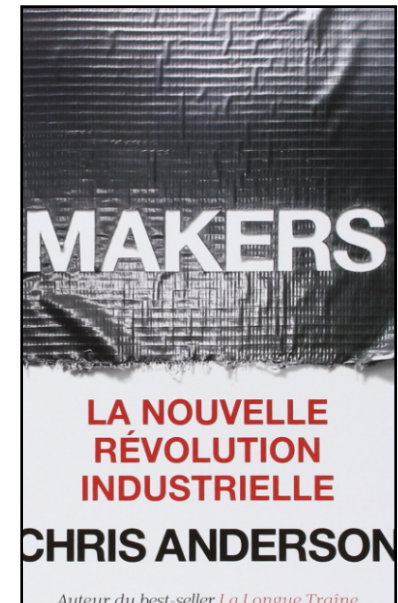
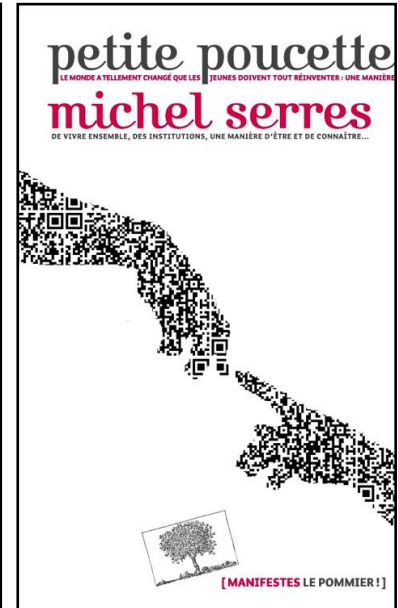
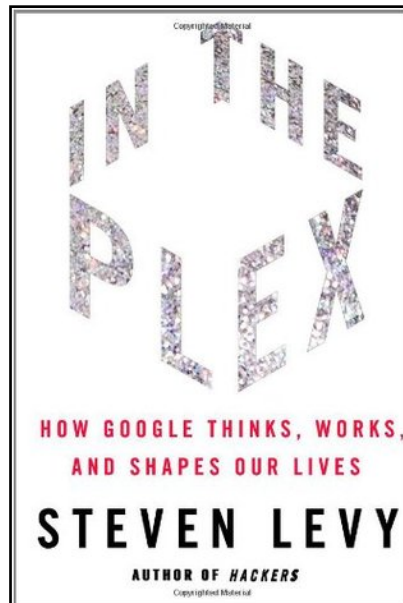
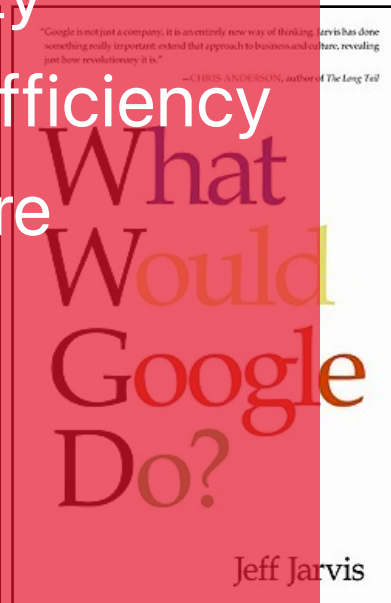
Why this course?

The optimists

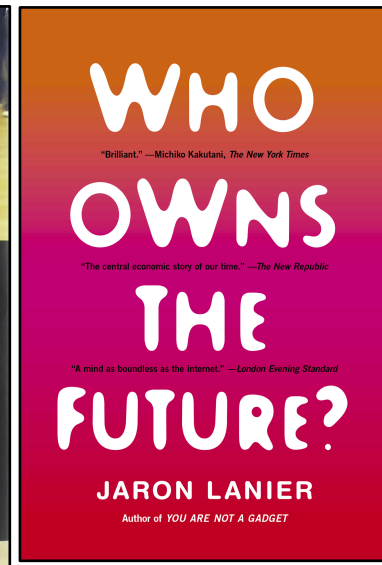
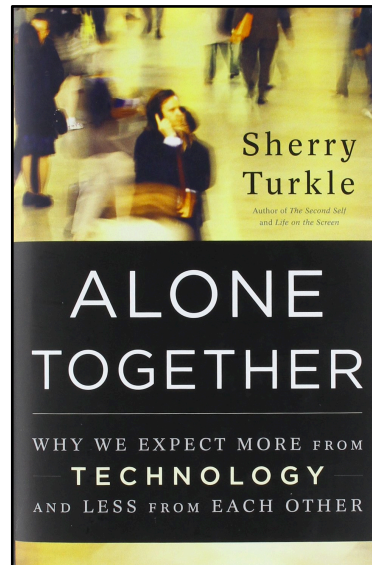
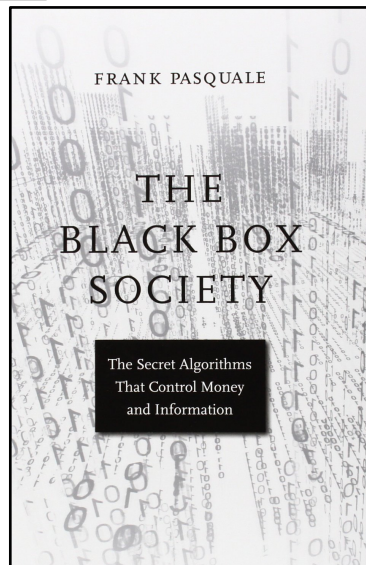
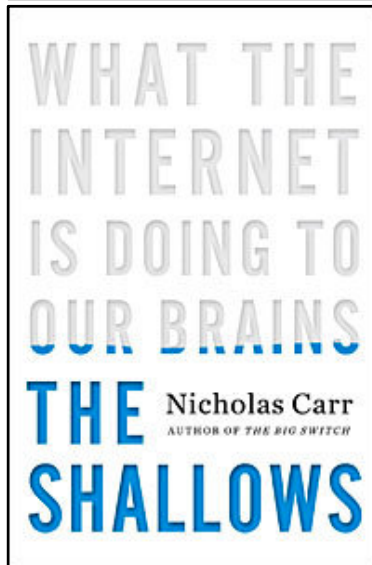
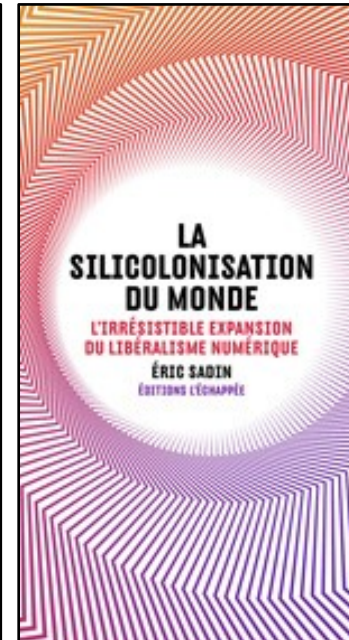
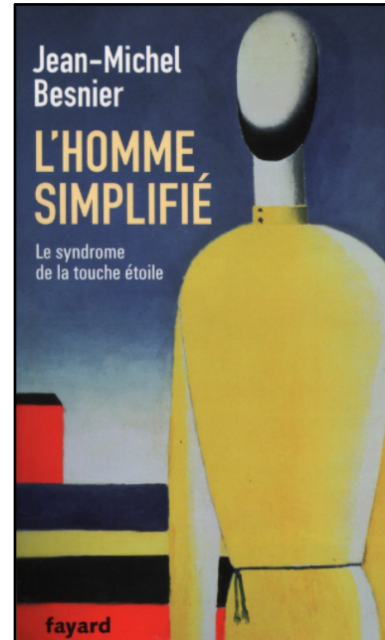
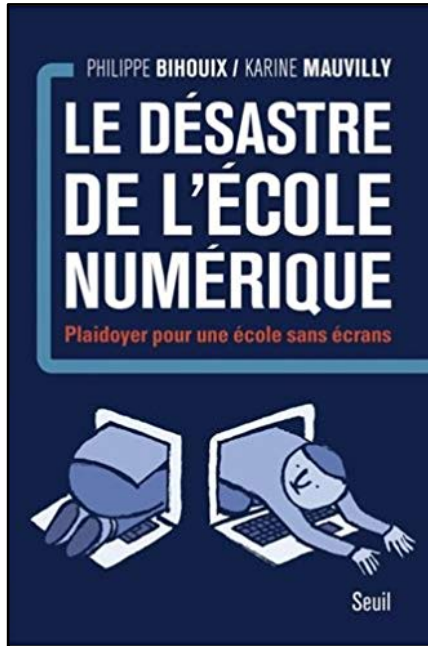


The optimists

- freedom of speech
- more democracy
- global solidarity
- more market efficiency
- a shared culture

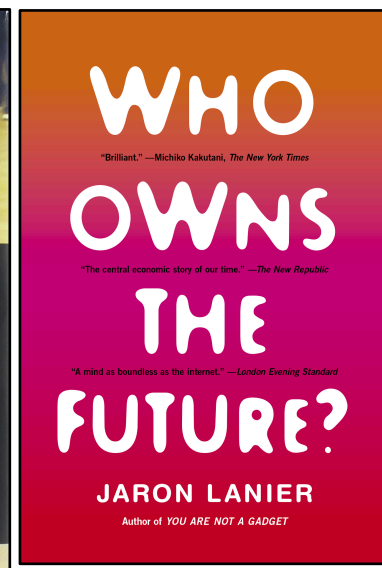
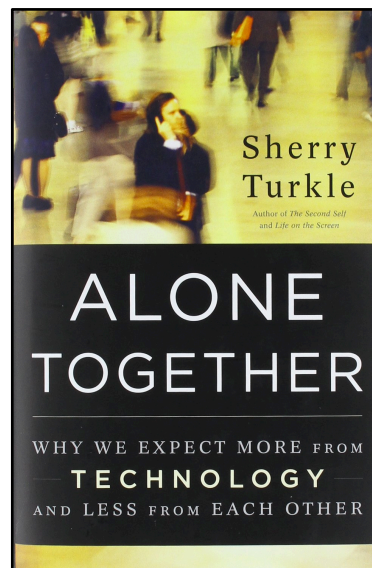
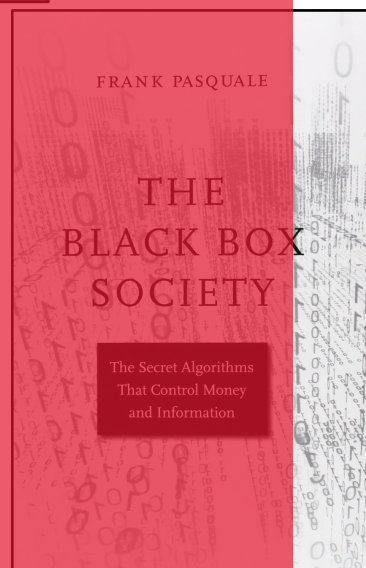
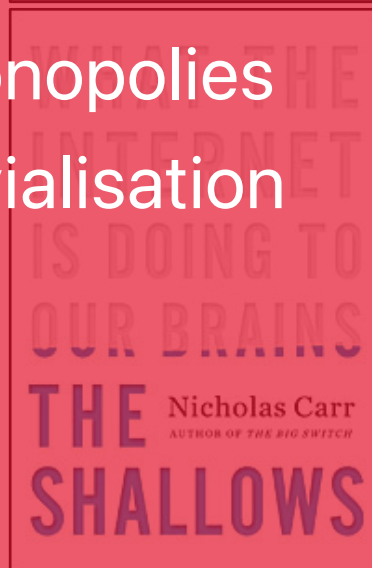
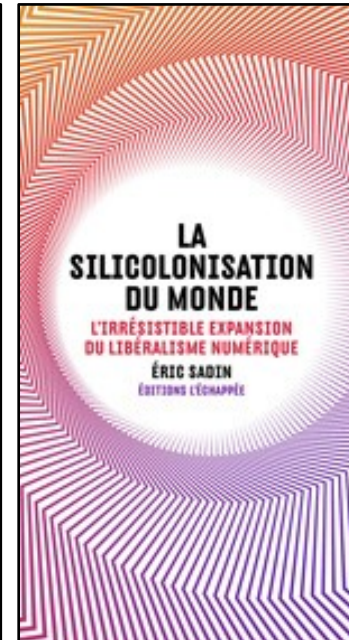
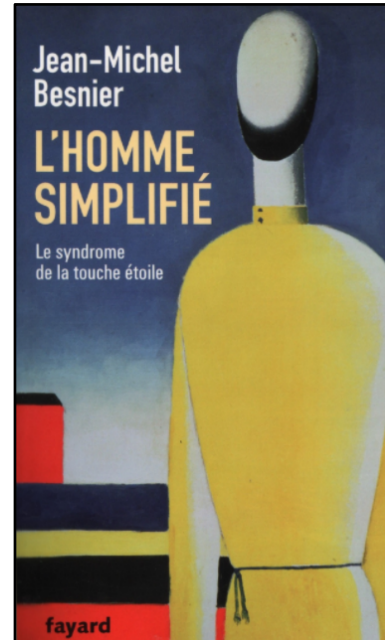


The critics



The critics

- censorship
- control society
- individualism
- monopolies
- trivialisation



Moral panic



A Global Framework

Tools that empower people



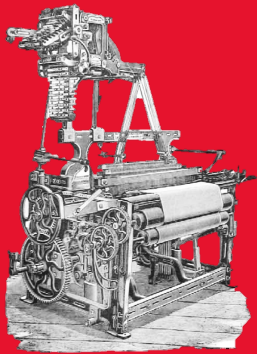
Tools that encourage self-organisation and commons



Tools that shift value and power



1769



1870



1969



1454

First printing
press



Practical information

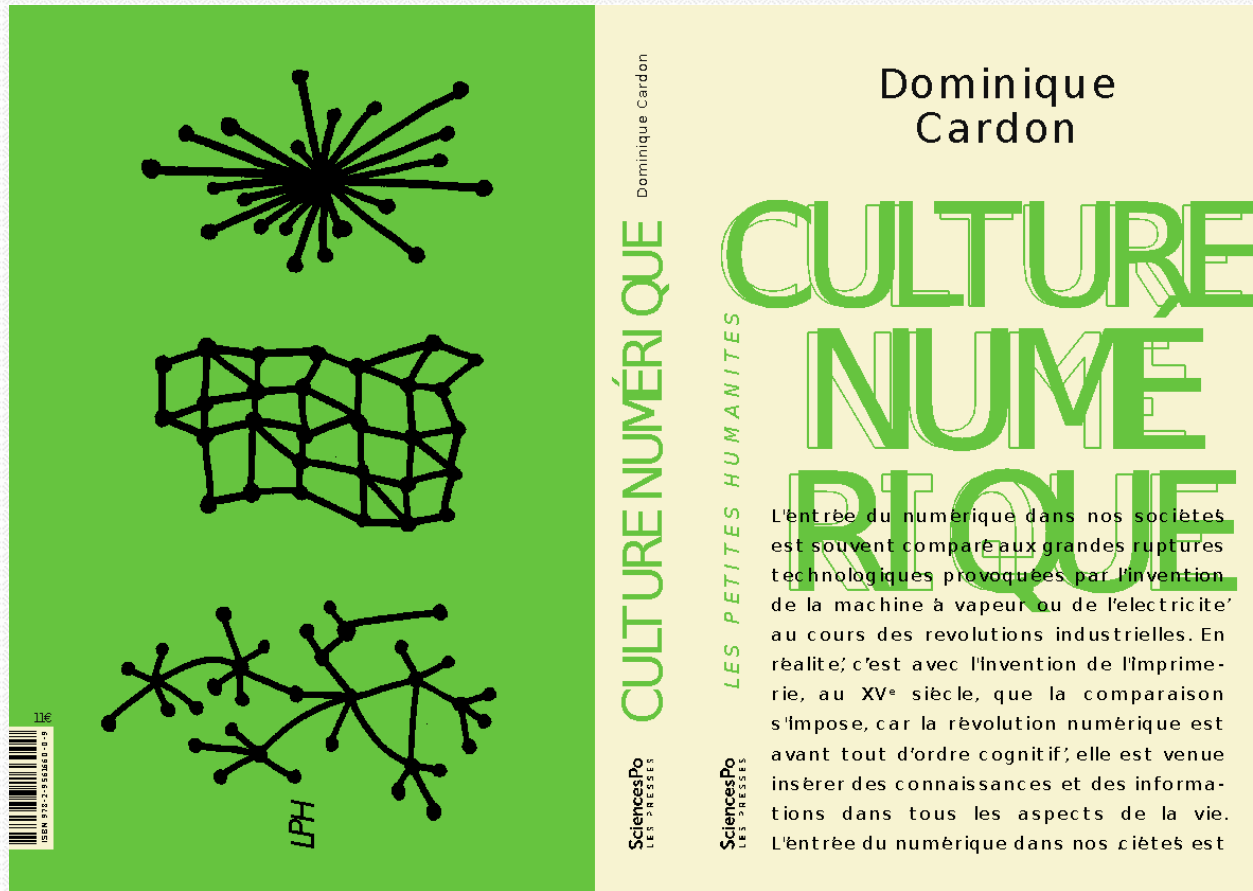
An experimental course

- Critical distance
- Practice digital tools
- Explore digital culture



<https://moodle.sciences-po.fr>.

Additional material



Contact

benjamin.gilbert@sciencespo.fr

Evaluation

30% — Individual note

70% — Digital exploration

Participation bonus

Evaluation – Individual note

A one or two-page individual note about the digital exploration you are working on in groups, which should include:

- a clear presentation of the subject of the exploration
- a well-defined problem
- some research hypotheses
- ideas for methods and research areas around the topic of the exploration
- the format intended for the output of the investigation
- difficulties that might be encountered in carrying out the investigation
- a short indicative bibliography

Evaluation – Digital exploration

In groups of 3 to 4 students, an investigation into a digital practice, phenomenon, service, company, etc. presented in a digital format, based on bibliographic and web-based research and which should include:

- a clear presentation of the question at stake
- your methods of investigation (e.g. interviews, online questionnaires, experimental protocols, online ethnography, etc.)
- your analyses and interpretations of the topic
- a synthetic account of the findings.

Evaluation – Digital exploration – Example

L'industrie musicale et le numérique

Introduction

De nouvelles façons de produire, diffuser, consommer la musique

Des enjeux d'interconnexion directe ou indirecte à travers la musique : être seuls ensemble

Conclusion

L'industrie musicale et le numérique

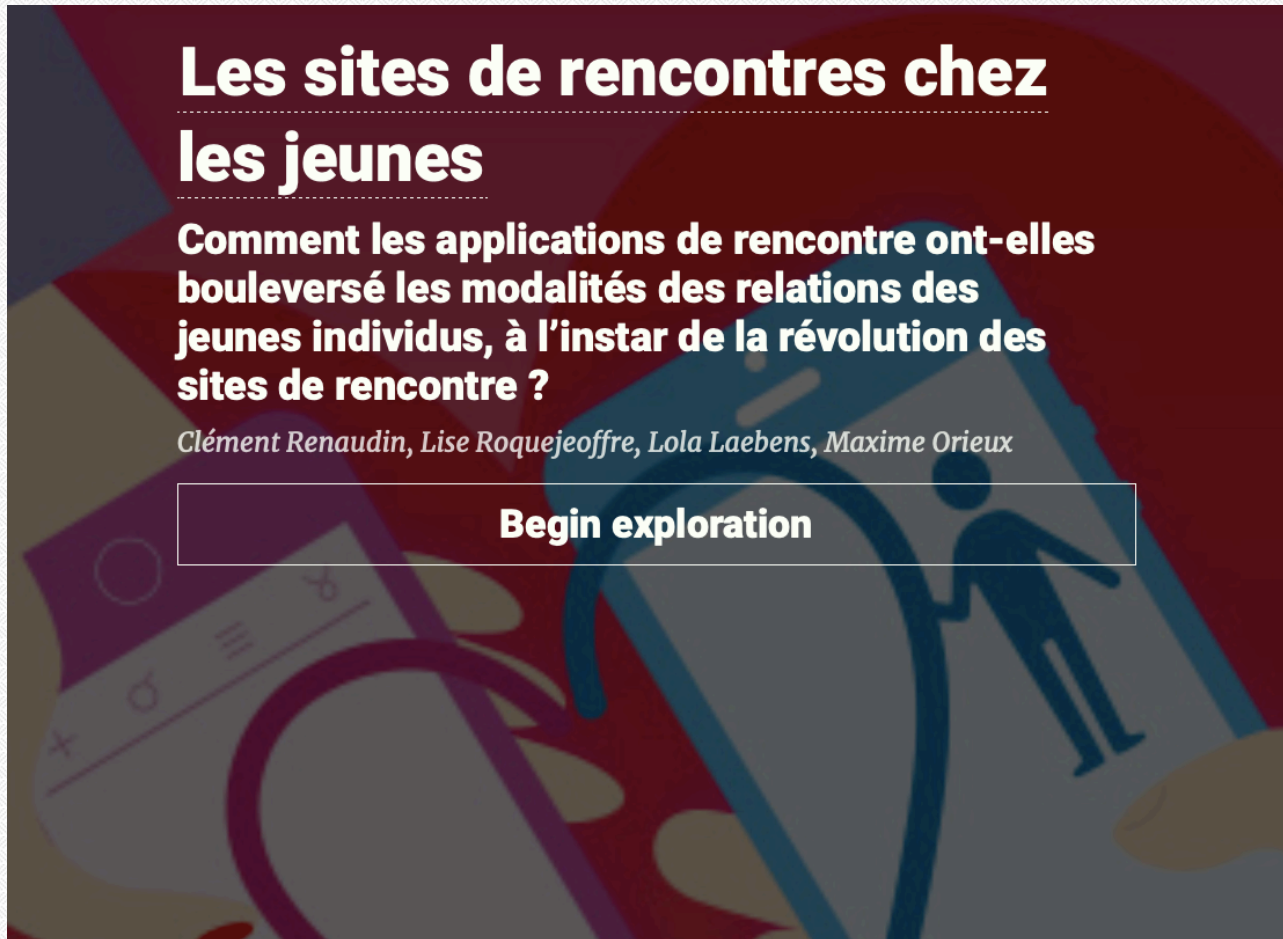
Production, diffusion, consommation de la musique : une individualisation ?

Apolline CHOPINEAUX, Loula MSELLATI

Introduction

La technologie a profondément modifié l'ensemble des pratiques reliées au monde de la musique. Qu'il s'agisse de production, d'écoute ou même de diffusion, la musique est aujourd'hui bien plus accessible qu'elle ne l'était auparavant et ce grâce à l'immixtion de la technologie dans l'industrie musicale. La première grande révolution apparaît avec l'invention du phonographe par Thomas Edison en 1877. Pour la toute première fois, il est possible d'écouter de la musique depuis chez soi alors qu'avant cela n'était possible qu'en assistant à des concerts, des représentations. Cela a été la première étape de la massification de la consommation musicale. Avec l'apparition du phonographe, c'est une nouvelle nécessité de production musicale qui est apparue, celle de l'enregistrement, qui est à l'origine même des inventions à venir dans les années suivantes. Ainsi, l'invention de l'autoradio dans les années 1930 est venue, elle aussi, bouleverser les pratiques liées à la musique. Il devient alors possible d'écouter des cassettes, seul ou à plusieurs, dans sa voiture dans un premier temps puis n'importe où par la suite grâce à un lecteur de cassette. Rapidement, dans les années qui ont suivi, les innovations se sont enchaînées et le casque stéréophonique ainsi que le walkman sont eux aussi venus modifier les habitudes des consommateurs de musique. C'est finalement vers une individualisation de la consommation de musique que la société s'est peu à peu dirigée. Assez paradoxalement, même si Internet et les nouvelles technologies ont permis de rassembler des gens de tous les coins du globe, cela s'est fait en parallèle d'une individualisation générale, donc y compris des pratiques liées à la musique. En plus d'une individualisation, c'est aussi et surtout à une facilitation de cette consommation qu'ont amené les nouvelles technologies. Au-delà de la consommation, c'est également la production de

<https://fonio.medialab.sciences-po.fr/castell/read/f5b99819-0746-4ca9-91ed-9657777793d0>



<https://fonio.medialab.sciences-po.fr/carajam/read/4840d084-8dfa-456d-a7df-31ea4bb76ea1>

Evaluation – Digital exploration – Example

Wikipédia et les femmes, ou comment une encyclopédie collaborative reproduit des biais sexistes [modifier | modifier le code]

[Gérer mon brouillon](#) · [Demander une relecture \(voir les demandes\)](#) · [Publier mon brouillon](#)

Cette page est un brouillon appartenant à Explorationnumérique

▼ **Conseils de rédaction**

- **N'hésitez pas** à publier sur le brouillon un texte inachevé et à le modifier autant que vous le souhaitez.
- Pour **enregistrer vos modifications** au brouillon, il est nécessaire de cliquer sur le bouton bleu : « Publier les modifications ». Il n'y a pas d'enregistrement automatique.

Si votre but est de publier un nouvel article, votre brouillon doit respecter les points suivants :

- Respectez le **droit d'auteur** en créant un texte **spécialement** pour Wikipédia en français ([pas de copier-coller venu d'ailleurs](#)).
- Indiquez les éléments démontrant la **notoriété** du sujet ([aide](#)).
- Liez chaque fait présenté à une **source de qualité** ([quelles sources](#) – [comment les insérer](#)).
- Utilisez un **ton neutre**, qui ne soit ni orienté ni publicitaire ([aide](#)).
- Veillez également à **structurer** votre article, de manière à ce qu'il soit conforme aux autres pages de l'encyclopédie ([structurer](#) – [mettre en page](#)).

→ Si ces points sont respectés, pour transformer votre brouillon en article, utilisez le bouton « publier le brouillon » en haut à droite. Votre brouillon sera alors transféré dans l'espace encyclopédique.

Questionnement initial

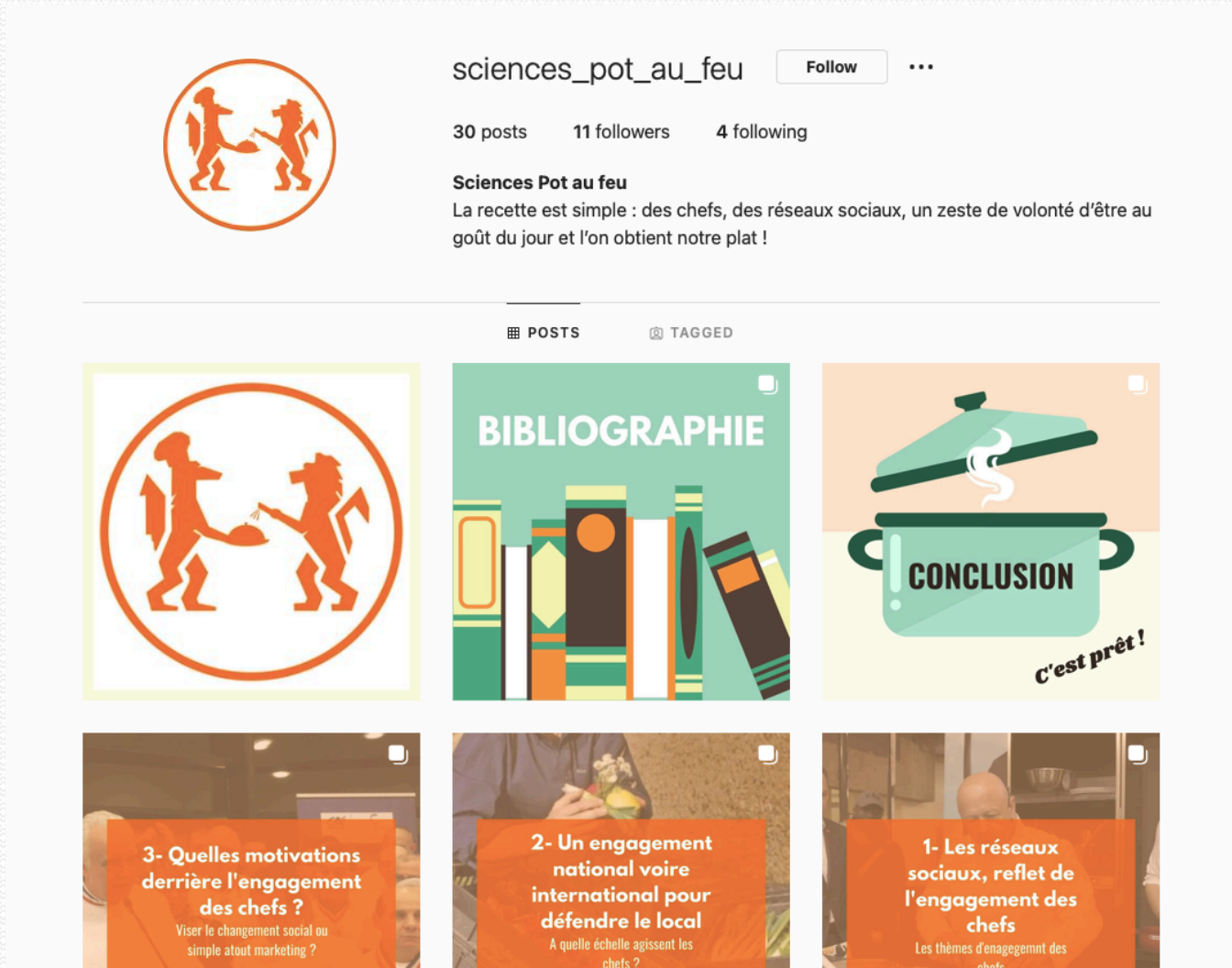
“S’informer à l’âge de l’abondance”. Tel était le thème général de ce semestre de Culture et enjeux du numérique. Quand nous avons eu connaissance de celui-ci, nous avons immédiatement pensé à [Wikipédia](#). Face à l’abondance de sources sur Internet, lorsqu’on souhaite faire une recherche élémentaire, il est courant d’aller sur Wikipédia; il s’agit d’ailleurs du sixième site le plus consulté.

Cette encyclopédie, même si elle n’est pas exhaustive, est en effet assez complète et assez fiable. Il s’agit d’une encyclopédie participative, un commun informationnel, d’une ampleur inédite: comme l’indique le livret de bienvenue sur Wikipédia:

«Wikinédia est la plus grande encyclopédie du monde. Créée en 2001, elle est alimentée chaque jour par plus de cent mille

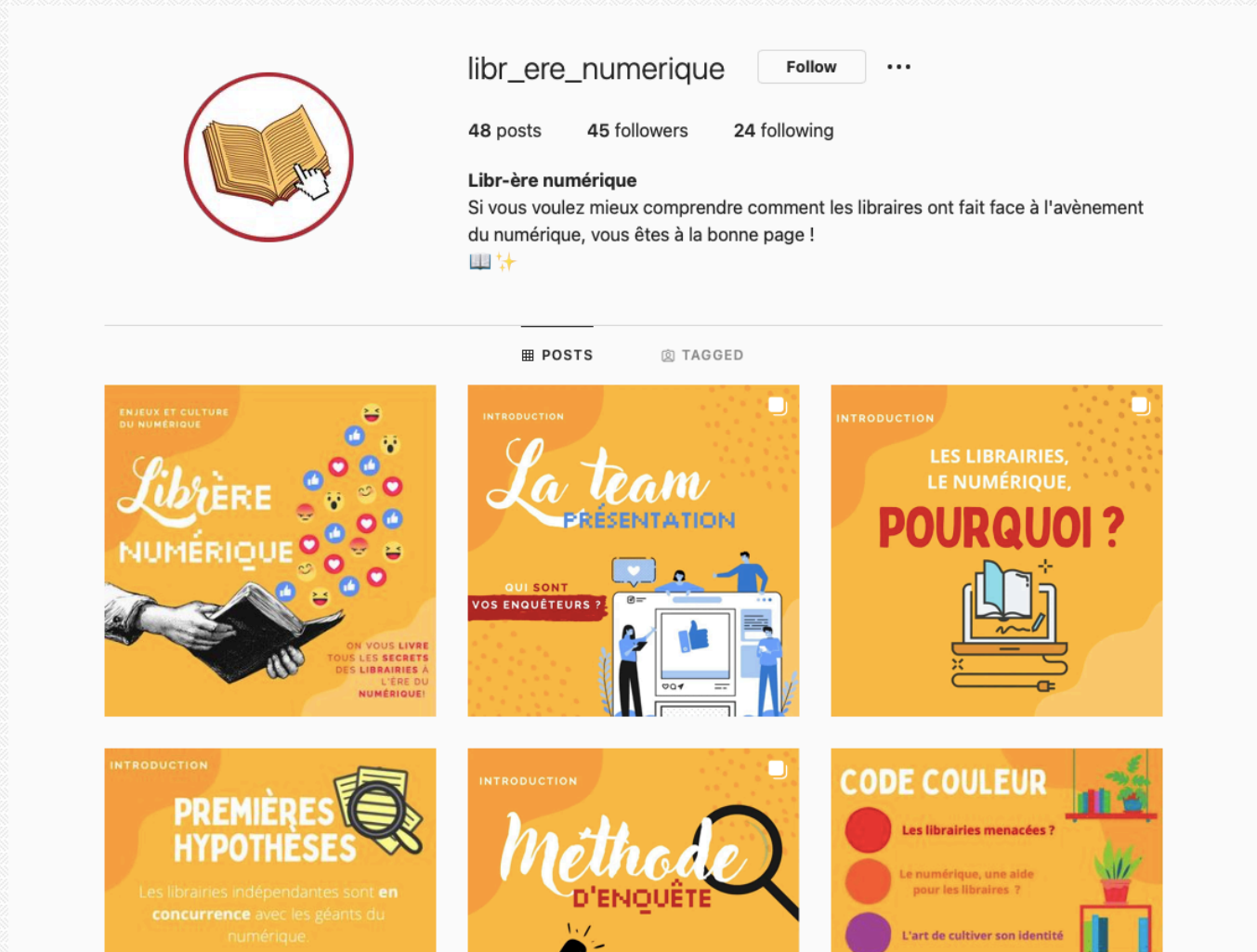
<https://fr.wikipedia.org/wiki/Utilisateur:Explorationnumérique/Brouillon>

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https://www.instagram.com/sciences_pot_au_feu/

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https://www.instagram.com/libr_ere_numerique/

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 Nov 2021 · 7 min 23 sec

About

Bienvenue dans La Tête dans les Étoiles, un podcast qui va s'interroger sur notre relation au numérique dans nos pratiques spirituelles. Au programme, Co-Star et l'essor de

[... see more](#)

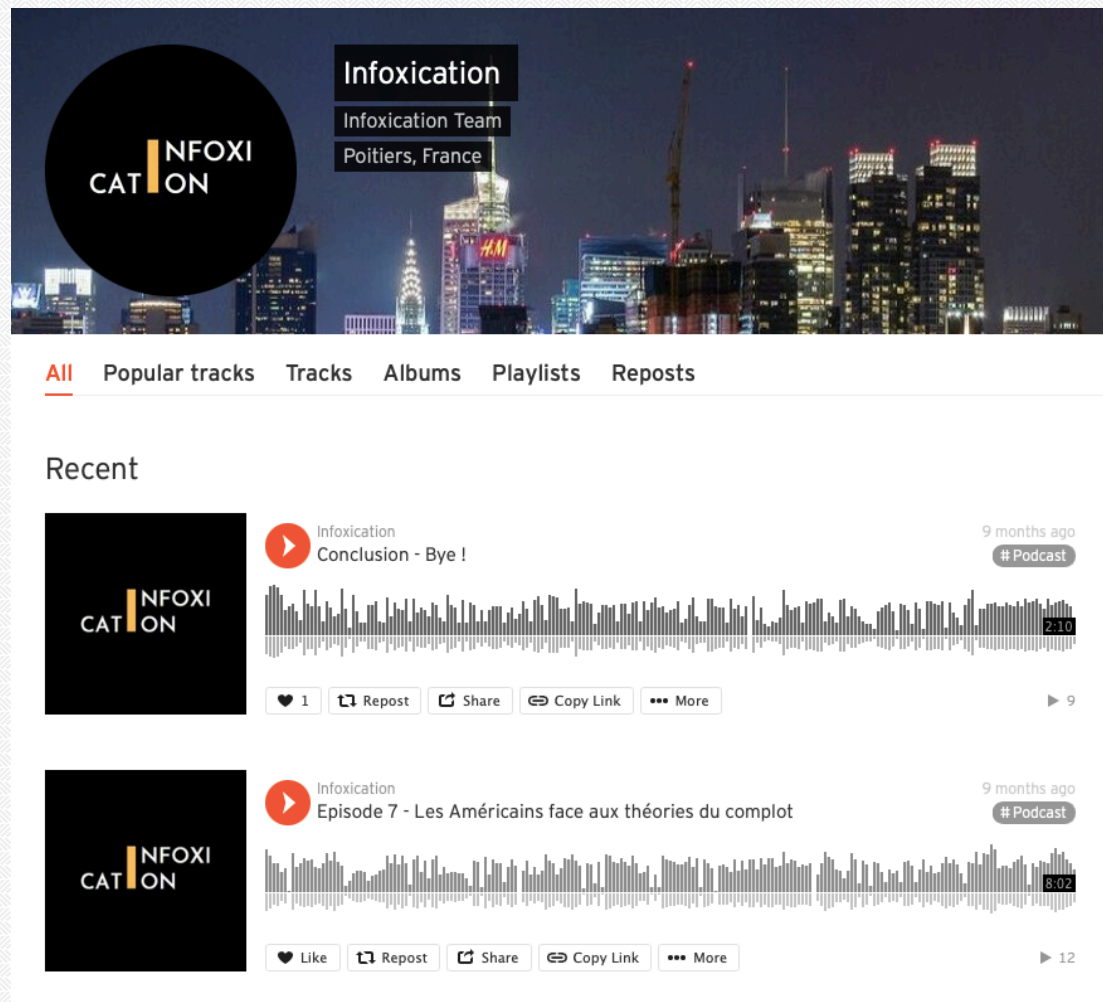


Bande-annonce : Co-Star, l'essor des applications...

 **TRAILER** 2 min 12 sec

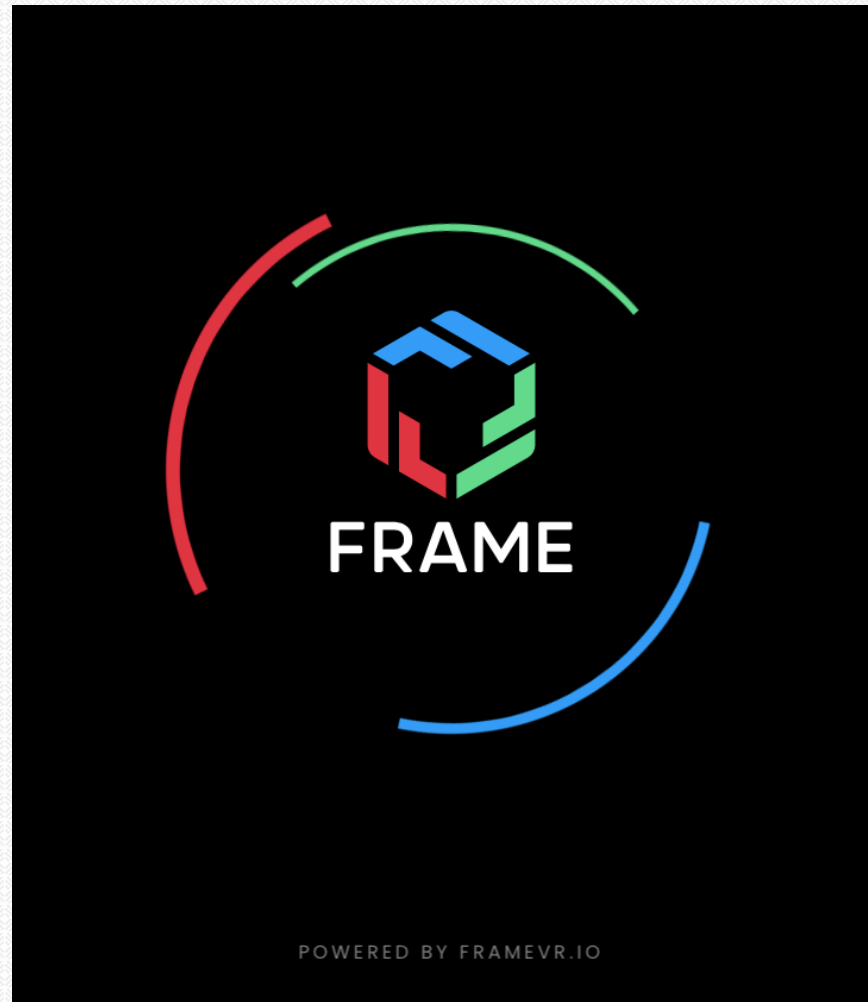
<https://open.spotify.com/show/3XOCEDHAEhA1RRasLUN5oj>

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<https://soundcloud.com/infoxication-86>

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<https://framevr.io/vraiepartie1>

Homework

- constitute groups of 2 to 3 students
- read the syllabus
- think about 2/3 topics for the digital exploration to share with the rest of the class
- read John Perry Barlow's Declaration of the Independence of Cyberspace

Thank you!