



Dirk Helbing (ETH Zurich)
dhelbing@ethz.ch

Digital Revolution: Dangers and Opportunities for Democracies

Follow **FuturICT** on





Source: ddp images/Marcus Brandt

<http://www.sueddeutsche.de/politik/streit-beigelegt-einigung-ueber-foederalismusreform-1.413140>

Climate Change



Financial, Economic, Spending Crisis



Conflict



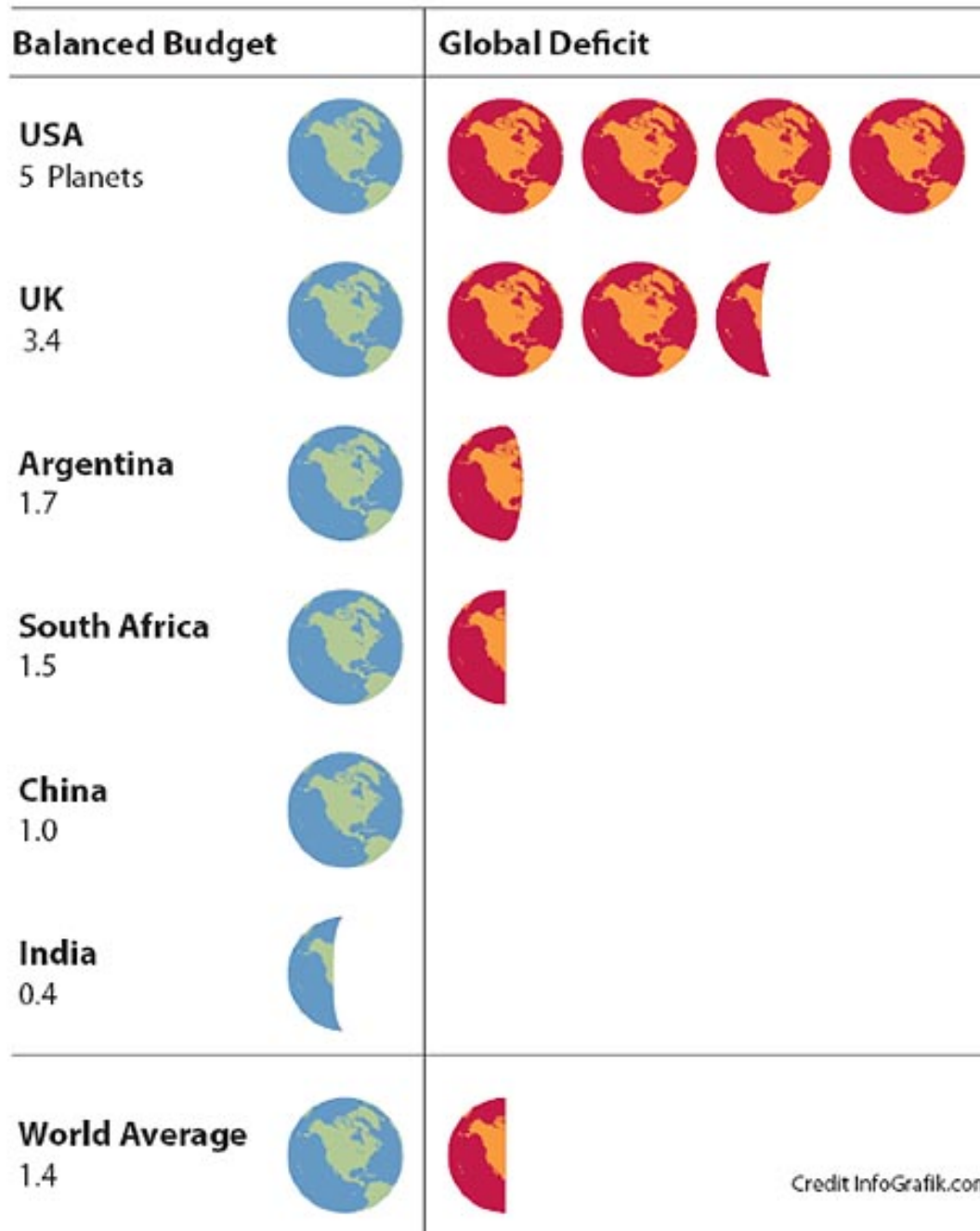
Mass Migration



Terrorism



How many planets we'd need if everyone lived like a resident of the following:



Our main problem is the lack of sustainability

The Digital Revolution:

Will Big Data and AI save us?



1 **NEW**
DEFINITION
IS ADDED ON
urban

1,600+
READS ON
Scribd.

13,000+ HOURS
MUSIC
STREAMING ON
PANDORA

12,000+
NEW ADS
POSTED ON
craigslist

370,000+ MINUTES
VOICE CALLS ON

skype™

98,000+
TWEETS

320+
NEW
twitter
ACCOUNTS

100+
NEW
Linked in
ACCOUNTS

1 **associatedcontent**
NEW
ARTICLE IS
PUBLISHED

6,600+
NEW
PICTURES ARE
UPLOADED ON
flickr™

50+
WORDPRESS
DOWNLOADS

695,000+
facebook.
STATUS
UPDATES

125+
PLUGIN
DOWNLOADS

79,364
WALL
POSTS

510,040
COMMENTS

Google

Google Search

168 MILLION
EMAILS
ARE SENT

60+
NEW
BLOGS

1,500+
BLOG
POSTS

70+
DOMAINS
REGISTERED

600+
NEW
VIDEOS



100+

Answers.com

40+

YAHOO! ANSWERS

QUESTIONS
ASKED ON THE
INTERNET...

25+ HOURS
TOTAL
DURATION

Reasons

Sustainability:

”To save the world”

Safety:

”For security reasons”

Power:

”Knowledge is power”

Money:

”Data is the new oil”



facebook

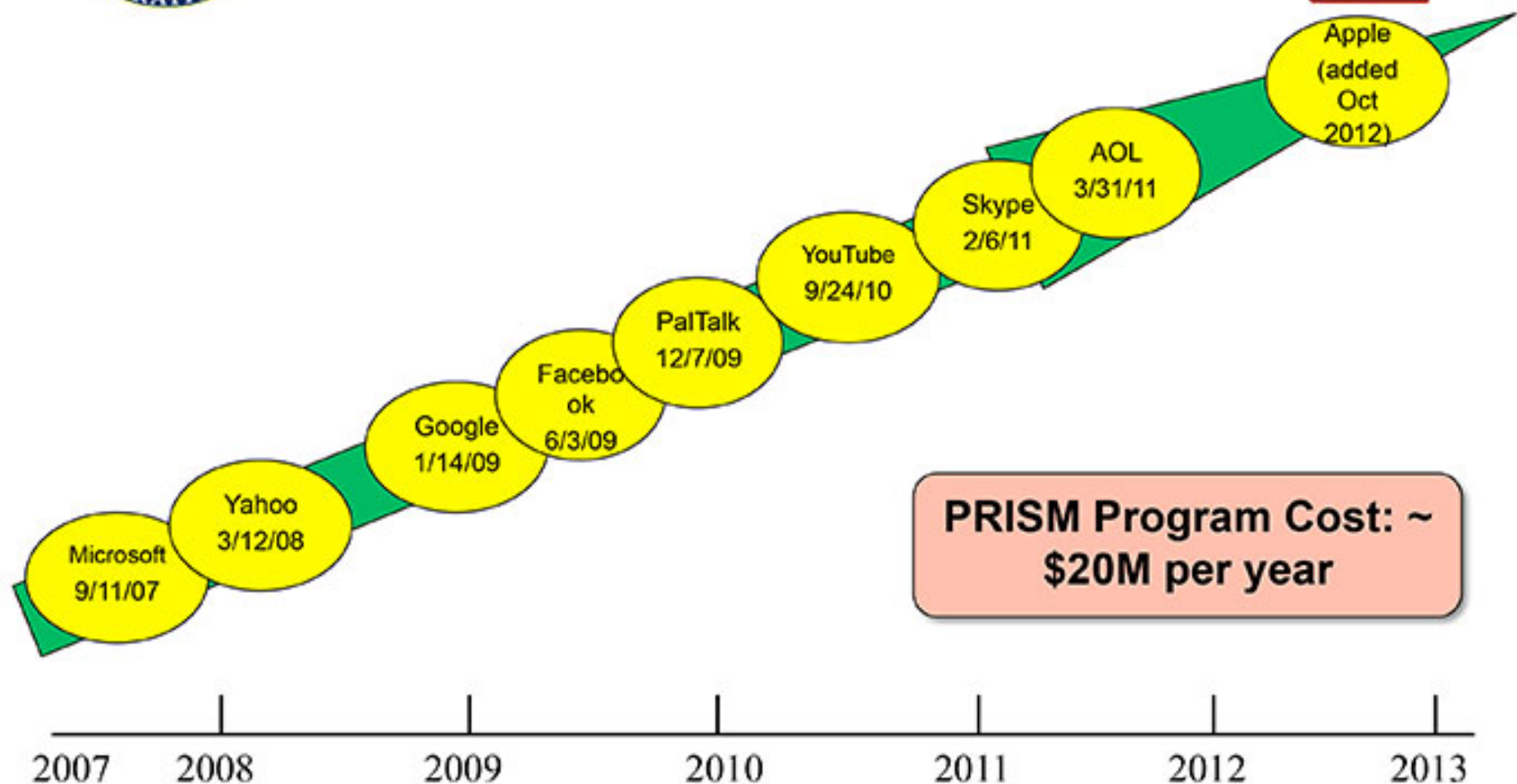


Hotmail

YAHOO!



(TS//SI//NF) Dates When PRISM Collection
Began For Each Provider



**PRISM Program Cost: ~
\$20M per year**

Surveillance Capitalism

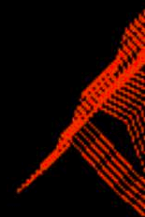
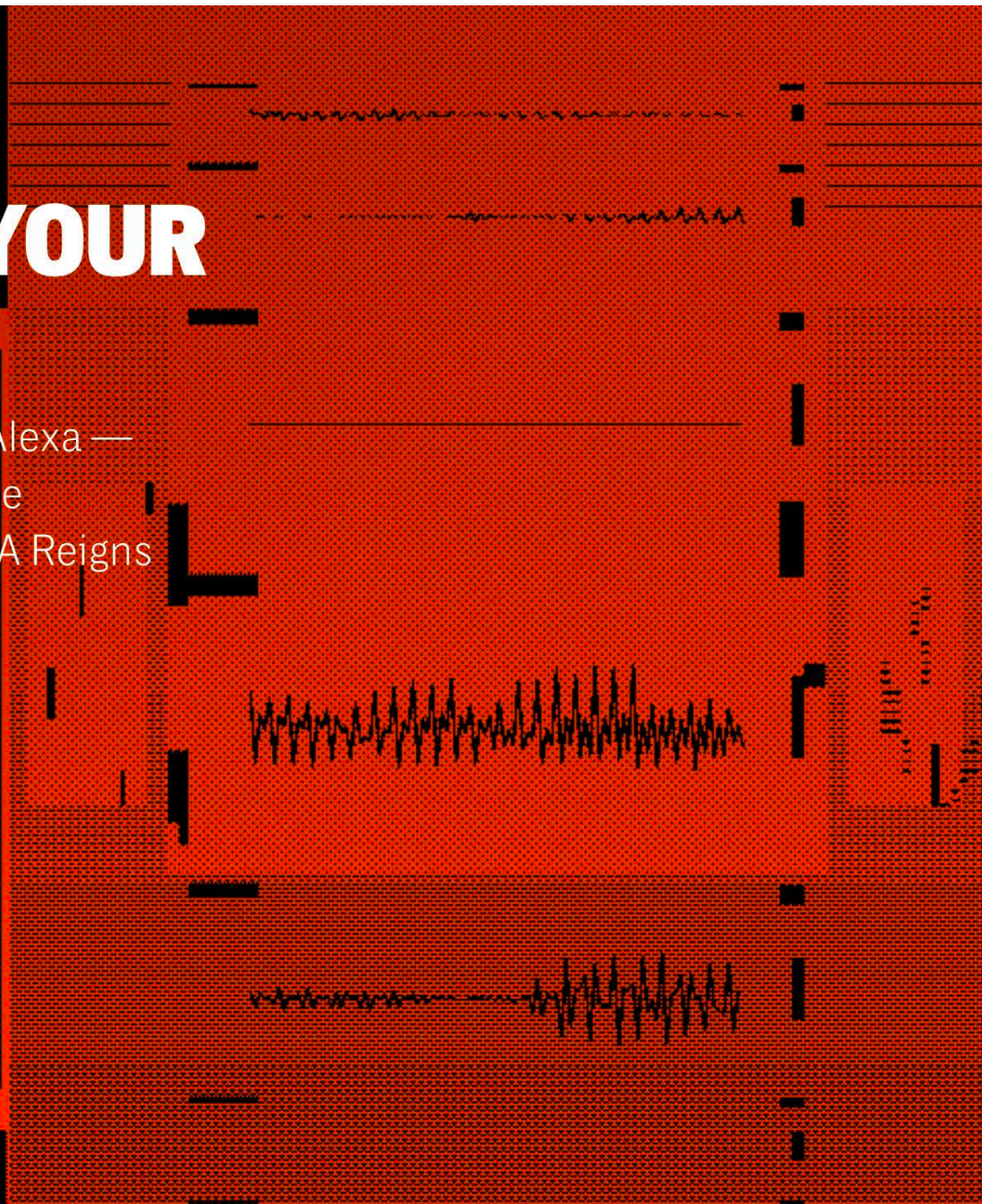
GET ALL THE
INFORMATION YOU CAN,
WE'LL THINK OF A
USE FOR IT LATER.



The
Intercept_

FINDING YOUR VOICE

Forget About Siri and Alexa —
When It Comes to Voice
Identification, the “NSA Reigns
Supreme”



CIA Director Gus Hunt

“It is really very nearly within our grasp to be able to compute on all human generated information,” Hunt said.

“You’re already a walking sensor platform,” he said, noting that mobiles, smartphones and iPads come with cameras, accelerometers, light detectors and geolocation capabilities.

http://www.huffingtonpost.com/2013/03/20/cia-gus-hunt-big-data_n_2917842.html

Google CEO: "We Know Where You Are. We Know Where You've Been. We Can More Or Less Know What You're Thinking About."

Nick Saint

🕒 Oct. 4, 2010, 9:47 AM 🔥 14,815



FACEBOOK



LINKEDIN



TWITTER



GOOG Alphas Non Vtg Rg-C

▲ **1,031.79**

27.23 (+2.70 %)

[Get real-time GOOG charts here »](#)

[Disclaimer](#)

Google CEO Eric Schmidt really has a knack for expressing relatively benign ideas in a way that makes him and his company look incredibly creepy.

The Atlantic [has posted](#) video of the full interview in which Eric talked about 'the creepy line', and it is chock full of unsettling sound bytes. In particular, he had the following to say on privacy:

With your permission, you give us more information about you, about your friends, and we can improve the quality of our searches. We don't need you to type at all. We know where you are. We know where you've been. We can more or less know what you're thinking about.

Digital Crystal Ball

CHRIS ANDERSON'S DREAM:

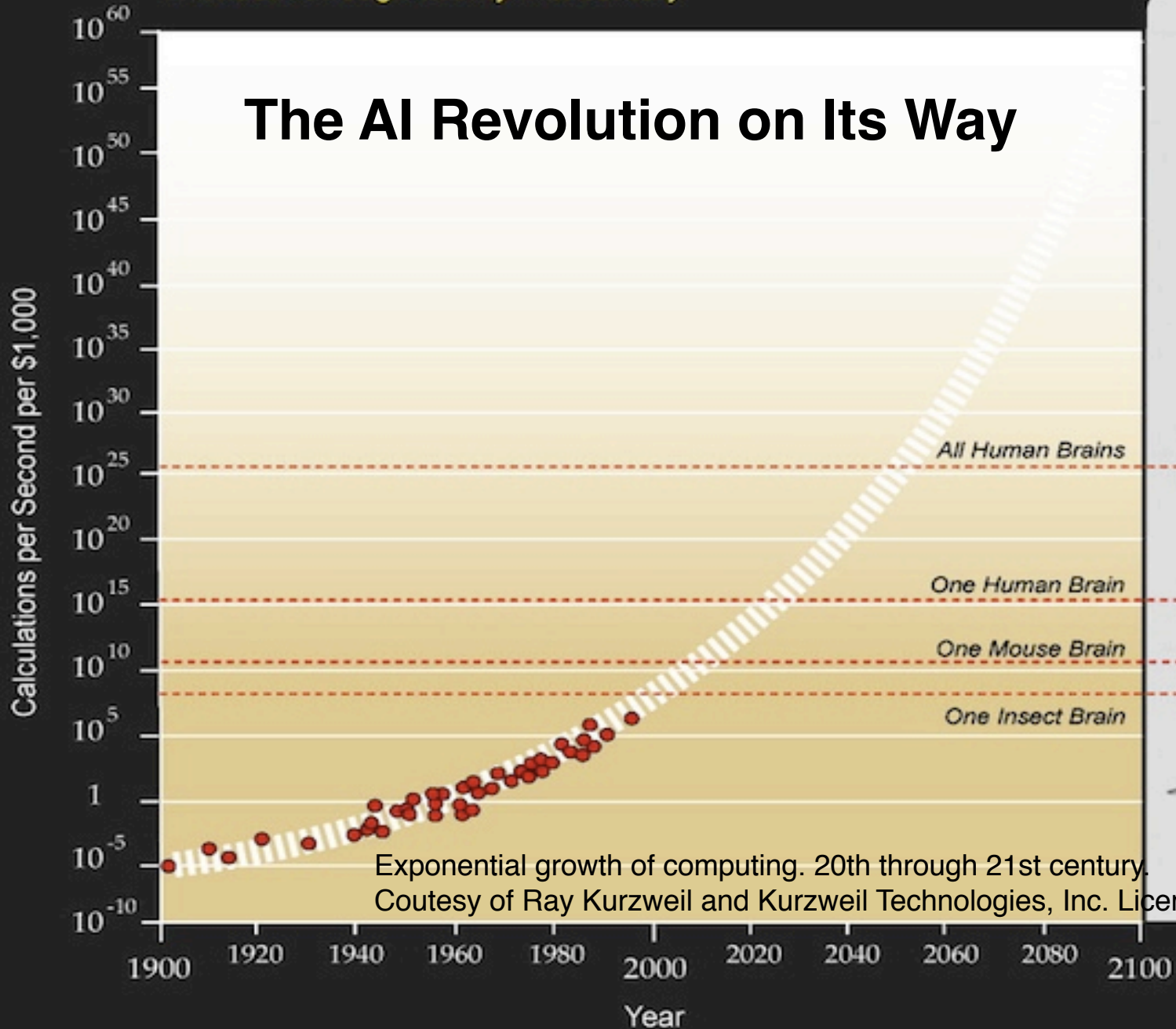
The end of theory: the data deluge makes the scientific method obsolete.

Wired Magazine 16(7), 2008

Exponential Growth of Computing

Twentieth through twenty first century

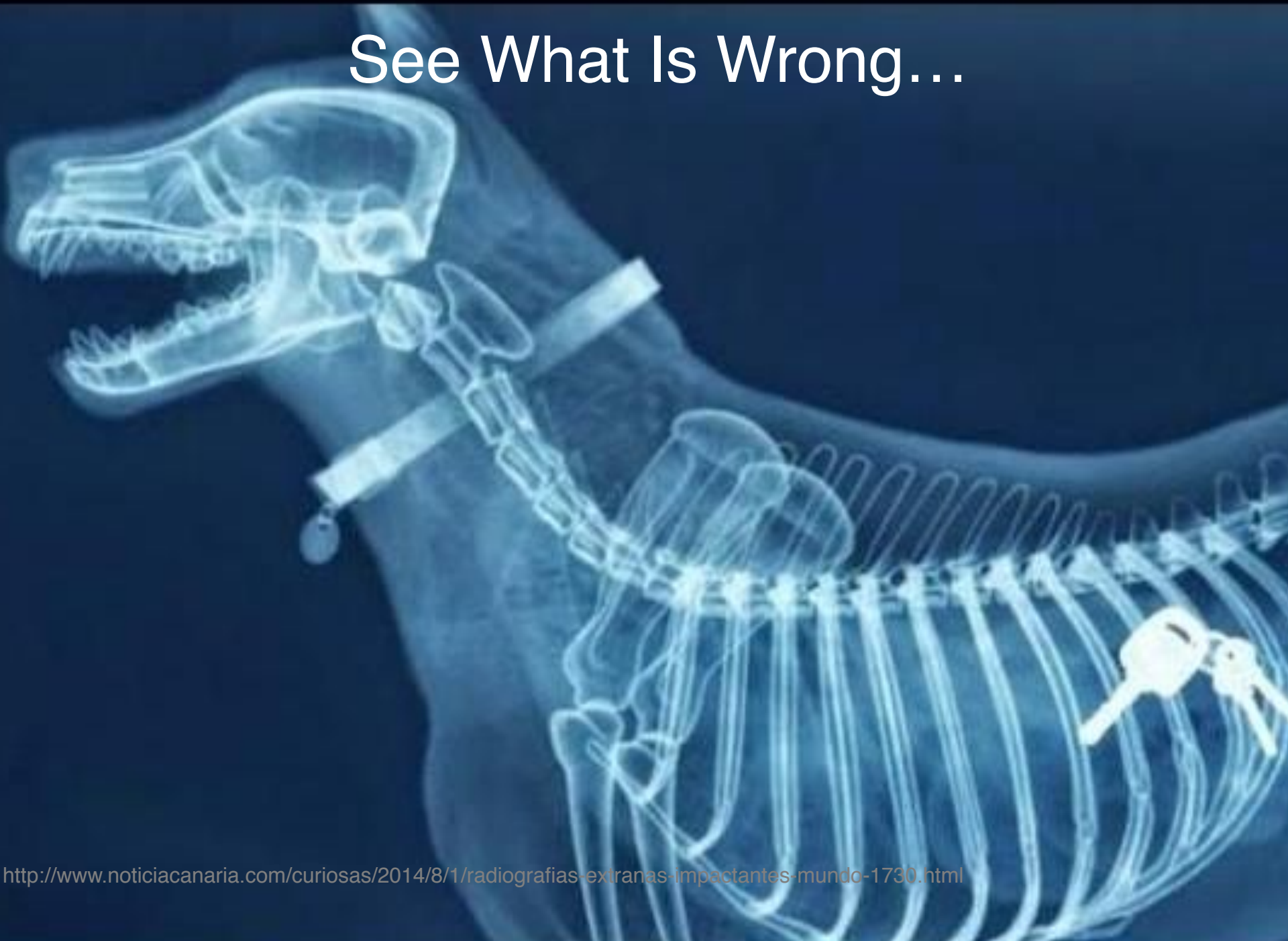
The AI Revolution on Its Way



Logarithmic Plot

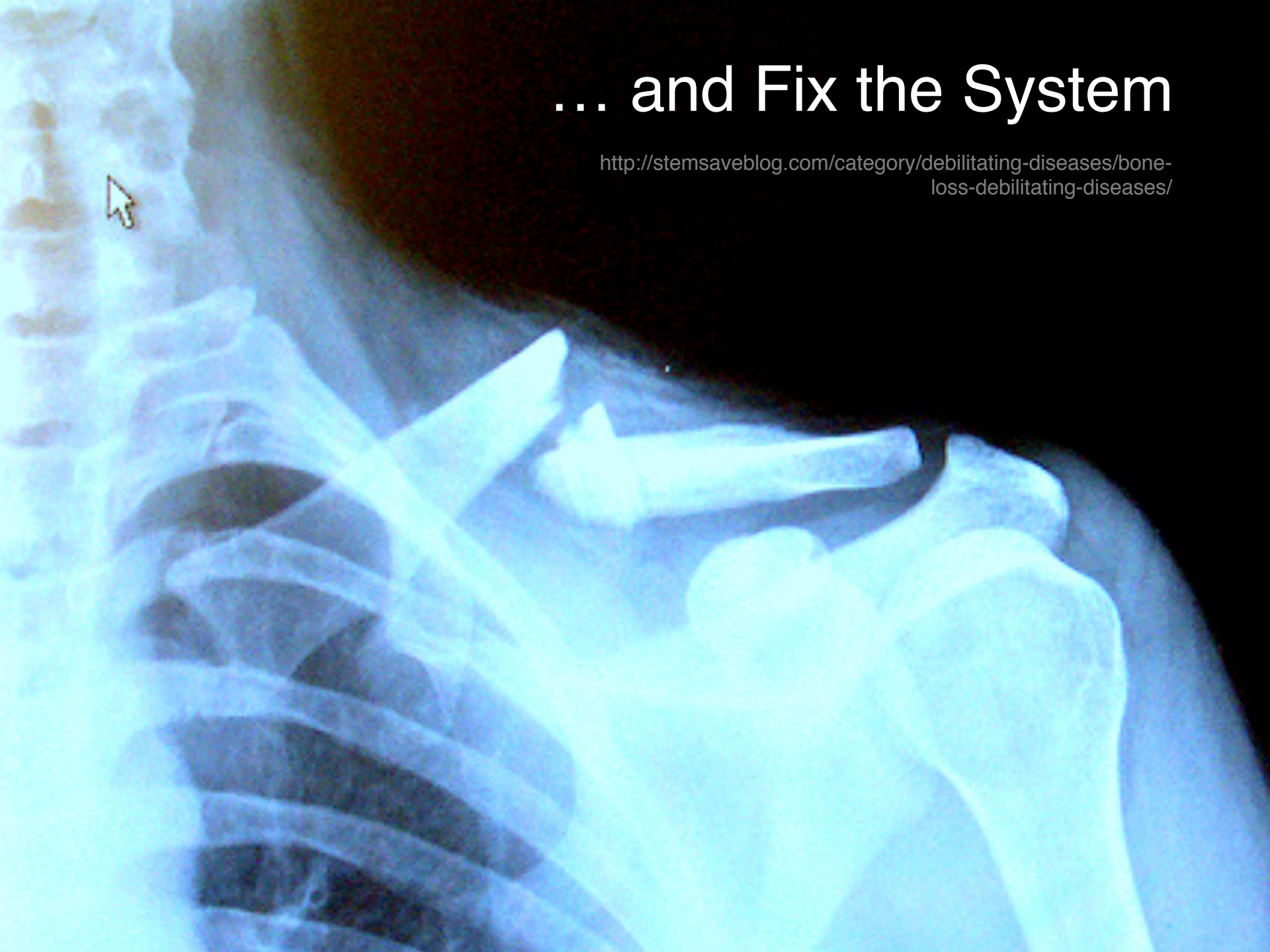


See What Is Wrong...



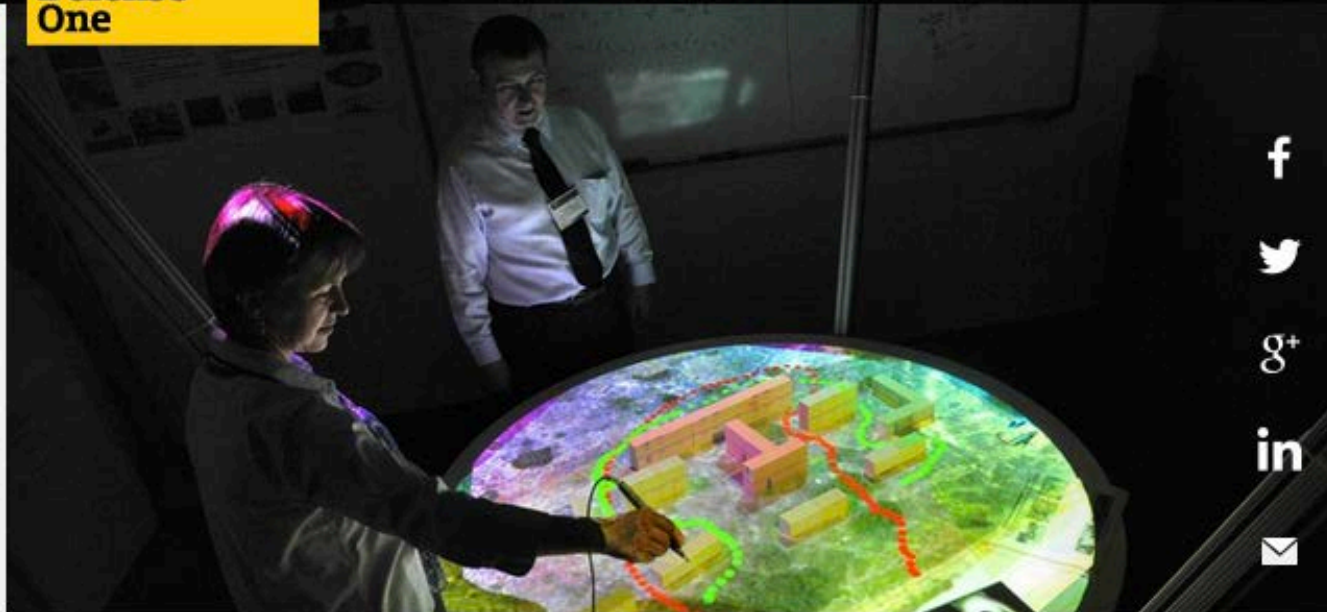
... and Fix the System

<http://stemsaveblog.com/category/debilitating-diseases/bone-loss-debilitating-diseases/>



A crystal ball is the central focus, containing a blue-tinted image of the Facebook logo and the word "facebook" in white. The crystal ball is placed over a blurred background of a computer screen. The screen shows a Facebook interface with a blue header, a search bar, and a navigation bar. The text "Can We Build A Crystal Ball?" is overlaid in red on the crystal ball.

Can We Build A Crystal Ball?



AA FONT SIZE + PRINT U.S. NAVY PHOTO BY MASS COMMUNICATION SPECIALIST 3RD CLASS JOHN FISCHER

Can the Military Make a Prediction Machine?

APRIL 8, 2015 BY PATRICK TUCKER

The planet is awash in open, free data. Can military-funded research turn it into a crystal ball?

[Research & Development](#) / [Intelligence](#)

What could the military do if it could better understand the massive amounts of data that humanity creates, an estimated 2.5 quintillion bytes every day? Could it predict aspects of the future?

Profiling / Digital Double

Digital Doubles

education level

number of kids

estimated net
worth

contact info

types of recent
purchases

religious & political
views

investments

marital status

habits (like
smoking &
gambling)

mortgage amount

salary



See anyone's personality

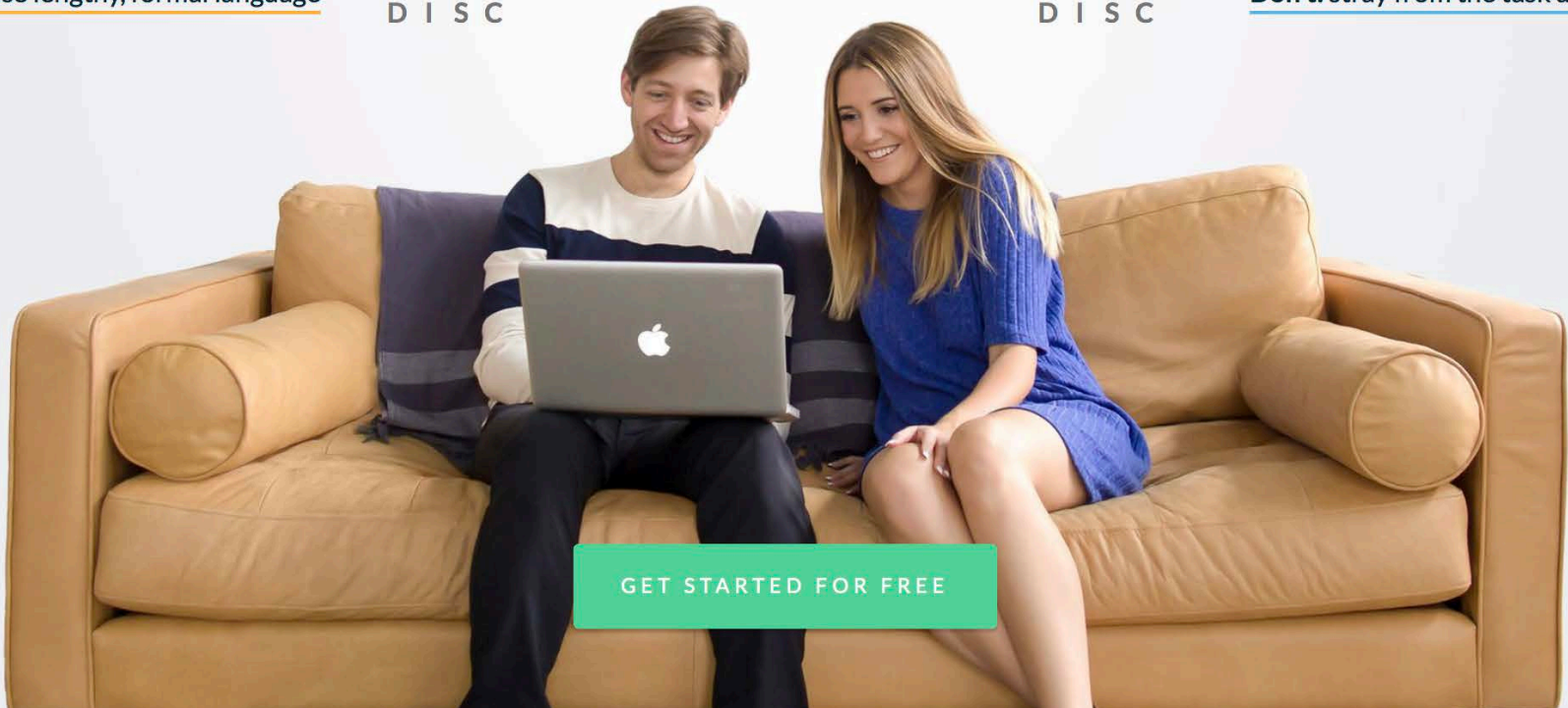
Do: use expressive language

Don't: use lengthy, formal language

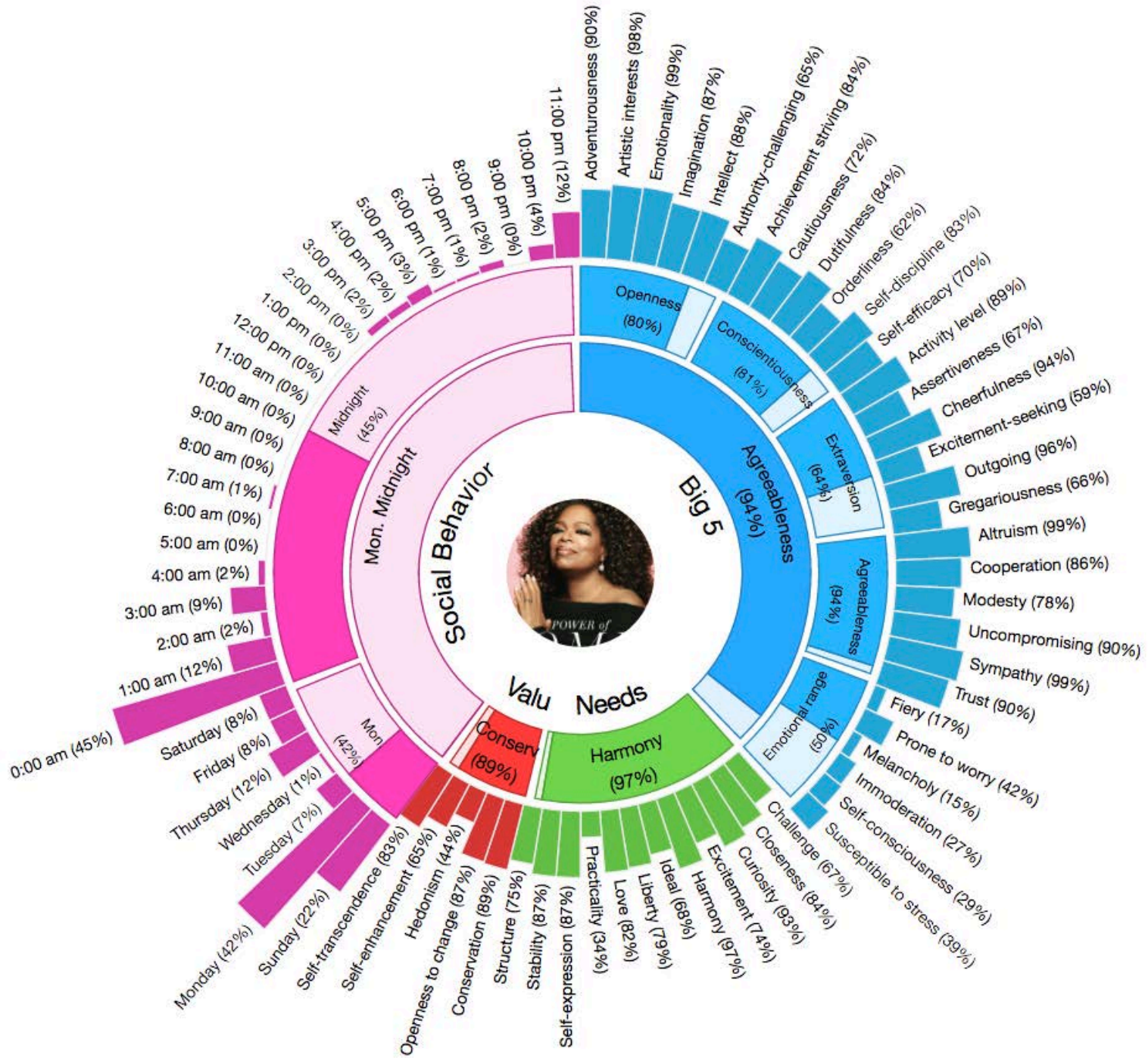


Do: speak clearly and directly

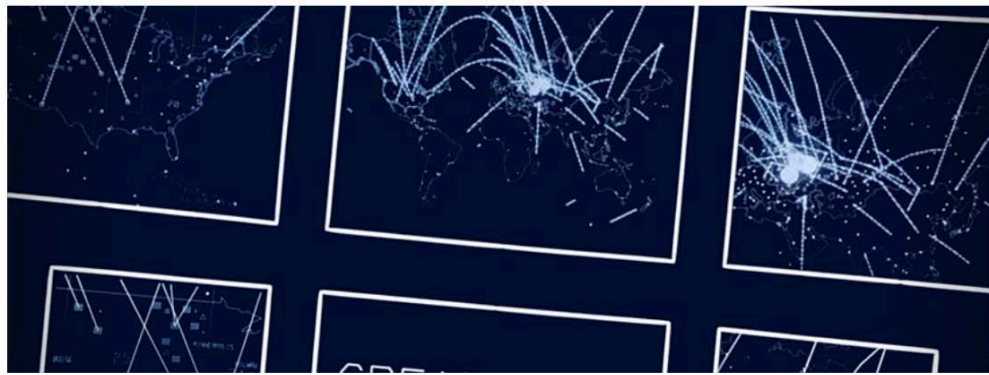
Don't: stray from the task at hand



GET STARTED FOR FREE



World Simulation



Sentient World Simulation and NSA Surveillance – Exploiting Privacy to Predict the Future?

Last updated on July 28, 2013 by Daniel Faggella



One of the major headlines in recent news is Edward Snowden's revelation of documents which prove that the US government is using high-tech software to gather massive amounts of private information on every-day Americans.

Snowden has taken bold action against the government in an effort to publicize the government's violation of constitutional rights and to "inform the public as to which is done in their name and that which is done against them".



Photo of Edward Snowden



Business ▶ **Government**

Sentient world: war games on the grandest scale

Sim Strife

23 Jun 2007 at 09:02, [Mark Baard](#)



Perhaps your real life is so rich you don't have time for another.

Even so, the US Department of Defense (DOD) may already be creating a copy of you in an alternate reality to see how long you can go without food or water, or how you will respond to televised propaganda.

The DOD is developing a parallel to Planet Earth, with billions of individual "nodes" to reflect every man, woman, and child this side of the dividing line between reality and AR.

Called the Sentient World Simulation (SWS), it will be a "synthetic mirror of the real world with automated continuous calibration with respect to current real-world information", according to a concept paper for the project.

"SWS provides an environment for testing Psychological Operations (PSYOP)," the paper reads, so that military leaders can "develop and test multiple courses of action to anticipate and shape behaviors of adversaries, neutrals, and partners".

PsyOps

Attention Economy

Attention Economy



Bread and Circuses 2.0

WEAPONS OF



MASS DISTRACTION

Targeting / Behavioral Manipulation

You are being
profiled and targeted.
All of you!

Michal Kosinski: 500 MB per day per person in 2012,
now dozens of GB per day.
In China: at least 2000 TB per day.

Manipulation of the Choices of People by Personalized Information



Tristan Harris: Mass Mind Control



How a handful of tech companies control billions of minds every day | Tristan Harris

258,580 views

6K 237 SHARE ...

Manipulation of Election Outcomes

Brexit-Propaganda: Die Bots wollen raus aus der EU

Von *Piotr Heller*



AFP

Pro-Brexit-Demonstrantin mit "I'm In"-Aufkleber auf dem Handy

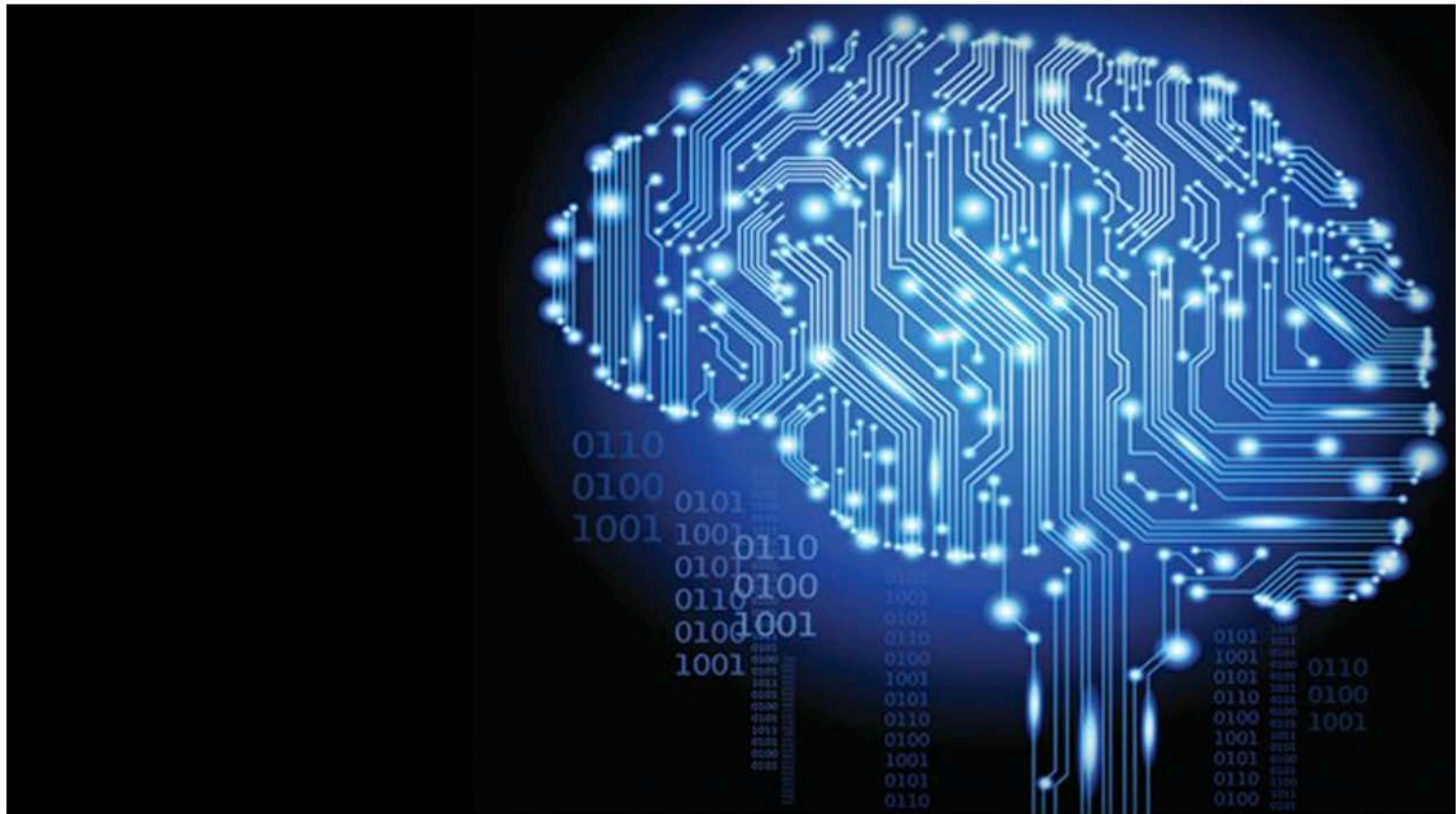
Beim Wahlkampf um das EU-Referendum im Vereinigten Königreich mischen automatische Meinungsmaschinen in sozialen Netzwerken kräftig mit. Das könnte einige Wähler durchaus beeinflussen.

Meet the weaponized propaganda AI that knows you better than you know yourself

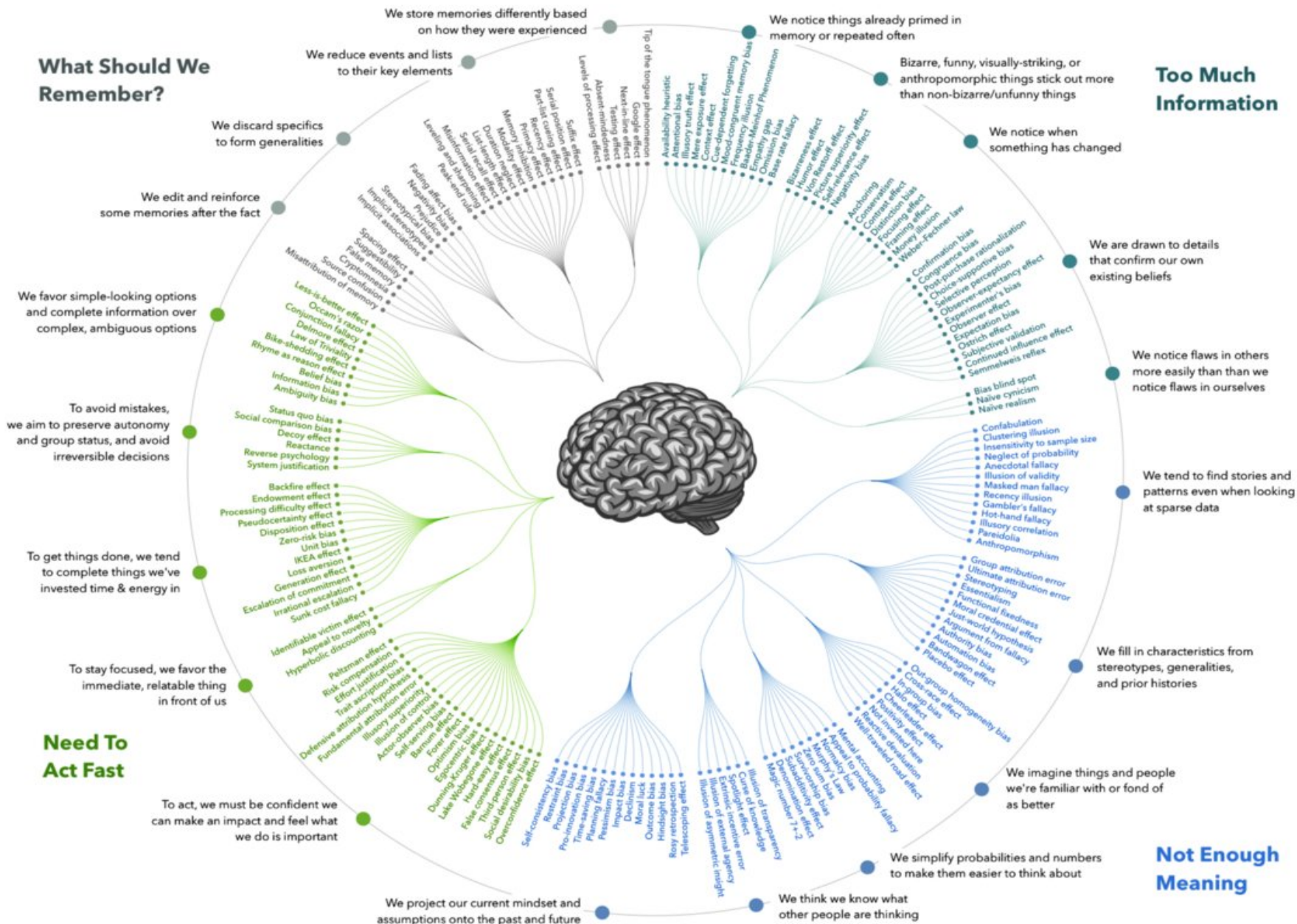
By Jessica Hall on March 1, 2017 at 8:42 am | [0 Comments](#)



1.3K SHARES



COGNITIVE BIAS CODEX

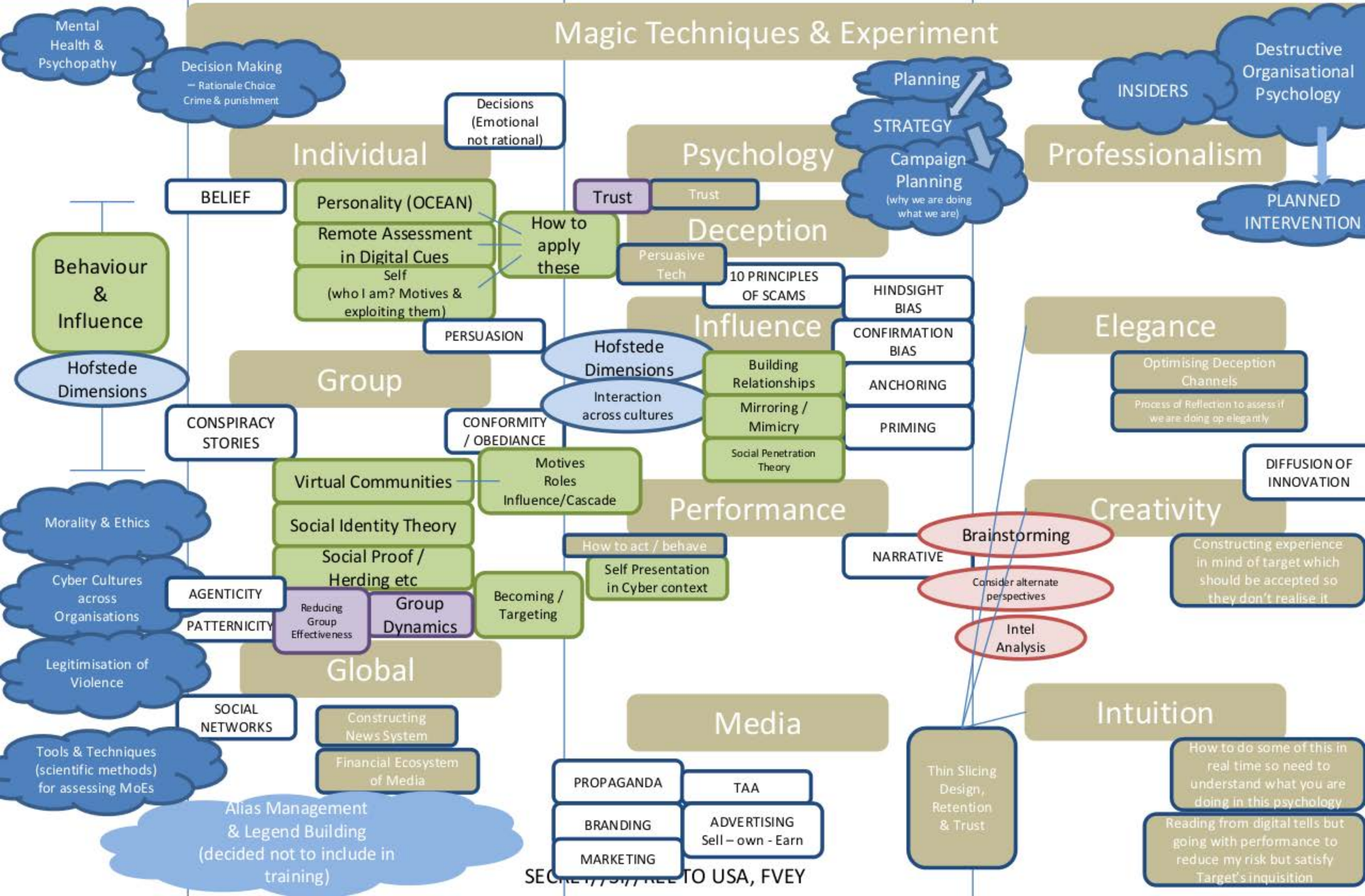


ACNO Key Skill Strands

Online HUMINT

Influence & Info Ops

Disruption & Comp Net Attack



Behavioral Control and Citizen Score



*The Making of
Behavioral Economics*

MISBEHAVING

Richard H. Thaler

*Best-selling coauthor of **Nudge***





Insights into Sesame Credit & Top 5 Ways to Use a High Sesame Score

These are the top ways in which netizens' high Sesame Credit scores can be used in daily life.



Published : 4 days ago

By **Manya Koetse** 



ADVERTISEMENT

Big data, meet Big Brother

China invents the digital totalitarian state

The worrying implications of its social-credit project



Censorship and Propaganda

Welcome to a Fact-Free World

🕒 05/06/2016 17:20 | **Updated** 05 June 2016



Robin Lustig

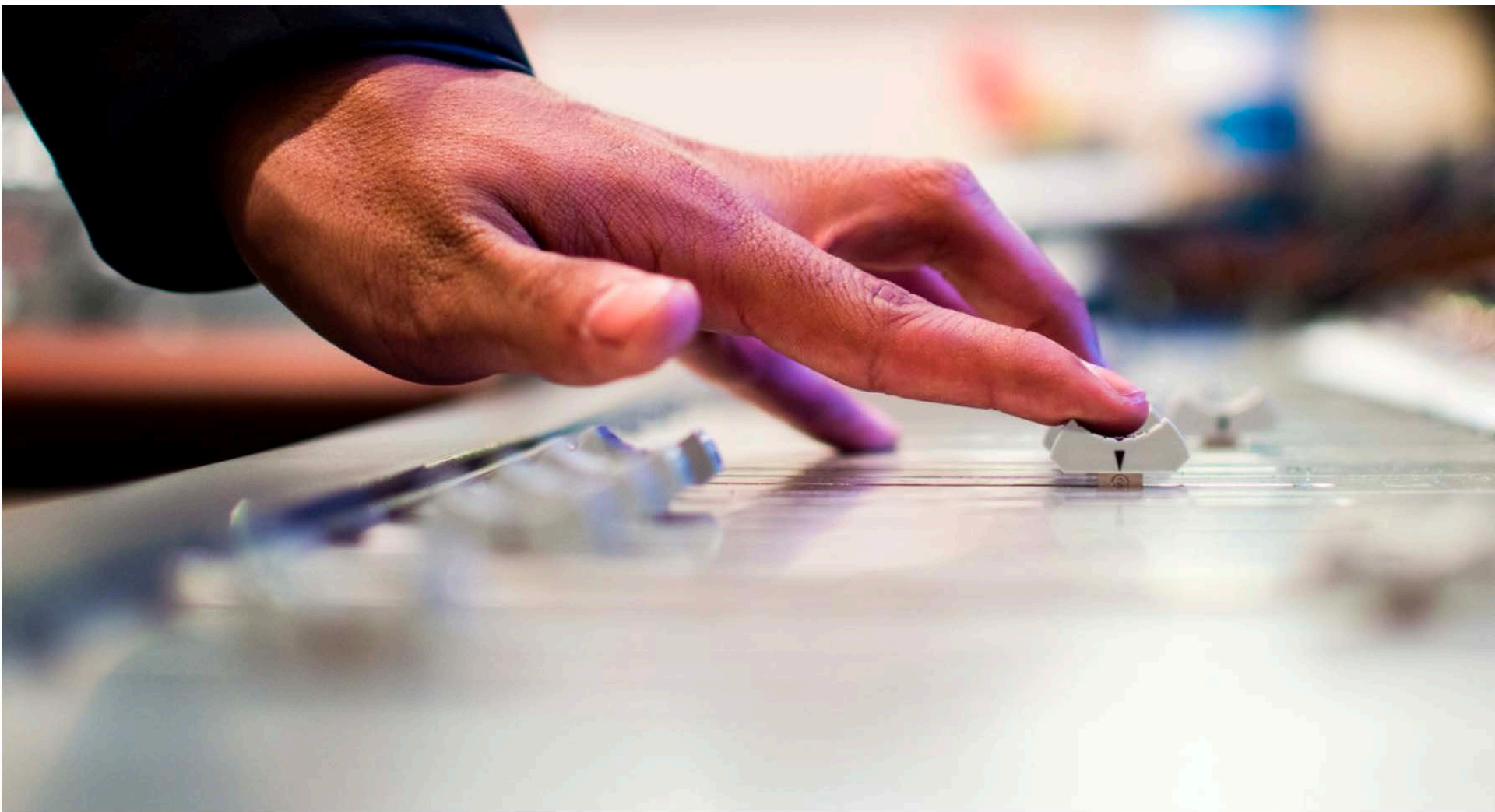


Journalist and broadcaster

See if you can spot the odd one out: Marilyn Monroe, Elvis Presley, Kim Kardashian, Donald Trump, Boris Johnson, Nigel Farage, David Cameron.

All but one of them, you will have noticed, are celebrities, people to whom the cameras are irresistibly drawn as if by some mysterious magnetic force.

The exception - of course - is David Cameron. And that may be one reason why the Remain campaign, as it counts down to the EU referendum in three weeks' time, looks as if it could now be in real trouble.



Adobe's "Project VoCo" Software Will Let You Photoshop Voice Recordings

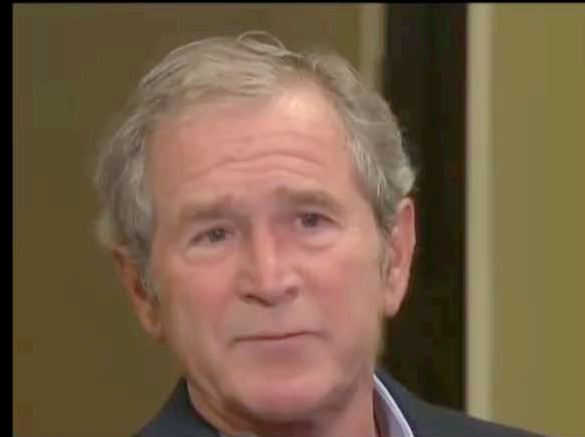
Using the speaker's own voice to produce new words.

Real-Time Re-Enactment of Videos

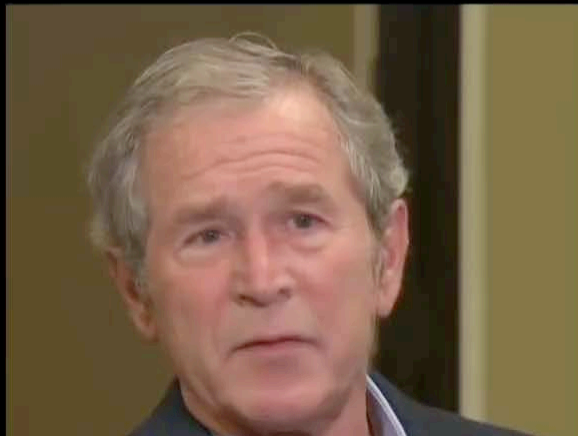
Source Actor



Real-time Reenactment



Reenactment Result



Target Actor



Lifestyle › Tech › News

Tech billionaires convinced we live in the Matrix are secretly funding scientists to help break us out of it

Many of the world's richest and most powerful people, including Elon Musk and Bank of America, think that we live in a simulation of the real world

Andrew Griffin | [@_andrew_griffin](#) | Thursday 6 October 2016 |



83K
shares

MATRIX
RELOADED

WWW.THEMATRIX.COM



Mind Reading and Mind Control

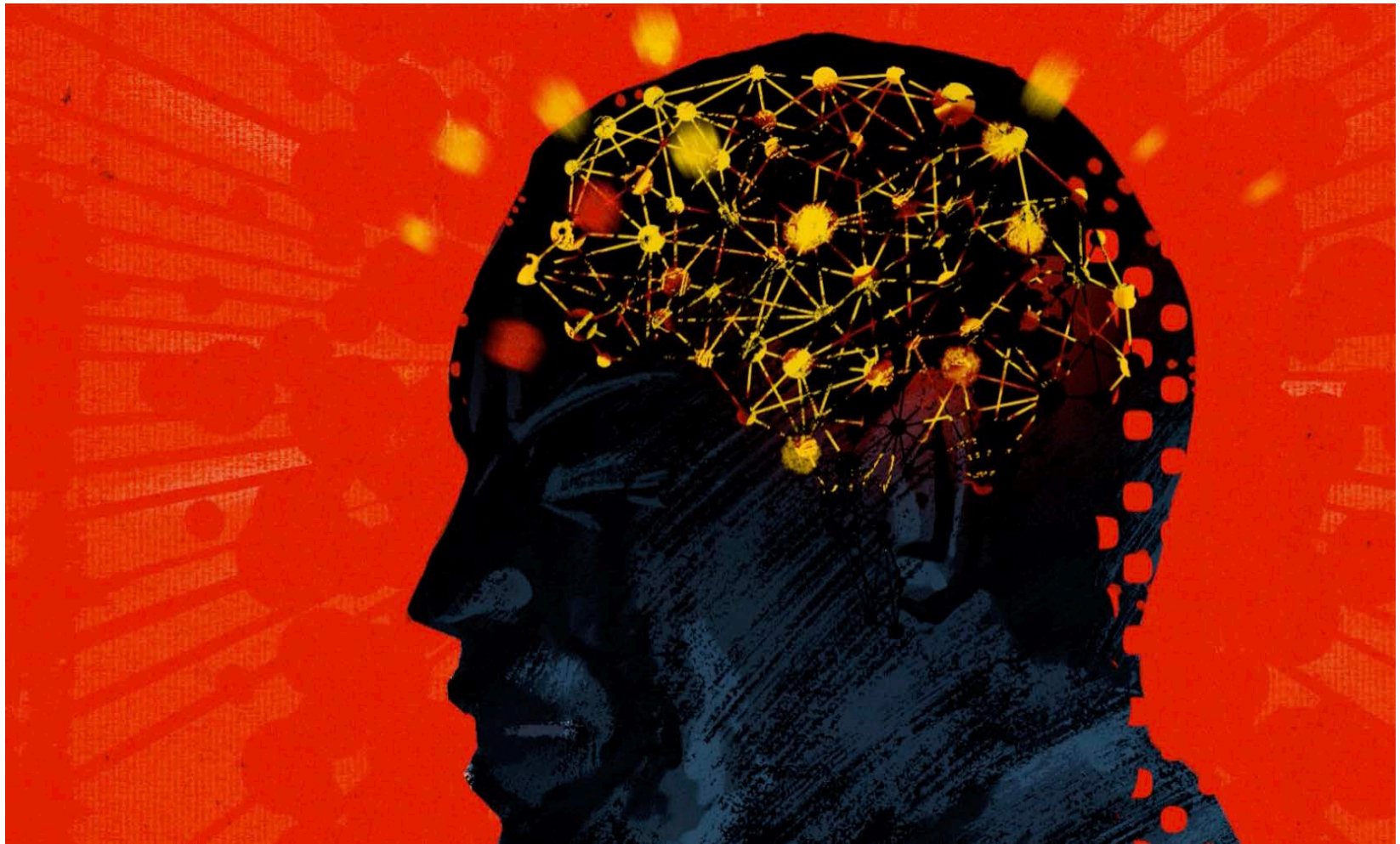
Brain-reading tech is coming. The law is not ready to protect us.

In the era of neurocapitalism, your brain needs new rights.

By Sigal Samuel | Updated Dec 20, 2019, 11:35am EST



SHARE



Nanotools for Neuroscience and Brain Activity Mapping

A. Paul Alivisatos,[†] Anne M. Andrews,^{‡§} Edward S. Boyden,[⊥] Miyoung Chun,^{||} George M. Church,[#] Karl Deisseroth,^{¶□} John P. Donoghue,[▪] Scott E. Fraser,[°] Jennifer Lippincott-Schwartz,[•] Loren L. Looger,[^] Sotiris Masmanidis,^{‡^*} Paul L. McEuen,[▽] Arto V. Nurmikko,[▼] Hongkun Park,[○] Darcy S. Peterka,[•] Clay Reid,^{††} Michael L. Roukes,^{‡‡§§} Axel Scherer,^{‡‡⊥*} Mark Schnitzer,^{¶|||} Terrence J. Sejnowski,^{^^} Kenneth L. Shepard,^{##} Doris Tsao,^{¶¶} Gina Turrigiano,^{□□} Paul S. Weiss,^{‡***} Chris Xu,^{○○} Rafael Yuste,^{●●*} and Xiaowei Zhuang^{^^}

[Author information](#) ► [Copyright and License information](#) ► [Disclaimer](#)

The publisher's final edited version of this article is available at [ACS Nano](#)

See other articles in PMC that [cite](#) the published article.

Abstract

Go to: 

Neuroscience is at a crossroads. Great effort is being invested into deciphering specific neural interactions and circuits. At the same time, there exist few general theories or principles that explain brain function. We attribute this disparity, in part, to limitations in current methodologies. Traditional neurophysiological approaches record the activities of one neuron or a few neurons at a time. Neurochemical approaches focus on single neurotransmitters. Yet, there is an increasing realization that neural circuits operate at emergent levels, where the interactions between hundreds or thousands of neurons, utilizing multiple chemical transmitters, generate functional states. Brains function at the nanoscale, so tools to study brains must ultimately operate at this scale, as well. Nanoscience and nanotechnology are poised to provide a rich toolkit of novel methods to explore brain function by enabling simultaneous measurement and manipulation of activity of thousands or even millions of neurons. We and others refer to this goal as the Brain Activity Mapping Project. In this Nano Focus, we discuss how recent developments in nanoscale analysis tools and in the design and synthesis of nanomaterials have generated optical, electrical, and chemical methods that can readily be adapted for use in neuroscience. These approaches represent exciting areas of technical development and research. Moreover, unique opportunities exist for nanoscientists, nanotechnologists, and other physical scientists and engineers to contribute to tackling the challenging problems involved in understanding the fundamentals of brain function.

Knowledge Doubling Every 12 Months, Soon to be Every 12 Hours

By: [David Russell Schilling](#) | April 19th, 2013

Tweet 

See also
FAZ Quarterly:
Revolution im Kopf

Knowledge Doubling Curve

Buckminster Fuller created the “Knowledge Doubling Curve”; he noticed that until 1900 human knowledge doubled approximately every century. By the end of World War II knowledge was doubling every 25 years. Today things are not as simple as different types of knowledge have different rates of growth. For example, nanotechnology knowledge is doubling every two years and clinical knowledge every 18 months. But on average human knowledge is doubling every 13 months. According to [IBM](#), the build out of the “internet of things” will lead to the doubling of knowledge every 12 hours.

Human Brain Indexing Will Consume Several Billion Petabytes

In a recent lecture at Harvard University neuroscientist Jeff Lichtman, who is attempting to map the human brain, has calculated that several billion petabytes of data storage would be needed to index the entire human brain. The Internet is currently estimated to be 5 million terabytes (TB) of which Google has indexed roughly 200 TB or just .004% of its total size. The numbers involved are astounding especially when considering the size of the human brain and the number of neurons in it.

Linear to Exponential Growth of Human Knowledge

A transition from the linear growth of human knowledge to the exponential growth of human knowledge has taken place.. According to researchers dealing with this information will necessitate the development of vastly more complex software, shareability, and artificial intelligence.

Author Clem Chambers, in a Forbes article on Amazon’s “Mechanical Turk” believes leading edge computer technology will be combined with artificial intelligence allowing collective problem-solving on a larger scale and the creation of vast amounts of data.

Neurocapitalism

Miriam Meckel



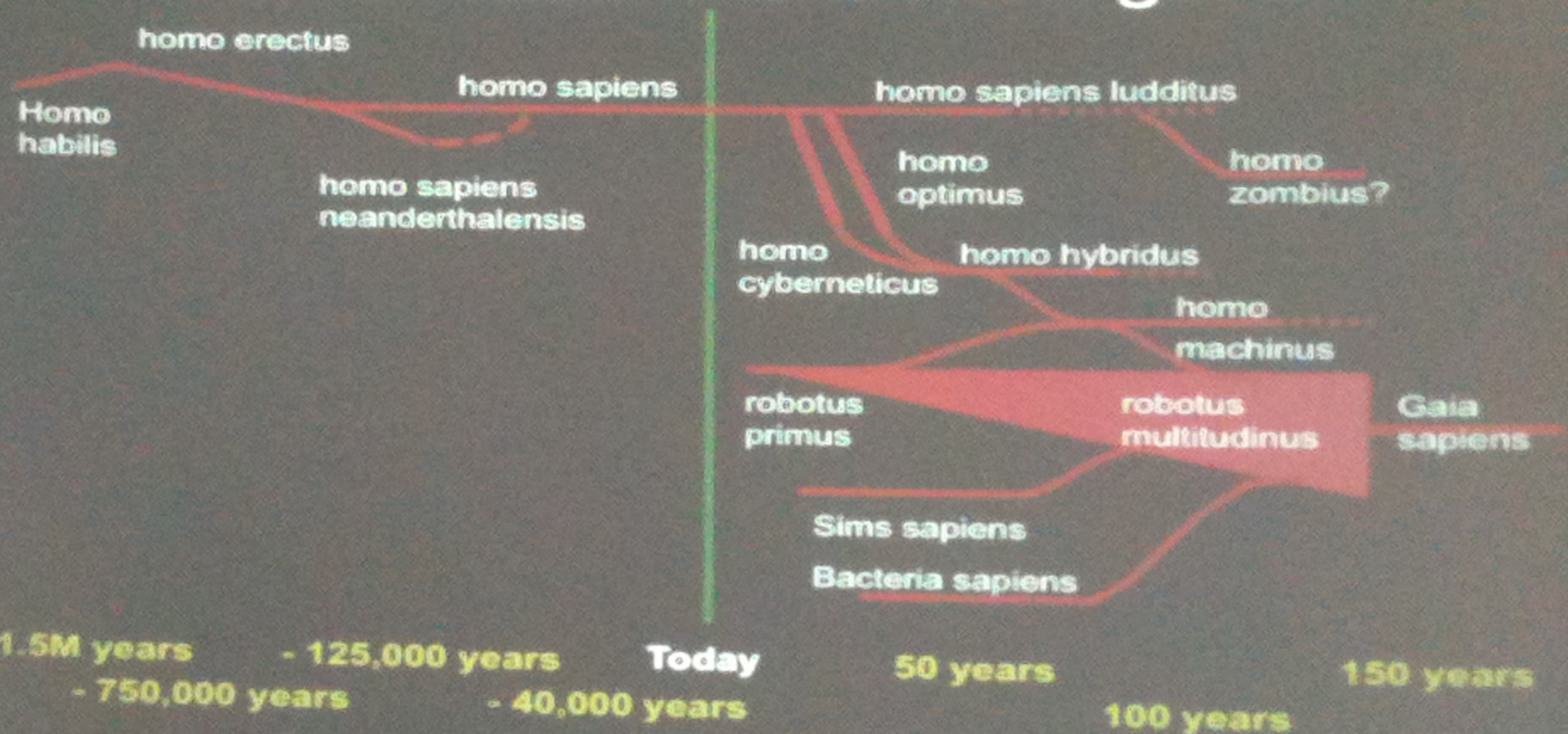
[Neurocapitalism]

... as a persistent "dynamically renewable
willingness to expand" (Henric Jokeit & Ewa Hess, 2013)



Human Machine Convergence

Human-machine Convergence



Wissen > Digital > Hirnforscher Randal Koene will Gehirne auf Computer hochladen



Hollywood hat's bereits getan: Im Film «Transcendence» wird Johnny Depps Gehirn auf einen Computer geladen.

INTERVIEW

Forscher will Gehirne hochladen: «Wir wären nicht mehr an unsere Körper gebunden und könnten Verstorbene zurückholen»

Der Hirnforscher Randal Koene ist überzeugt, dass wir unsere Gehirne künftig auf Computer hochladen werden. Im Interview erklärt er, welche Vorteile ein Leben ohne Körper für uns Menschen hätte.

Digital God

Google Loon: Omnipresence



Google, Glass & Nest: Omniscience

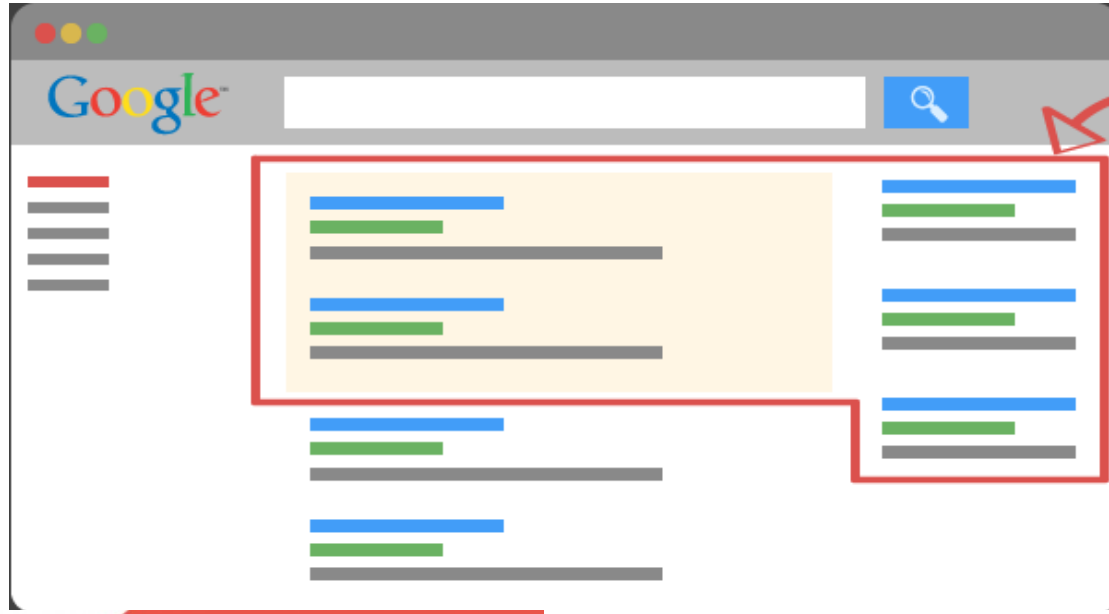


Google's CEO Eric Schmidt:

Think of it as an opportunity to instrument the world. These networks are now so pervasive that we can literally know everything if we want to. What people are doing, what people care about, information that's monitored, we can literally know it if we want to, [pauses, lowers voice] and if people want us to know it.



Ads, Google Now, Android M: Omnipotence



Google Brain and Deepmind: Superintelligence



Google Calico: Emperor over Life and Death



AI Is God: Former Google Engineer Creating New Religion

565
Shares

Manpreet Singh

8 Months Ago



AI Is God: Former Google Engineer Creating New Religion

Anthony Levandowski, the multi-millionaire engineer who got famous for being fired by Waymo, a company belonging to Google has founded a religious organization which is called Way of the Future.



INDY/TECH

ELON MUSK SLAMS PROPOSAL TO CREATE AN ARTIFICIAL INTELLIGENCE 'GOD' THAT PEOPLE WILL WORSHIP

Digital Policing

»»Code is law.««*

*** AND LAW ENFORCEMENT IS
INCREASINGLY BEING ENCODED**



Lawrence Lessig

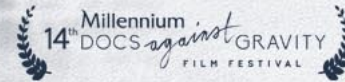
CODE, VERSION 2.0 (2006)

That holds true for governments as well: Not only is code law, as Lessig famously put it – increasingly, law enforcement is being encoded, offloaded into software and the infrastructure it operates on.

Algorithms May Turn Correlations into Causal Relationships

WE KNOW YOU WILL
COMMIT A CRIME.

YOU JUST DON'T
KNOW IT YET.



PRE-CRIME

a film by MONIKA HIELSCHER & MATTHIAS HEEDER

Kloos & Co.
Medien GmbH

WDR® arte

Filmförderung Hamburg
Schleswig-Holstein

FFA--

DEUTSCHER
FILMFÖRDERFONDS

MDM
Medienfördernde
Medienförderung

MEDIA
EUROPE LOVES CINEMA

german
films

RISE AND SHINE
WORLD SALES

100,000 false positives for every real terrorist: Why anti-terror algorithms don't work

by Timme Bisgaard Munk

Abstract

Can terrorist attacks be predicted and prevented using classification algorithms? Can predictive analytics see the hidden patterns and data tracks in the planning of terrorist acts? According to a number of IT firms that now offer programs to predict terrorism using predictive analytics, the answer is yes. According to scientific and application-oriented literature, however, these programs raise a number of practical, statistical and recursive problems. In a literature review and discussion, this paper examines specific problems involved in predicting terrorism. The problems include the opportunity cost of false positives/false negatives, the statistical quality of the prediction and the self-reinforcing, corrupting recursive effects of predictive analytics, since the method lacks an inner meta-model for its own learning- and pattern-dependent adaptation. The conclusion is algorithms don't work for detecting terrorism and is ineffective, risky and inappropriate, with potentially 100,000 false positives for every real terrorist that the algorithm finds.

Contents

- [1. Introduction](#)
- [2. What is the method behind the use of predictive analytics to predict terrorism?](#)
- [3. What is the question?](#)
- [4. What is the inspiration?](#)
- [5. The predictive analytics literature](#)
- [6. The use of predictive analytics in practice](#)
- [7. Predictive analytics: The statistical premises and systemic problems](#)
- [8. Predictive analytics is implicitly based on interpretation, but this goes unrecognized](#)
- [9. Predictive analytics, dynamics and history](#)
- [10. Predictive analytics and the self-fulfilling prophecy](#)
- [11. Predictive analytics and the gamification of categorization](#)
- [12. Conclusion](#)

British 'Karma Police' program carries out mass surveillance of the web

by [Russell Brandom](#) | [@russellbrandom](#) | Sep 25, 2015, 10:44am EDT



SHARE



TWEET



LINKEDIN

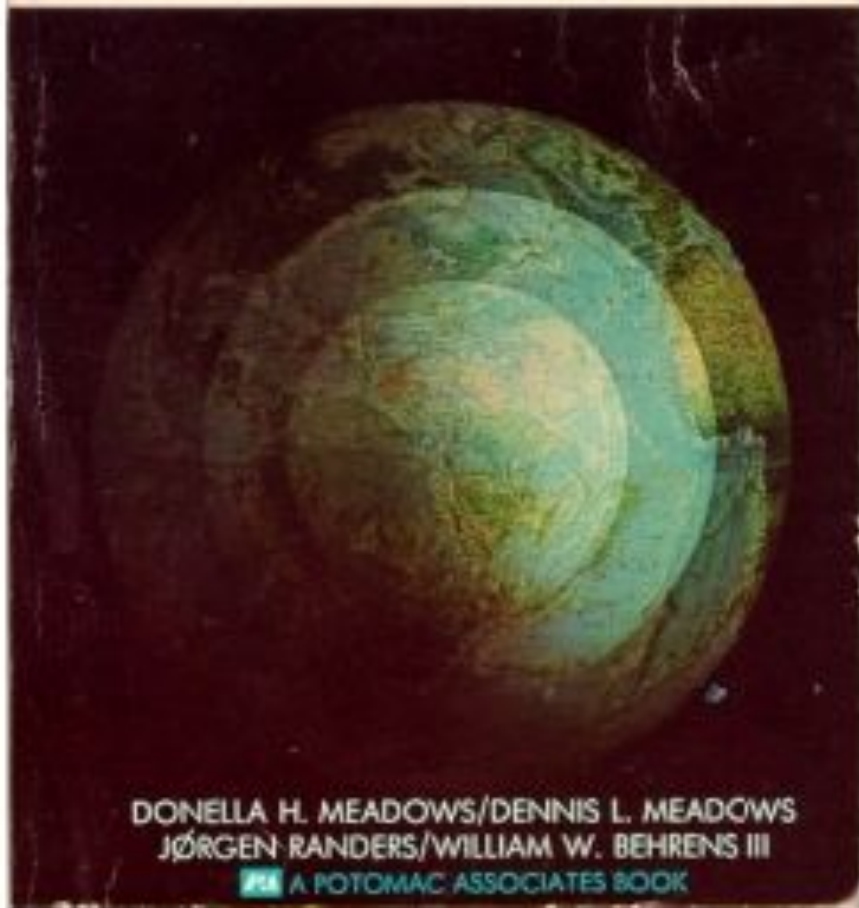


Algorithm-Based Dying/Killing

© SIGNET NON-FICTION • Y5250 • \$1.25

THE LIMITS TO GROWTH

The headline-making report on the imminent global disaster facing humanity—and what we can do about it before time runs out. "One of the most important documents of our age!" —Anthony Lewis, *The New York Times*



DONELLA H. MEADOWS/DENNIS L. MEADOWS
JØRGEN RANDERS/WILLIAM W. BEHRENS III

 A POTOMAC ASSOCIATES BOOK

Global 2000 Report to the President of the U.S.

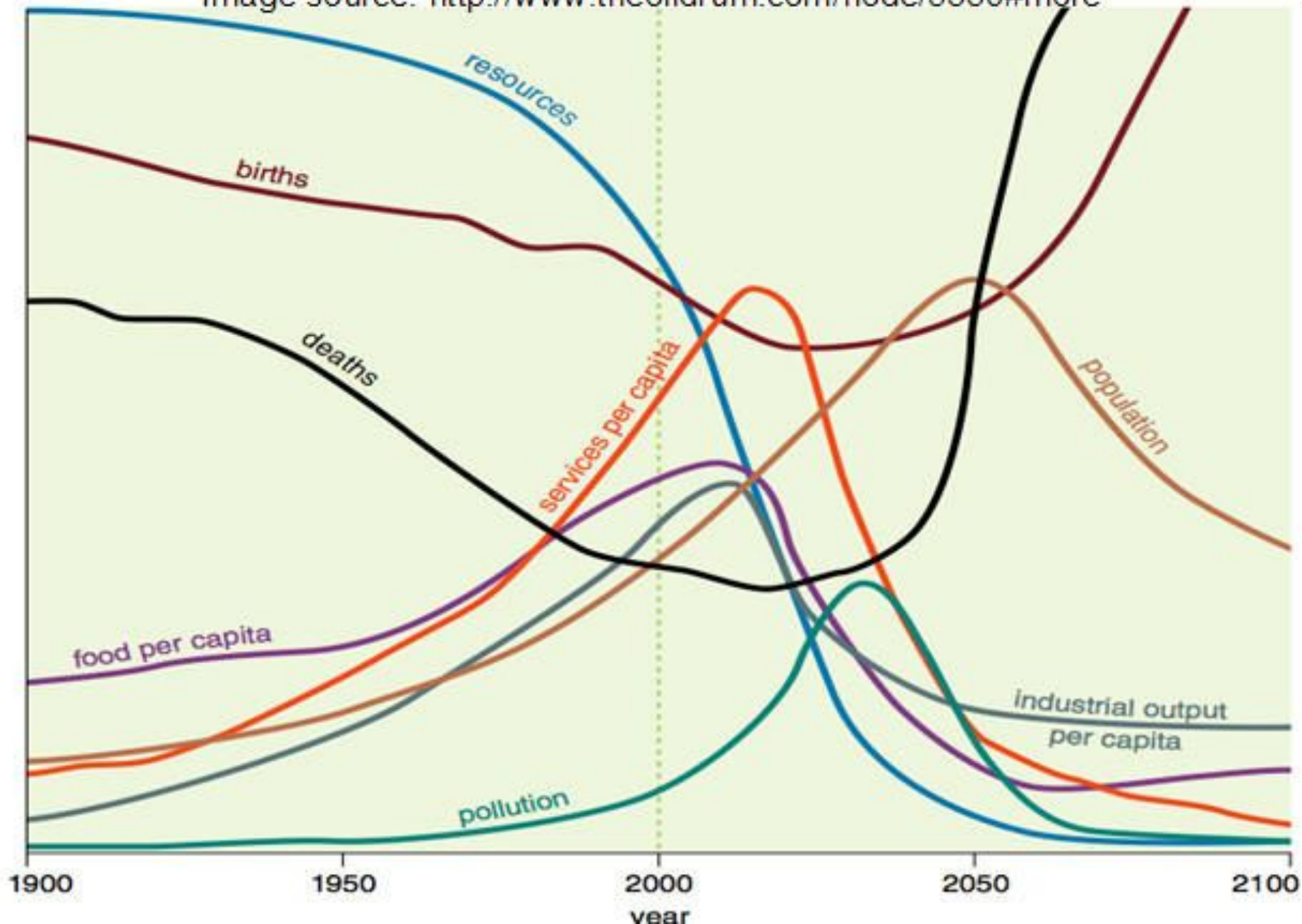
Entering the
21st Century

Volume I: The Summary Report
Special Edition with the
Environment Projections and
the Government's Global Model


Gerald O. Barney
Study Director

Limits to Growth (1972) predictions

Image source: <http://www.theoildrum.com/node/5330#more>



Learning *to* Die *in the* Anthropocene



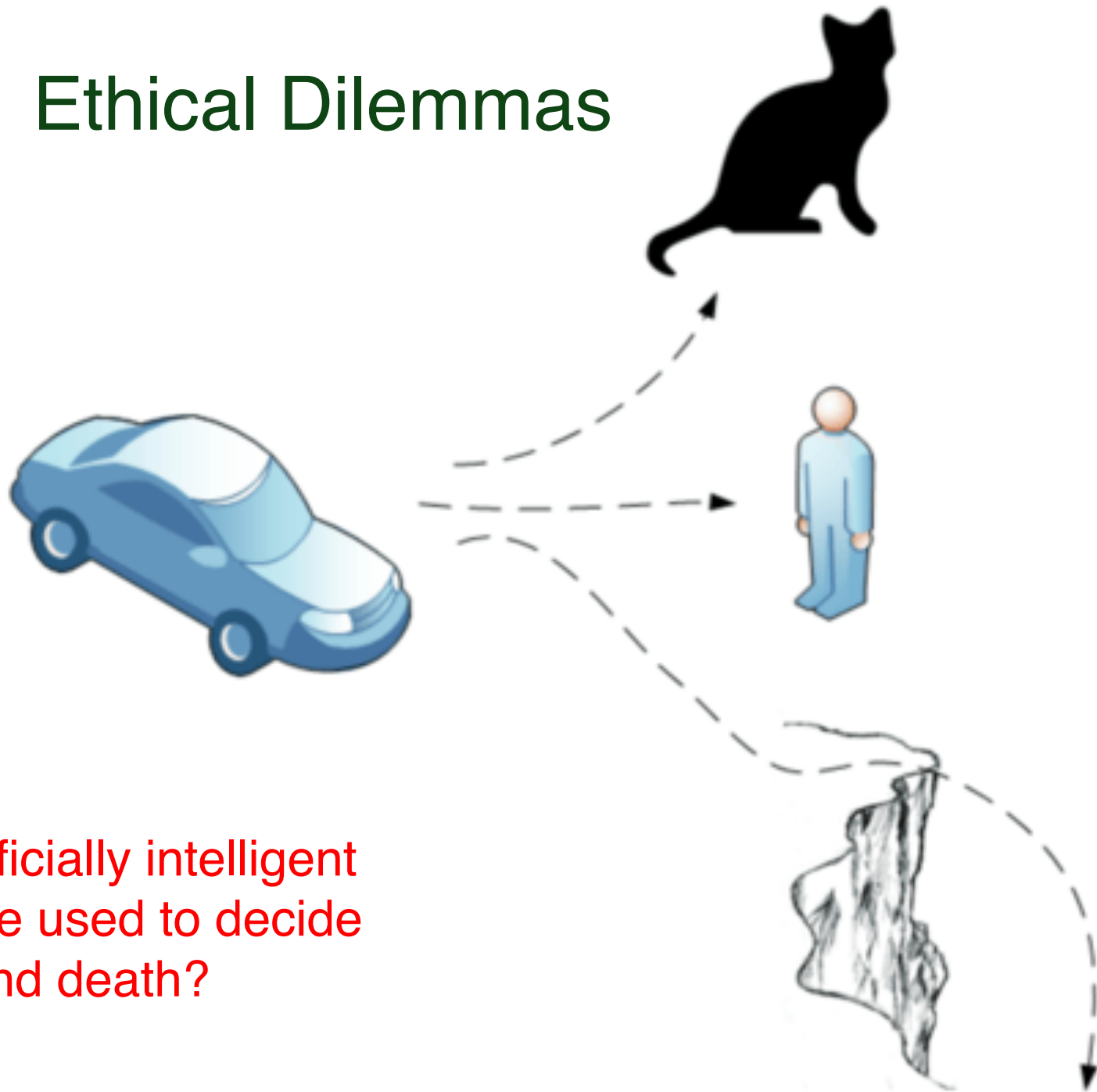
REFLECTIONS ON THE
END OF A CIVILIZATION

Roy Scranton

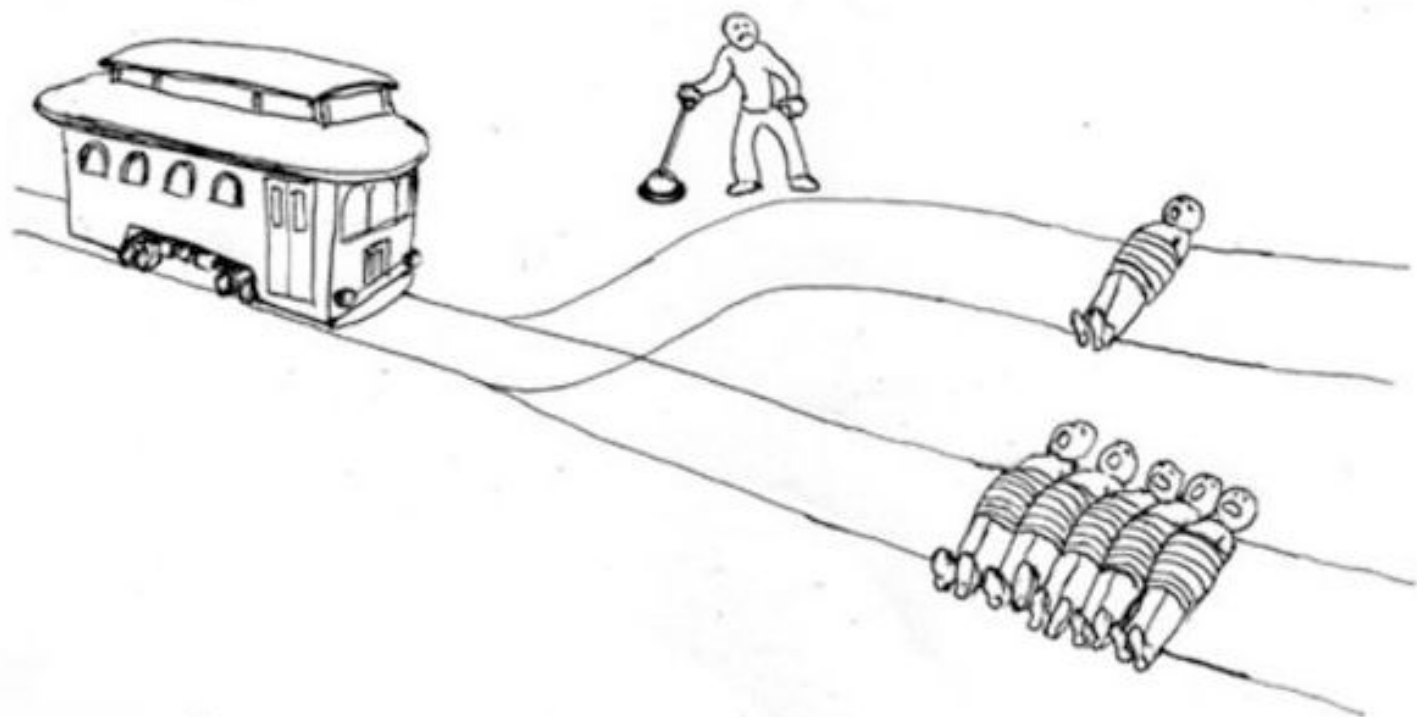
"Scranton draws on his experiences in Iraq to confront the grim realities of climate change. The result is a fierce and provocative book."

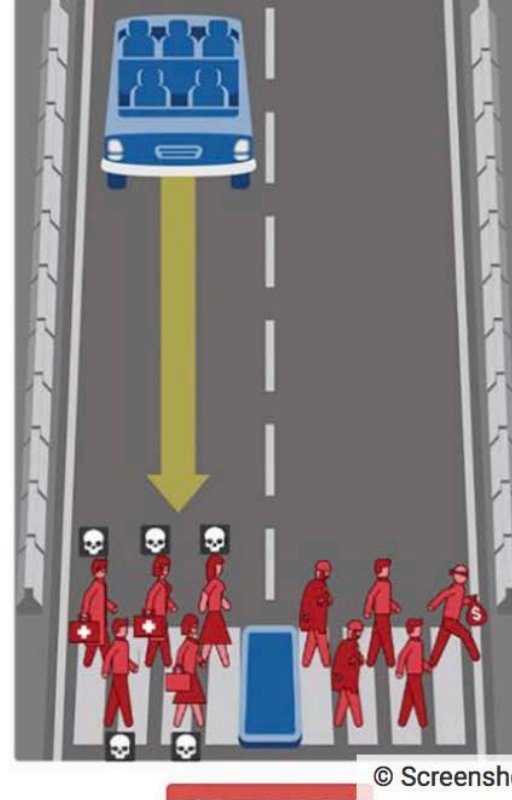
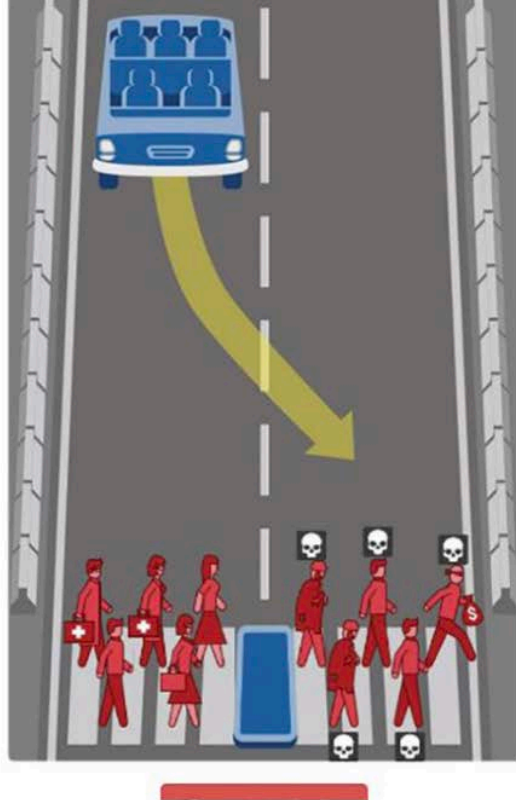
—Elizabeth Kolbert, author
of *The Sixth Extinction*

Ethical Dilemmas



Would artificially intelligent systems be used to decide over life and death?





© Screenshot von mit.edu

Das MIT stellt interessante Szenarios auf.

Ethische Probleme im Auto

Oma oder Obdachlosen überfahren? Makabrer MIT-Test zeigt Dilemma selbstfahrender Autos

10.08.2016 - Finanzen100

Selbstfahrende Autos müssen bald auch ethische Entscheidungen selbst treffen - dass es dabei durchaus um Leben und Tod geht, zeigt jetzt ein Online-Test des MIT.

Wenn Software über Leben und Tod entscheidet

von Peter Welchering

20.12.2017 12:40 Uhr

Google & Co investieren in Computerprogramme, die die Lebenserwartung eines Menschen genau berechnen. So sollen teure Therapien bei Schwerkranken eingespart werden.



Doctors are using AI to **triage** covid-19 patients. The tools may be here to stay

Faced with staff shortages and overwhelming patient loads, a growing number of hospitals are turning to automated tools to help them manage the pandemic.

by **Karen Hao**

April 23, 2020





HOME
NEDERLANDS
ENGLISH

F. Hamburg

Een computermodel voor het ondersteunen van euthanasiebeslissingen (E.M. Meijers Reeks)

Alle boeken



Zoeken

Geavanceerd zoeken >

ISBN: 9789046600207

Aantal Pagina's: 344

Status: Verschenen - bestelbaar - leverbaar

Prijs: € 58.00

Uitgever : Maklu-Uitgevers nv

[Print-versie](#) [Bestel Nu](#)



Over het boek:

In Nederland mogen artsen zonder een scherp criterium beslissen op een verzoek tot euthanasie. In een dergelijke beslisspraktijk is het onwaarschijnlijk dat er consistentie bestaat tussen hun beslissingen. Dit proefschrift heeft allereerst ten doel deze inconsistente beslisspraktijk aan te tonen. Het proefschrift presenteert voorts een computermodel waarmee de inconsistentie tussen euthanasiebeslissingen in principe teruggedrongen kan worden. Ter onderstreping van het belang van dit model toont de auteur aan dat twee cruciale beslissingen van de Hoge Raad [het Chabot-arrest en het Brongersma-arrest] wezenlijk strijdig zijn met elkaar. Wil men de gesignaleerde inconsistenties volledig en definitief voorkomen, dan zal de bron daarvan [de Wet Toetsing Levensbeëindiging] moeten worden aangepakt. Daarom wordt in het proefschrift het politieke voorstel gedaan om de euthanasiewet in te trekken en tezelfdertijd de hulp bij zelfdoding te decriminaliseren.

Dit is een boek in de [Meijers-reeks](#). De reeks valt onder verantwoordelijkheid van het E.M. Meijers Instituut voor Rechtswetenschappelijk Onderzoek van de Faculteit der Rechtsgeleerdheid van de Universiteit Leiden. Dit promotieonderzoek vond plaats in het kader van het onderzoeksprogramma Multi Level Jurisdiction en stond voorts onder auspiciën van SIKS, de Nederlandse Onderzoeksschool voor Informatie en Kennissystemen.

Ist es Eugenik?

Die Schweiz nimmt aussergewöhnlich viele Corona-Tote in Kauf.
Historiker erinnert das an dunkle Zeiten.



Linus Schöpfer

Publiziert: 02.12.2020, 16:30



77 Kommentare





The Petrodollar

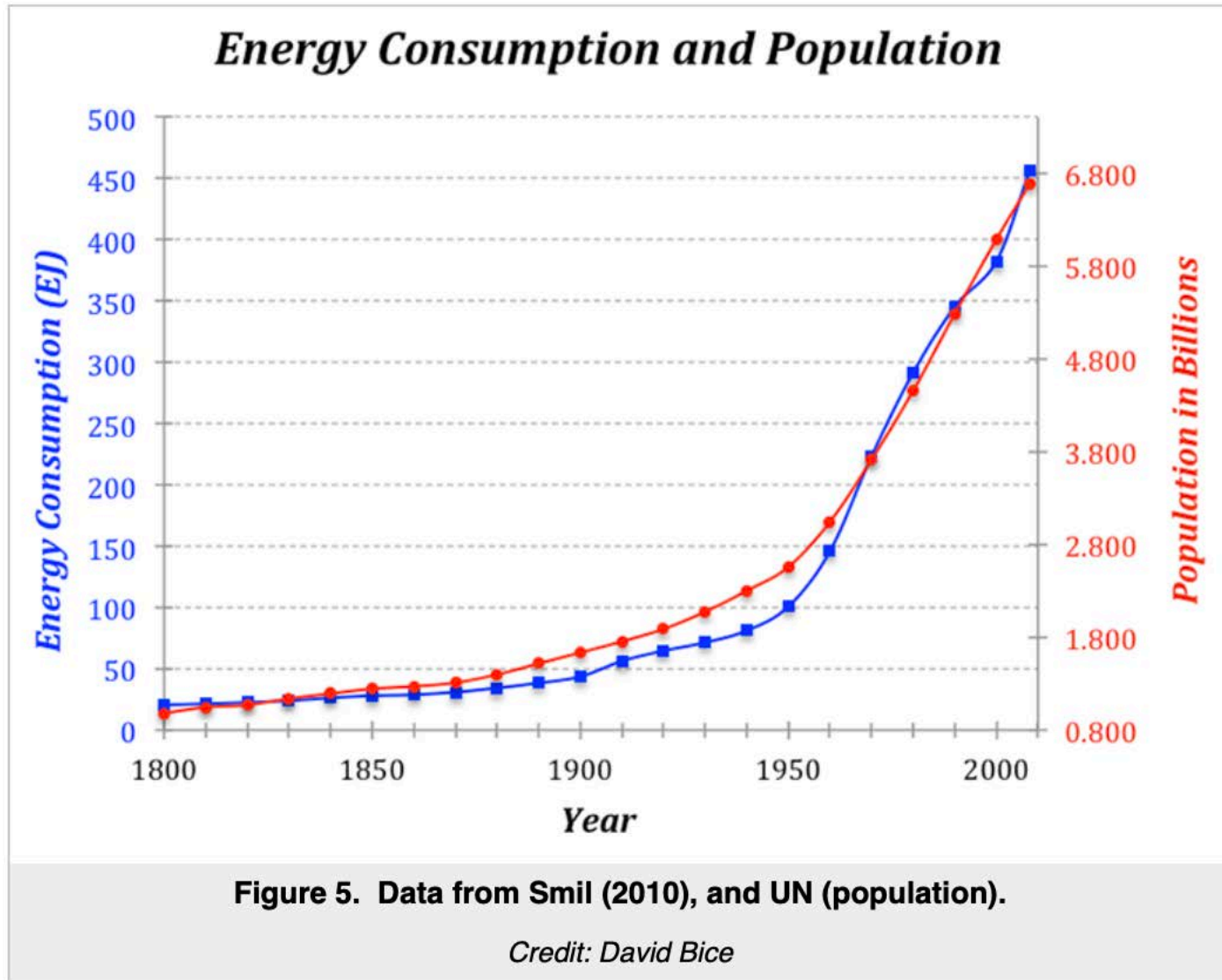


Today's Money Is Backed by Oil...

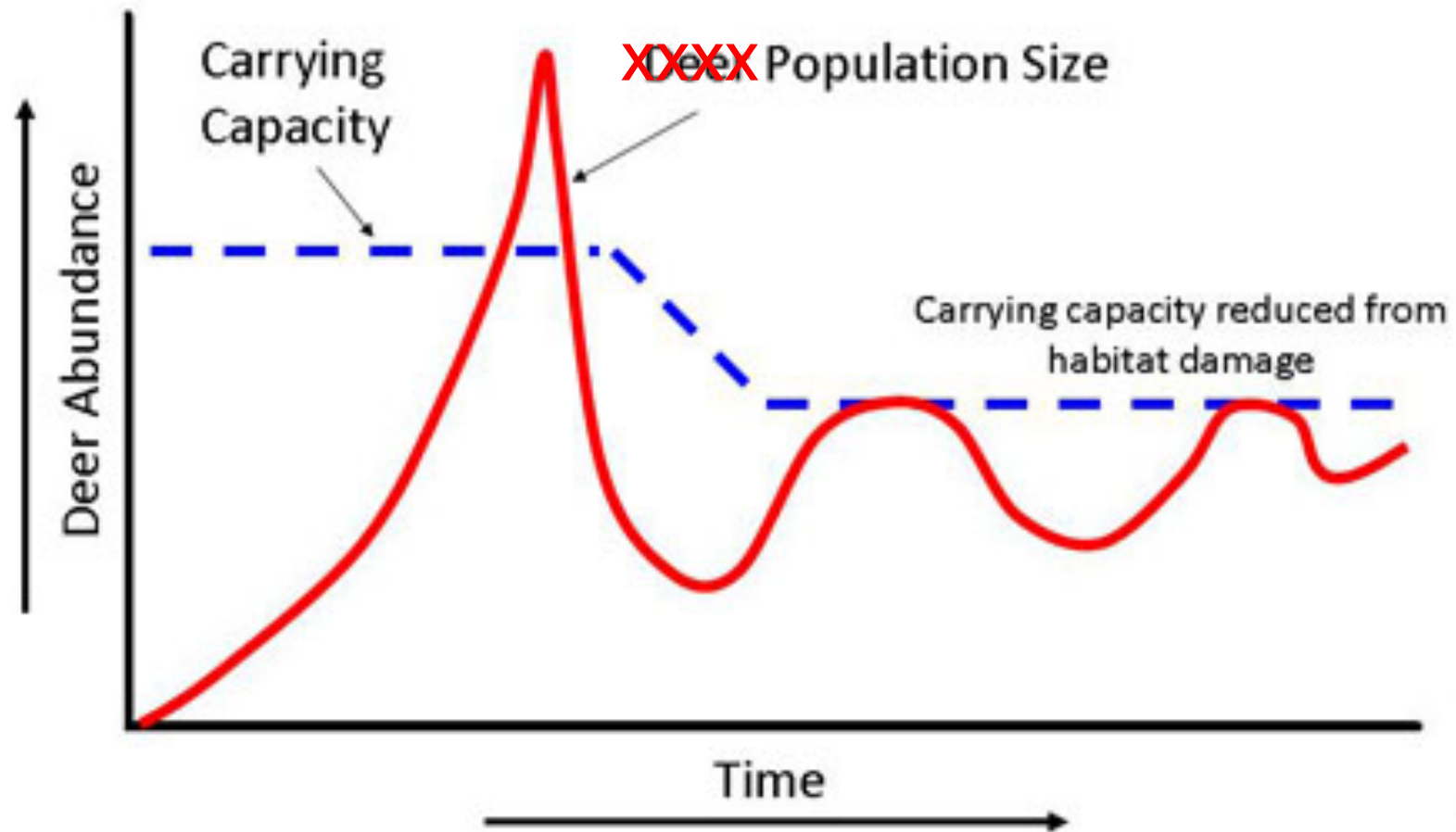


... Which Turns into CO₂



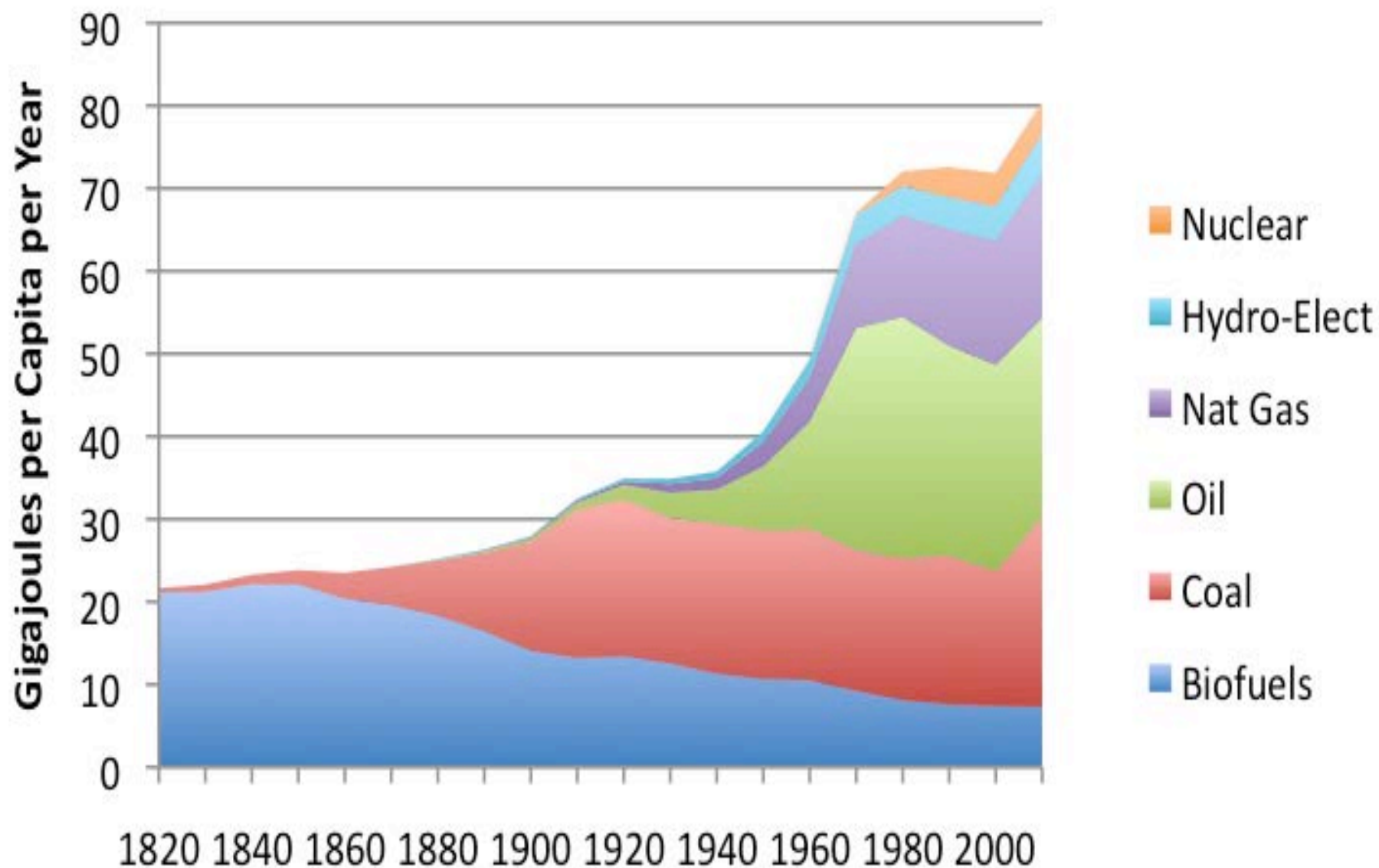


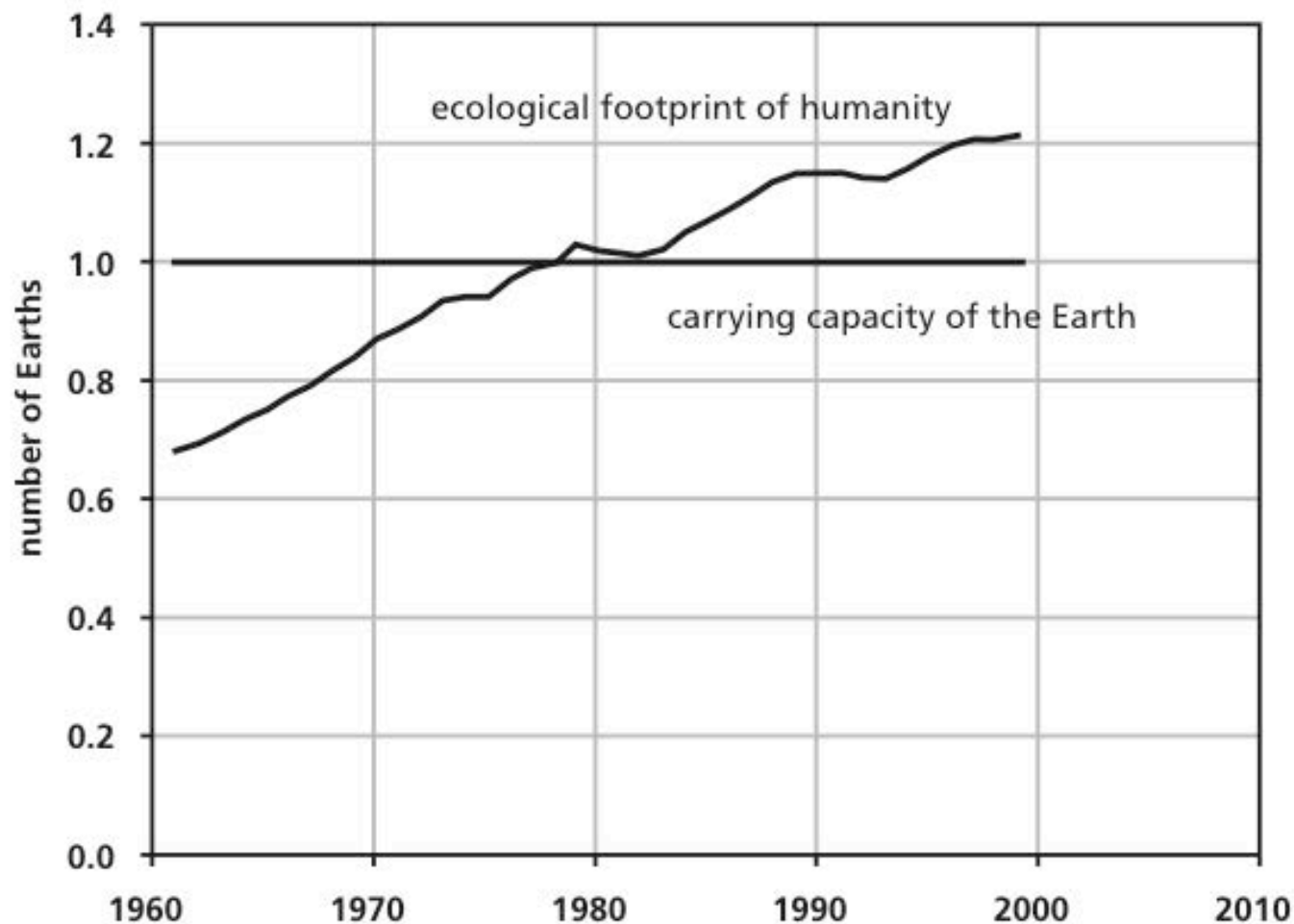
Unrestricted ~~xxxx~~ population growth may diminish the habitat's carrying capacity





World per Capita Energy Consumption





Ecological Footprint versus Carrying Capacity

This graph shows the number of Earths required to provide the resources used by humanity and to absorb their emissions for each year since 1960. This human demand is compared with the available supply: our one planet Earth. Human demand exceeds nature's supply from the 1980s onward, over-shooting it by some 20 percent in 1999. (Source: M. Wackernagel et al.)

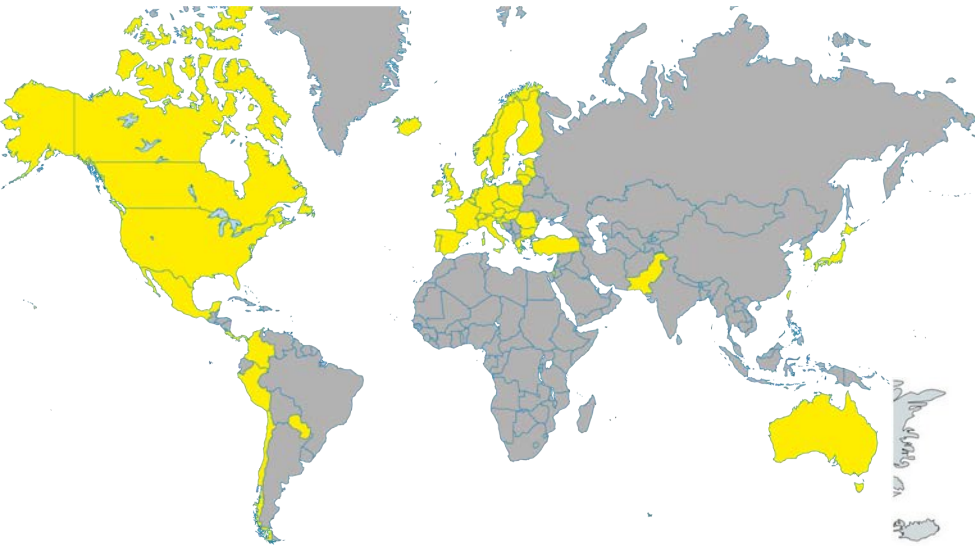
And now?

How to take climate
action and improve
sustainability?

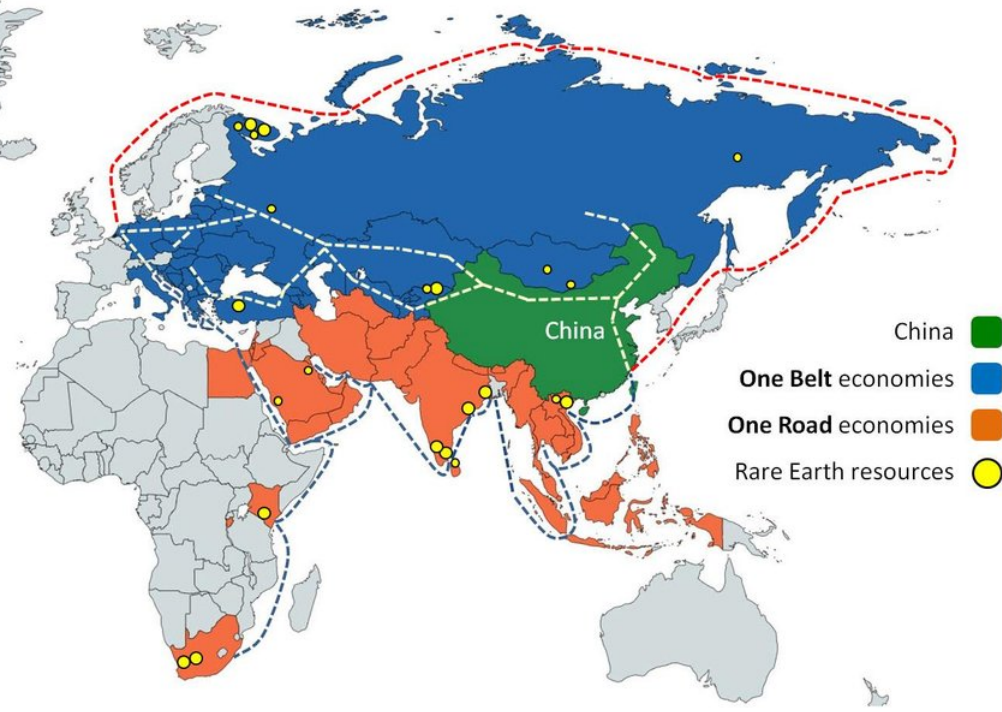
Pillar 1: Nation States, United Nations



Pillar 2: Global Corporations, Economies of Scale, Neoliberalism, Free Trade

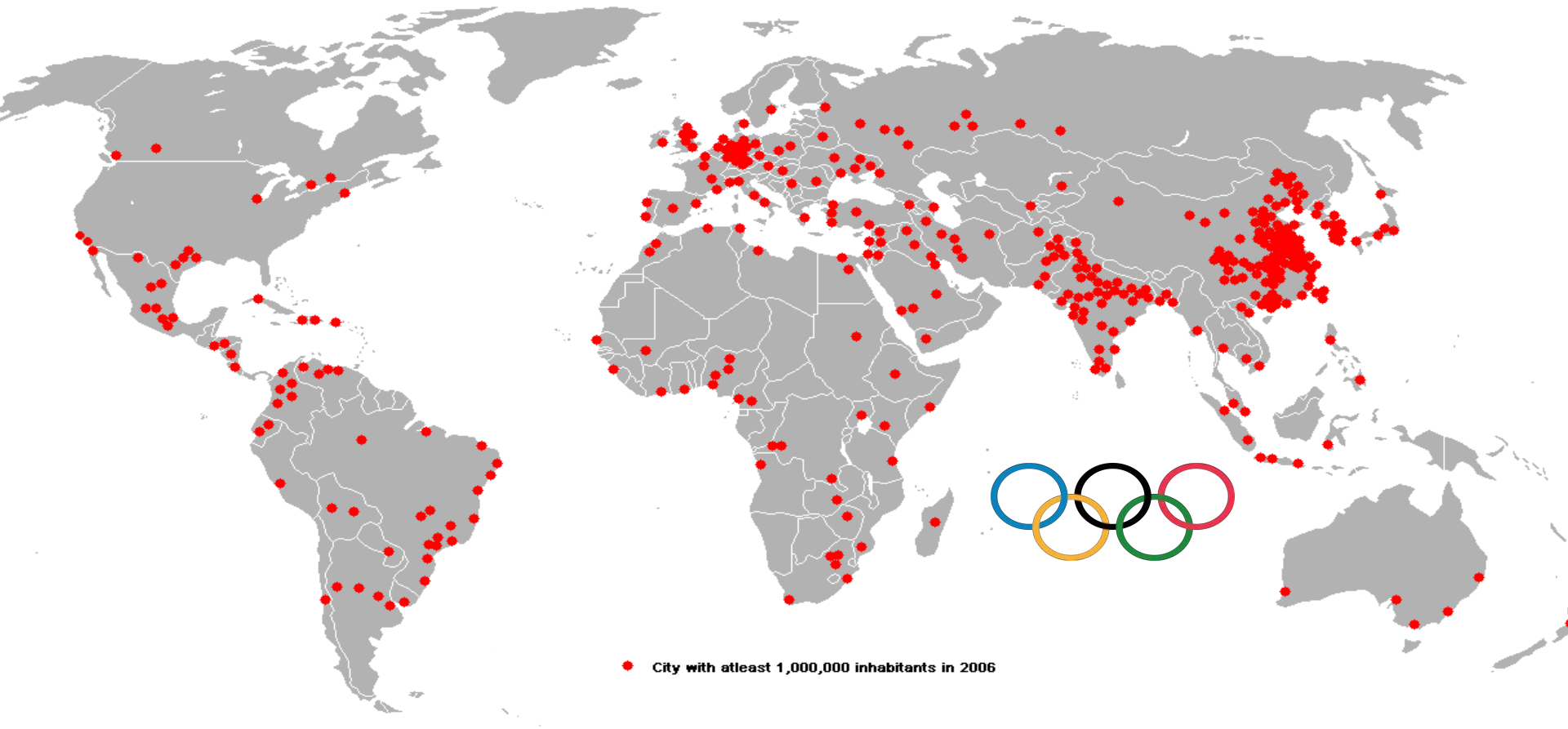


In the framework of supply chains, monopolies are the best solution (“economy of scales”). But what we really need is a circular economy!

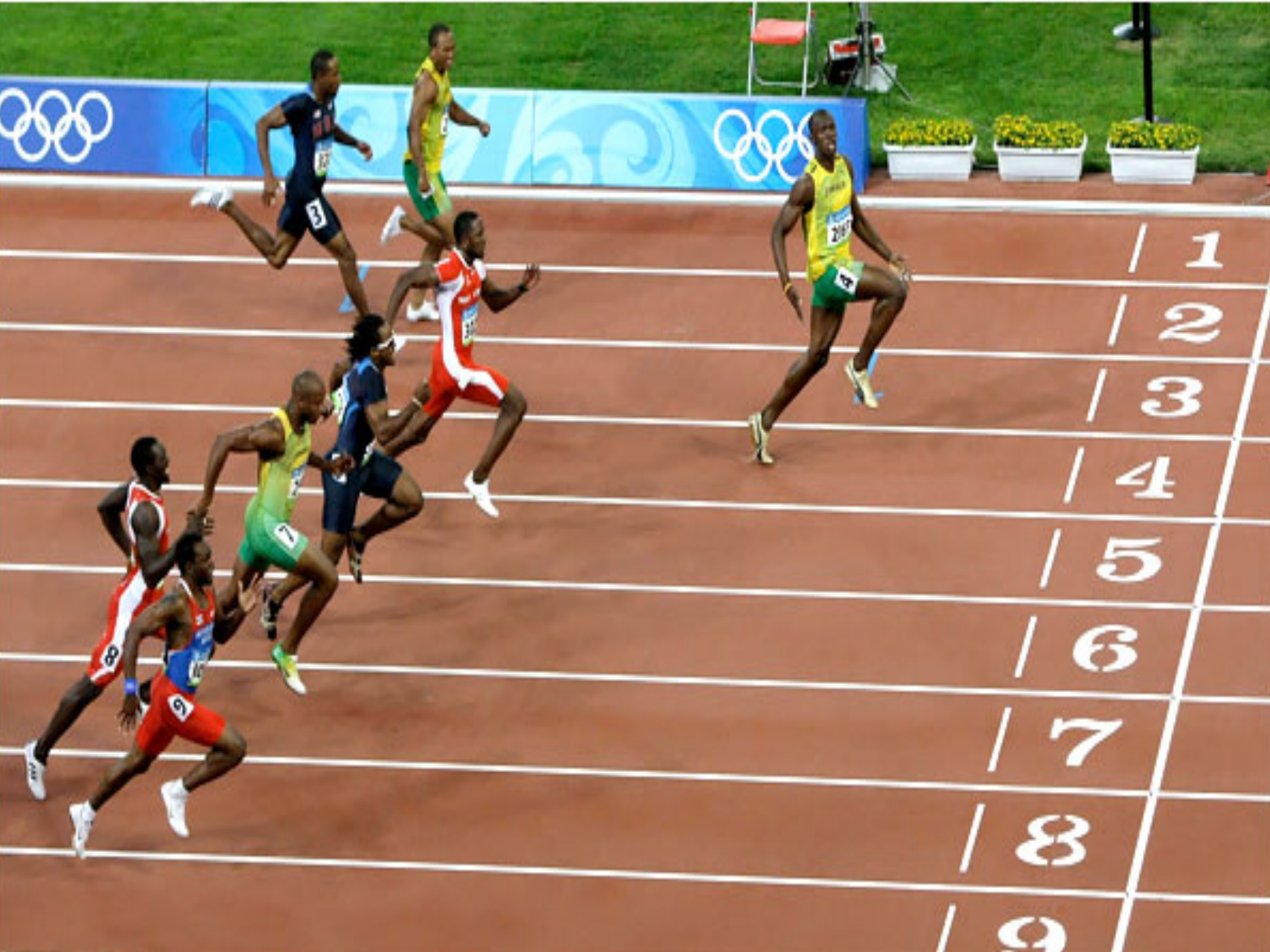


Pillar 3: City Olympics

Fixing the World Together!

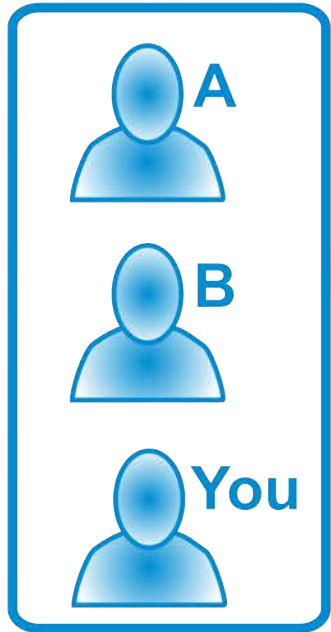


Public domain ([SoccerFan](#) (update to a map done by [Bogdan](#)))

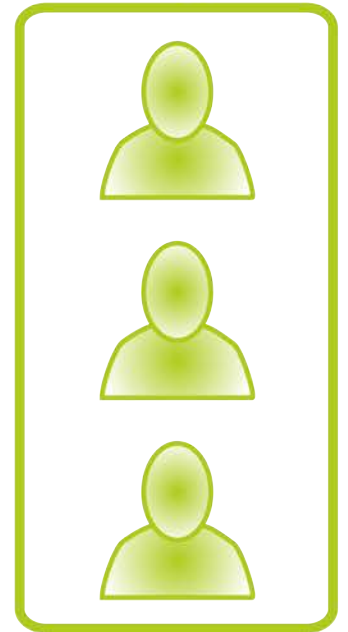


Competition Naturally Raises Everybody's Effort

Your group



Other group



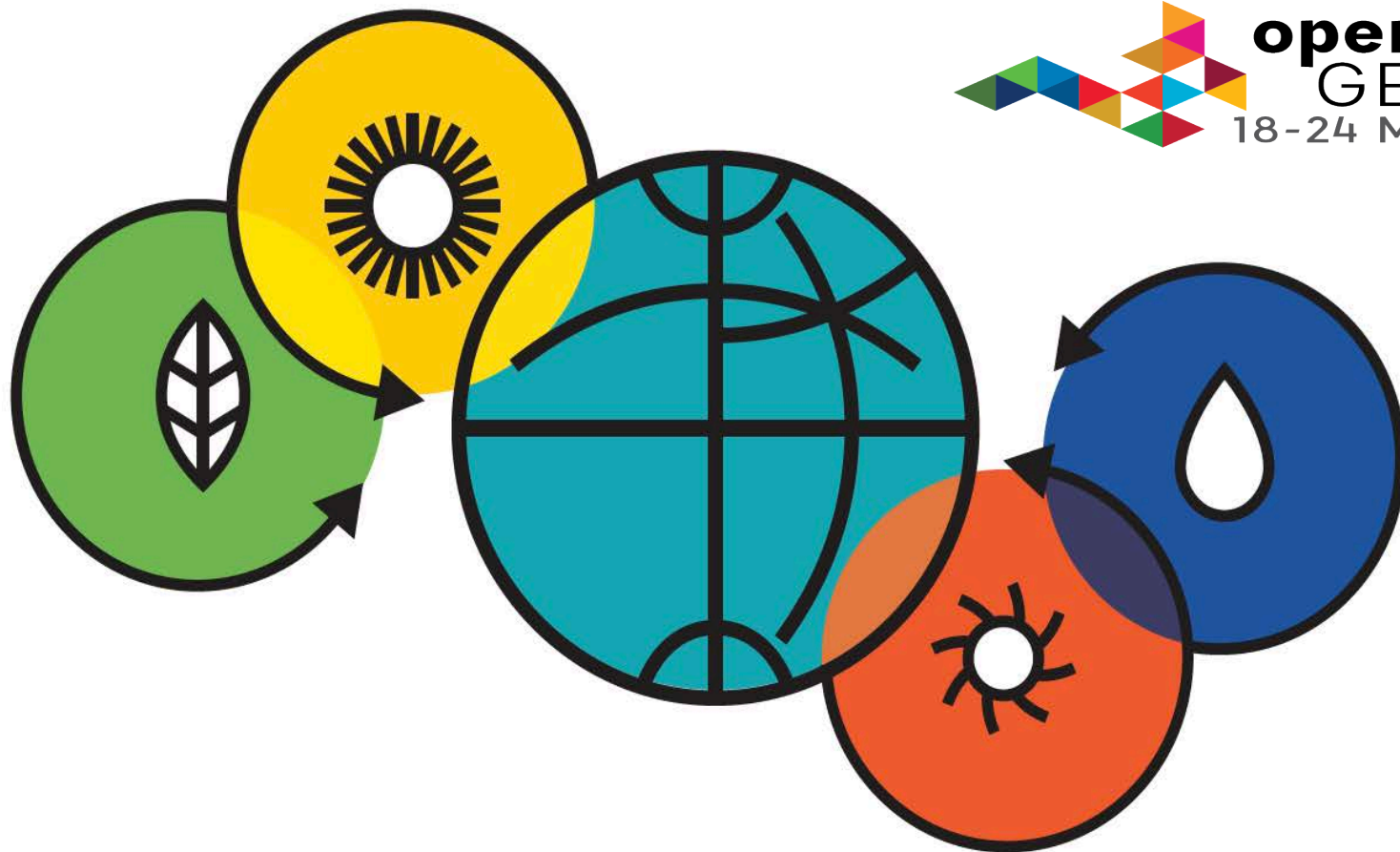
Joint work of Michael Mäs and Dirk Helbing

Combining Competition and Cooperation



Glocalisation Rather than Globalisation

- Think global
- Act local (and diverse)
- Experiment
- Learn from each other
- Help each other



 **open**
GENEVA
18-24 Mars 2019

THE CLIMATE CITY CUP

POWERED BY

Climathon

and



FuturICT 2.0

mobility

BIKE TO



WORK



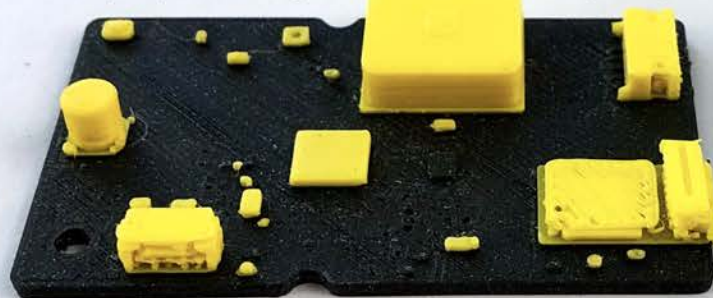


THE CLIMATE CITY CUP

POWERED BY  and 



For illustration purpose only. Final product may vary.





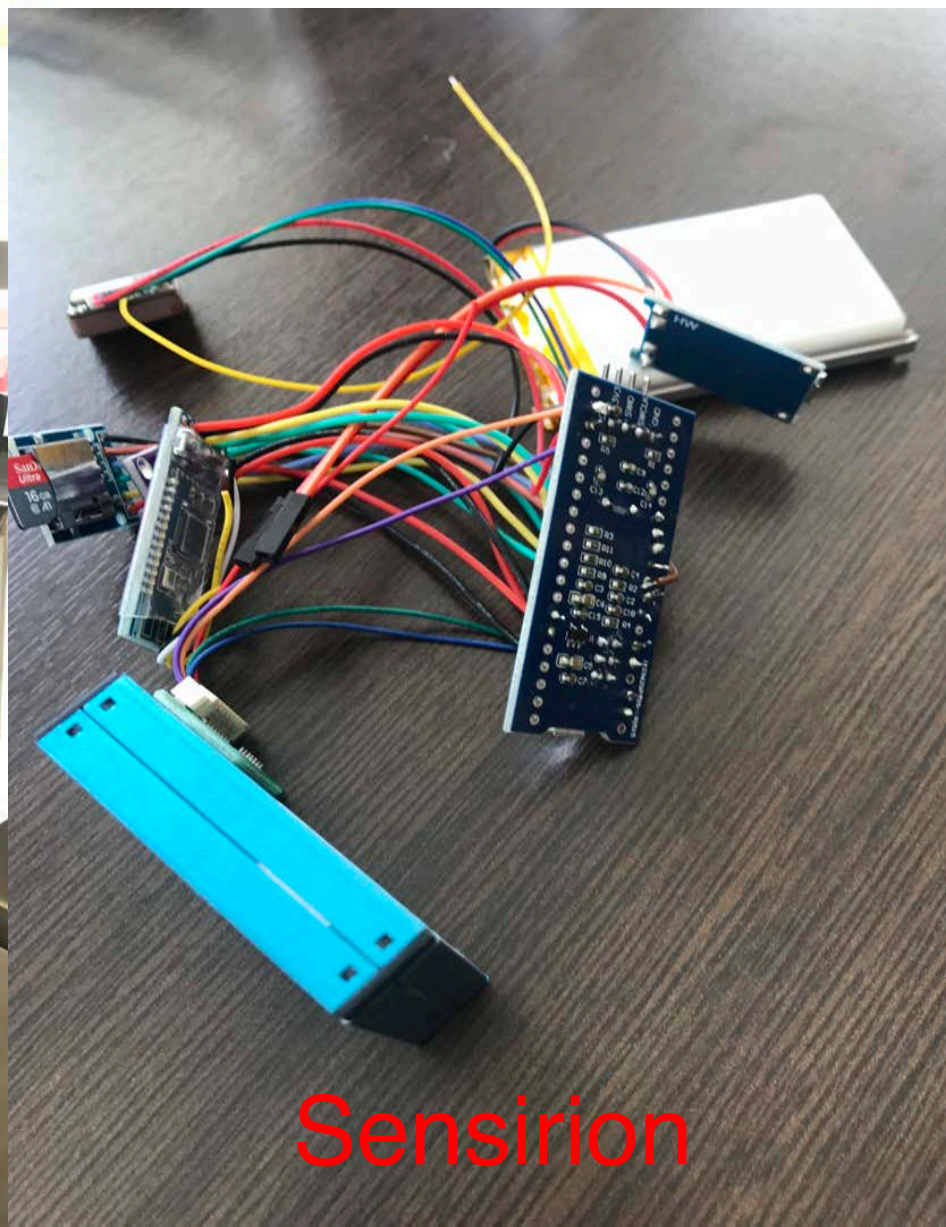


THE CLIMATE CITY CUP
POWERED BY [Climathon](#) and [FuturiCT 2.0](#)

BLOCKCHAIN AND IOT SCHOOL

ETH ZÜRICH | 12-16 FEBRUARY | 2018





Sensirion

Digital Assistants:

Boosting self- organization

Participatory Platforms to Empower People



ISTP

Institute of Science, Technology and Policy
Institut für Wissenschaft, Technologie und Politik

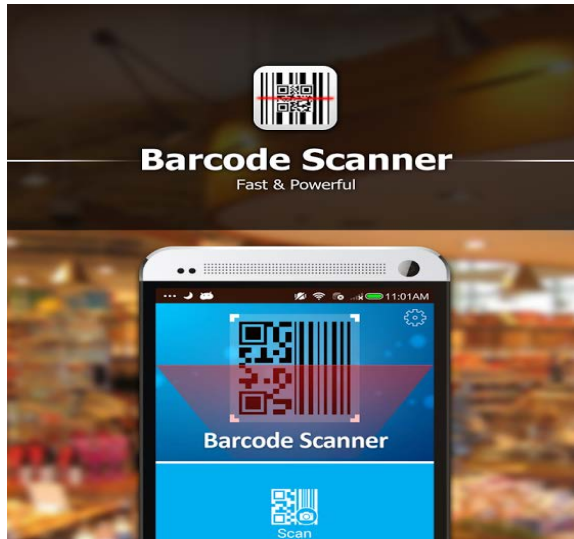
Empower Polis



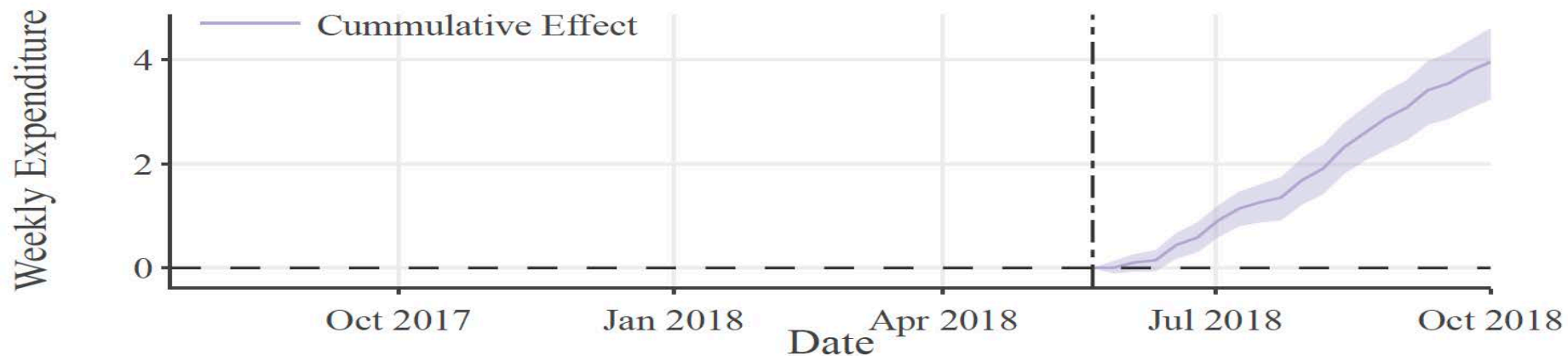
Grippenet
InfluenzaNet



Responsible, Sustainable Consumption



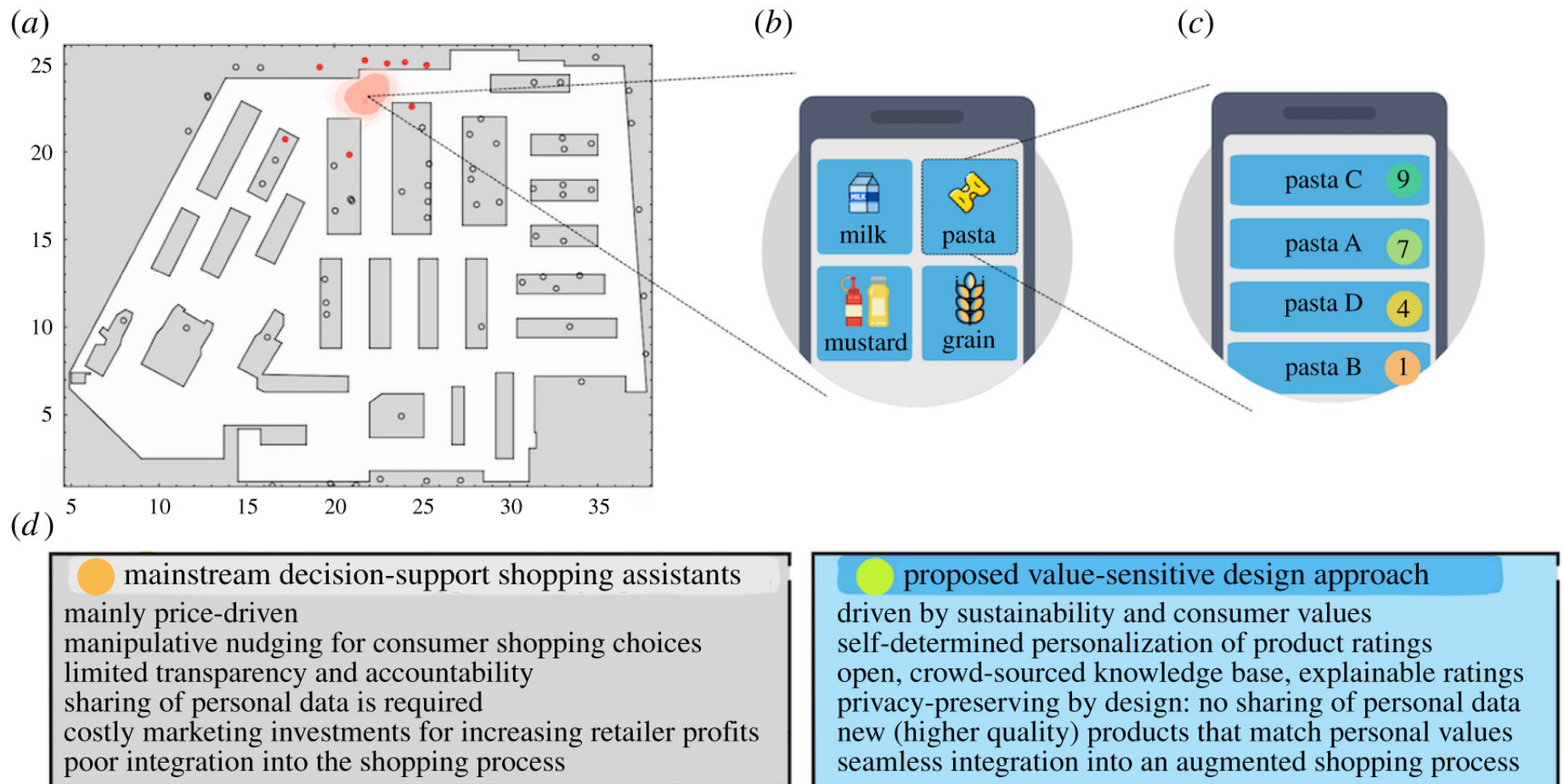
ASSET
Project



How value-sensitive design can empower sustainable consumption

Thomas Asikis, Johannes Klinglmayr ✉, Dirk Helbing and Evangelos Pournaras

Published: 13 January 2021 | <https://doi.org/10.1098/rsos.201418>

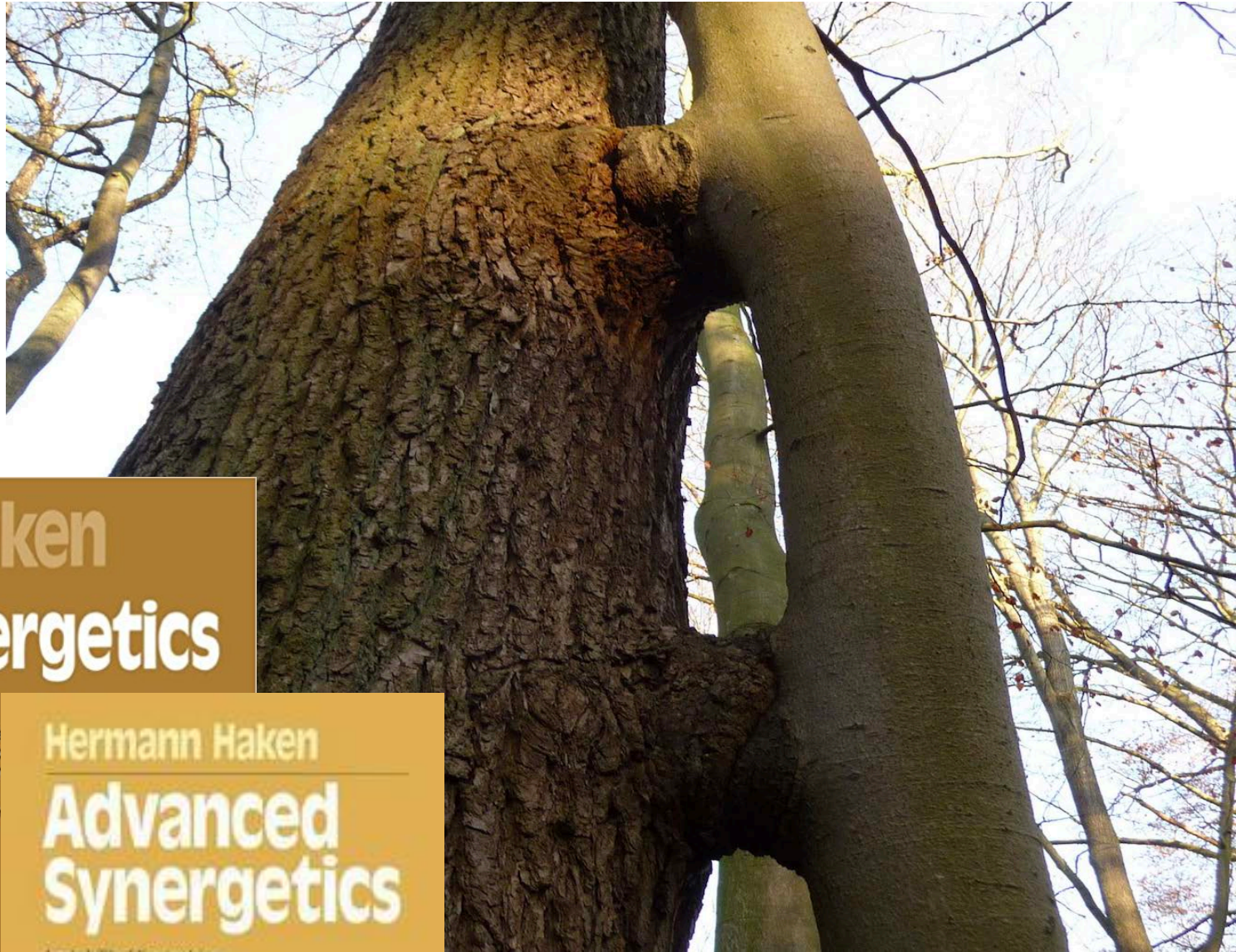


The Participatory
Economy 4.0:
Unleashing the Power
of Combinatorial
Innovation

Cybernetics + Synergy = CyberSyn?



Synergy + Cybernetics = Synergetics!



H. Haken

Synergetics

An Introduction

Nonequilibrium Phase
and Self-Organization
in Physics, Chemistry,
and Biology

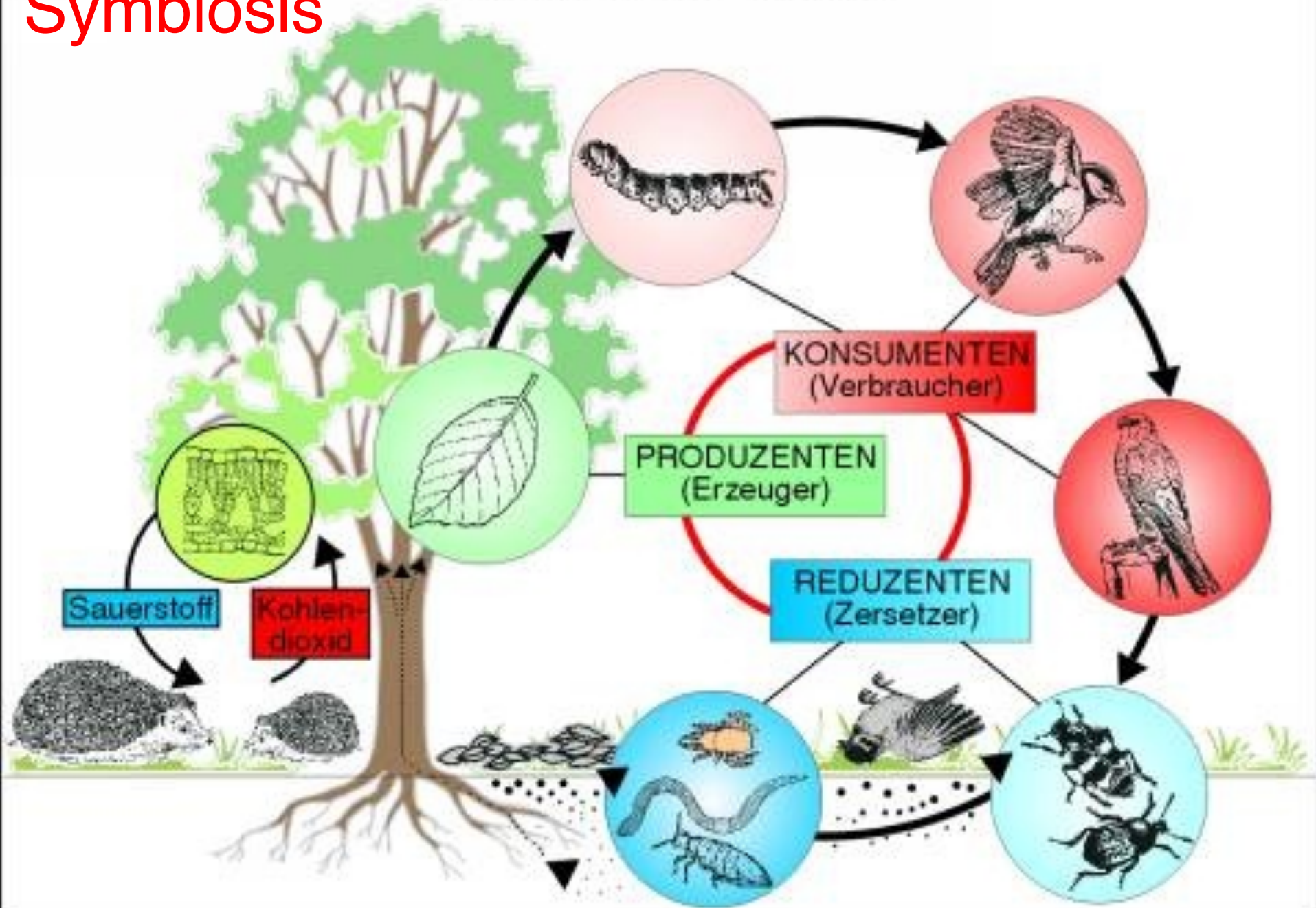
Third Revised and Expanded Edition

Hermann Haken

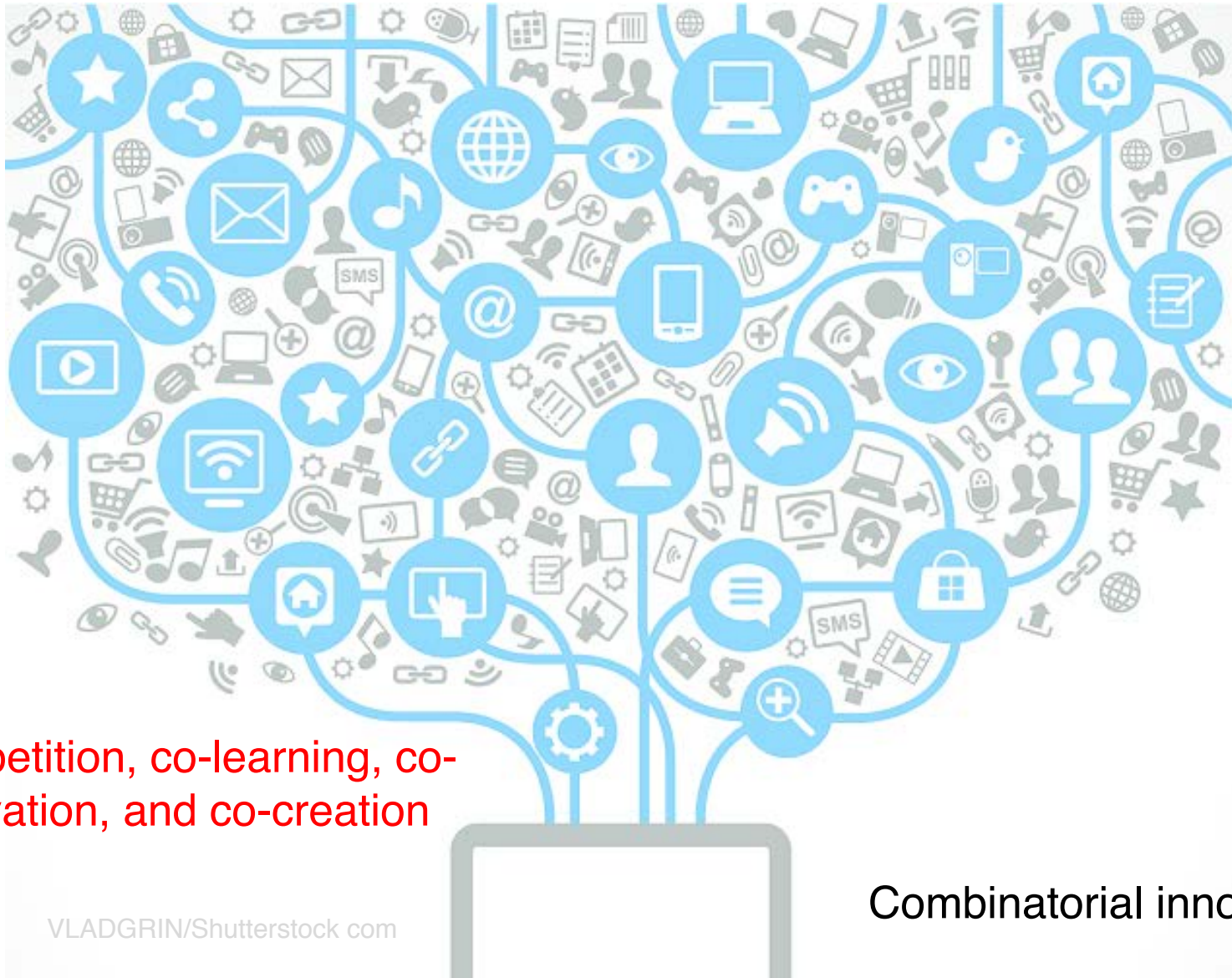
Advanced Synergetics

Symbiosis

ÖKOSYSTEM WALD



Information, Innovation, Production and Service Ecosystem



co-epetition, co-learning, co-
innovation, and co-creation

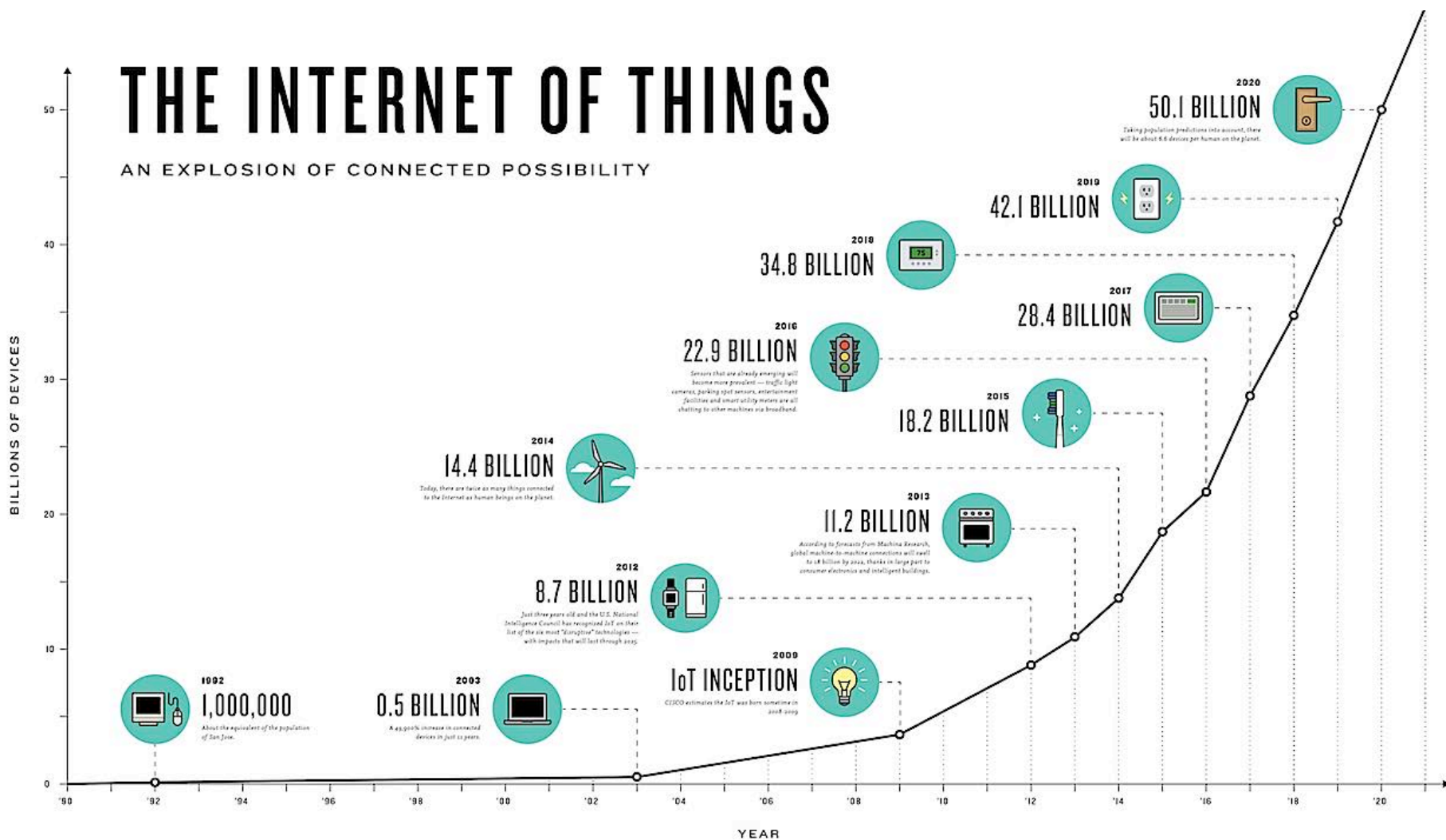
Combinatorial innovation

Socio-Ecological
Finance FIN4:
Participatory
sustainability



THE INTERNET OF THINGS

AN EXPLOSION OF CONNECTED POSSIBILITY

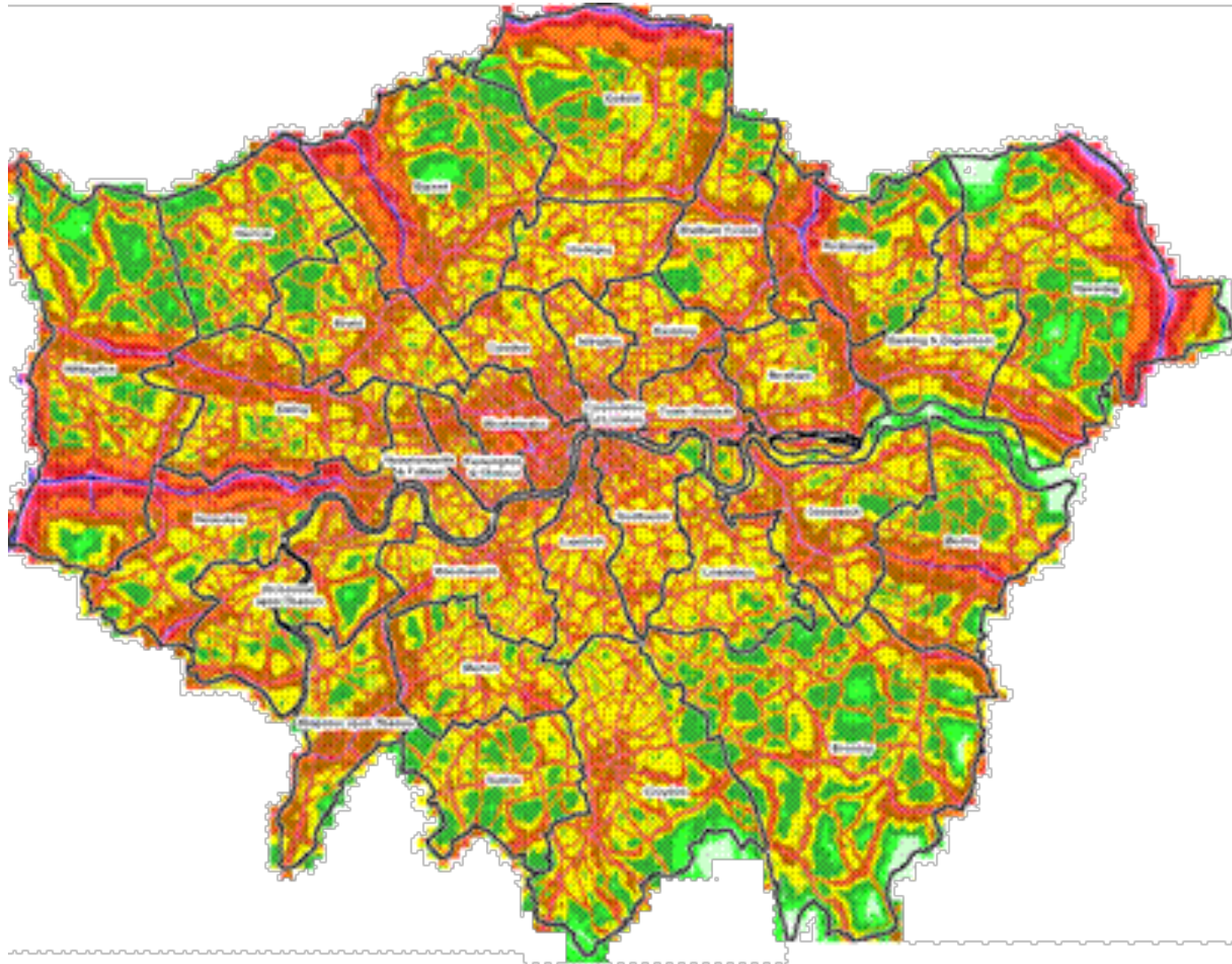


The background of the image features a light gray network diagram with several circular nodes connected by straight lines. The word "nervousnet" is written in a bold, orange, italicized sans-serif font across the center. Above the 'n' and 't' of the word are small orange icons consisting of three concentric curved lines, resembling a signal or Wi-Fi symbol.

nervousnet

nervousnet.info

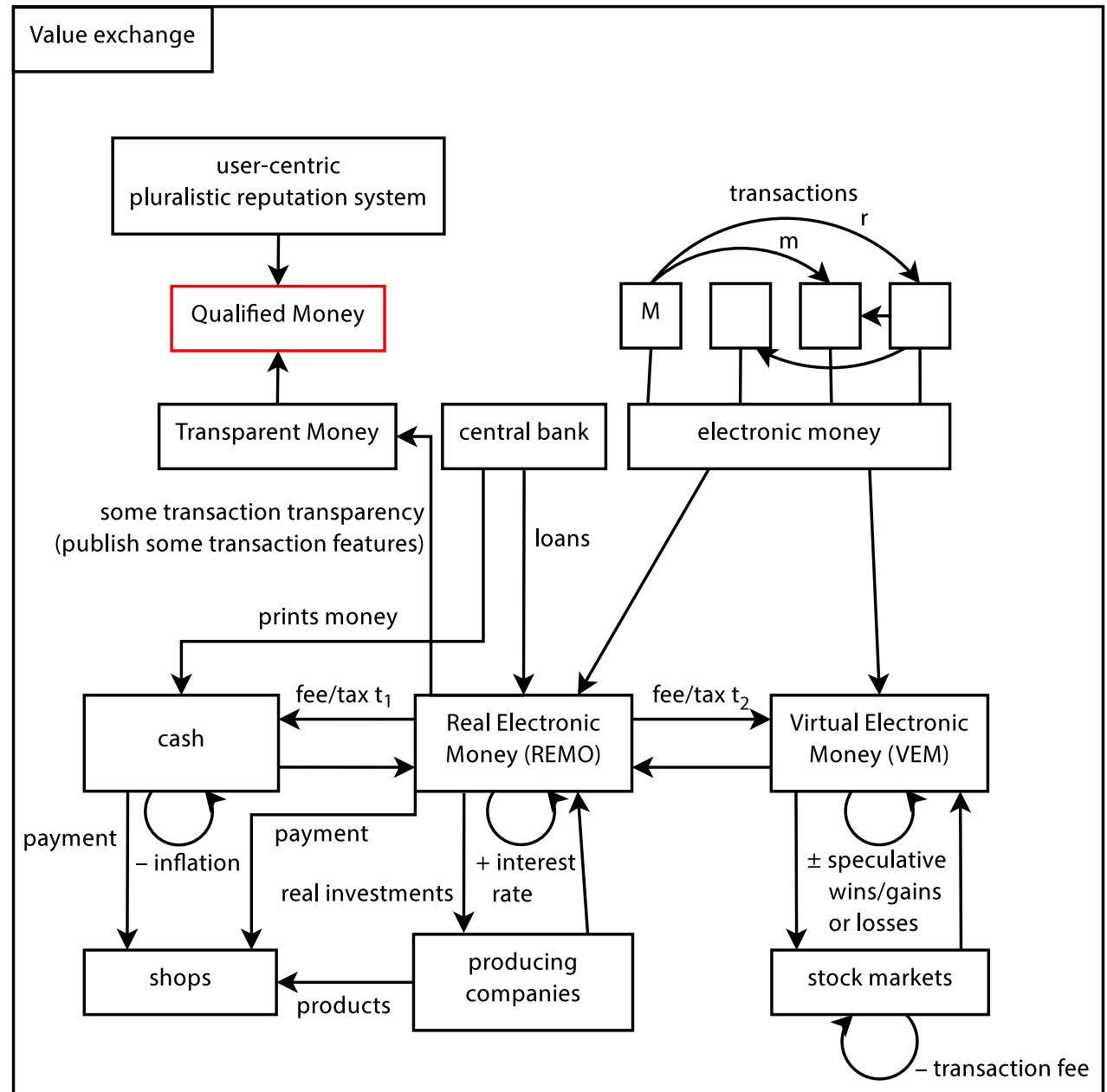
Mapping Noise and other Externalities



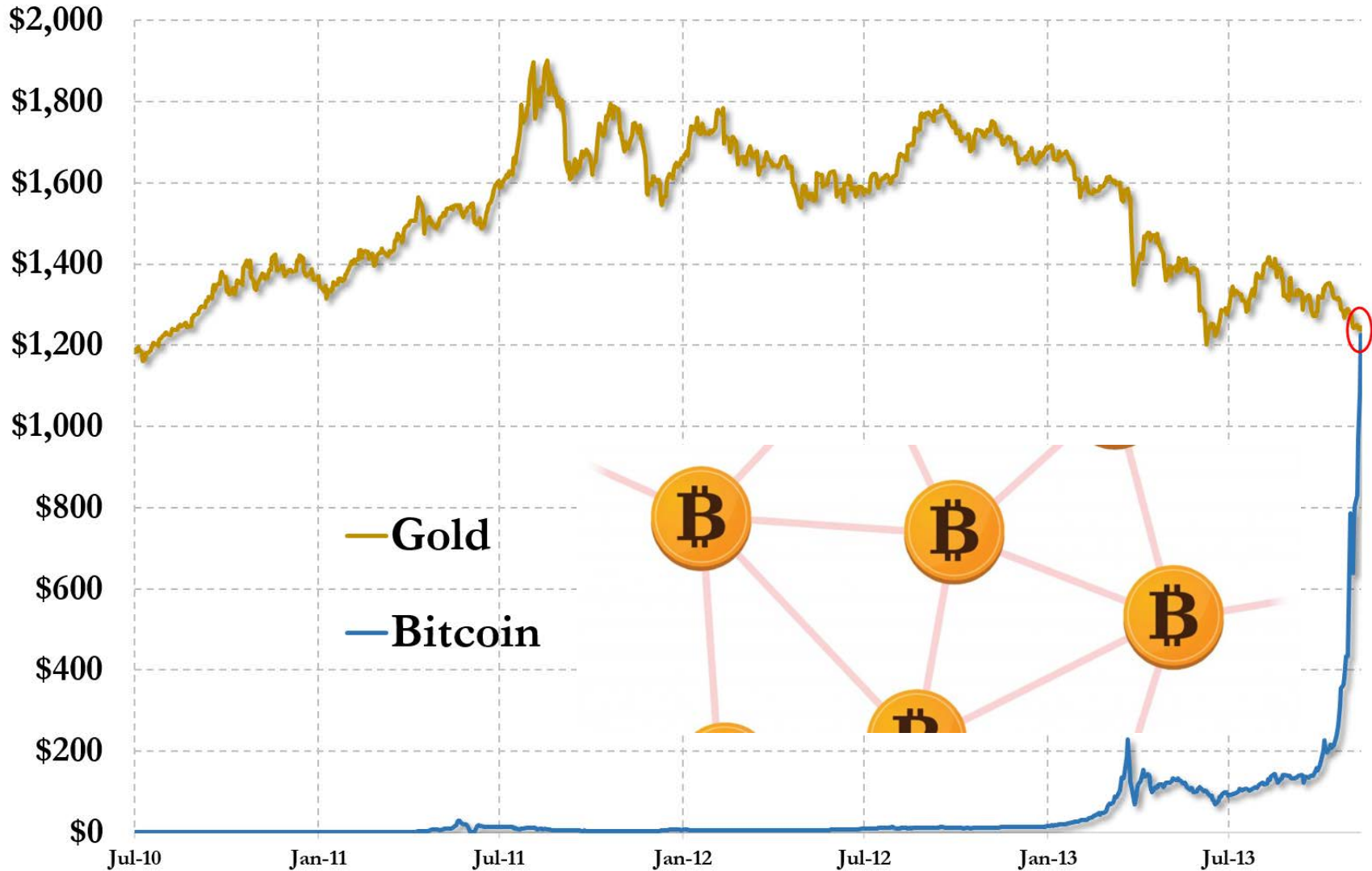
The No. 1 Principle

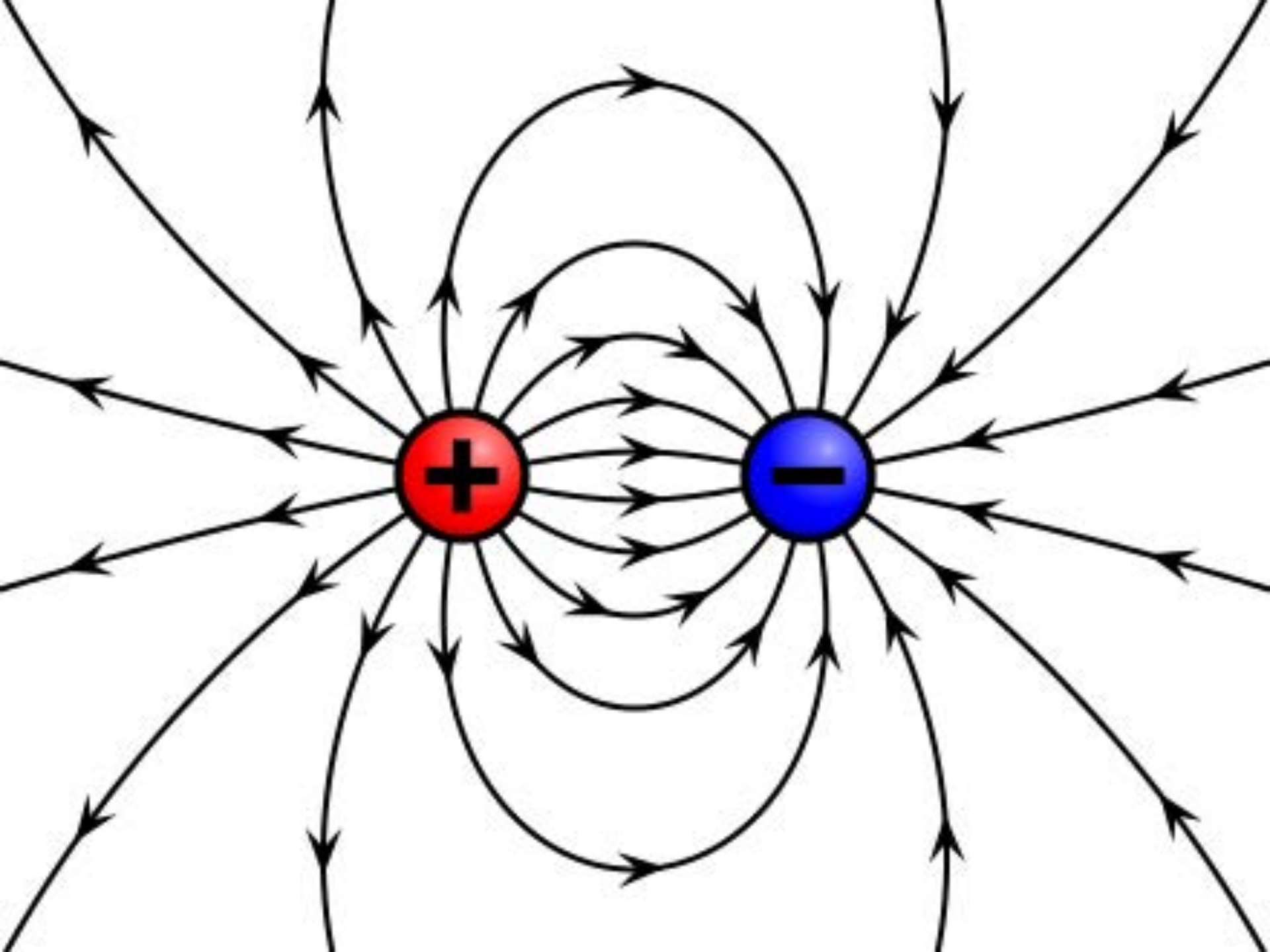
Increase positive
externalities, reduce
negative ones, and
ensure fair
compensation

We Need a Multi-Dimensional Incentive/Reward System: „Qualified Money“

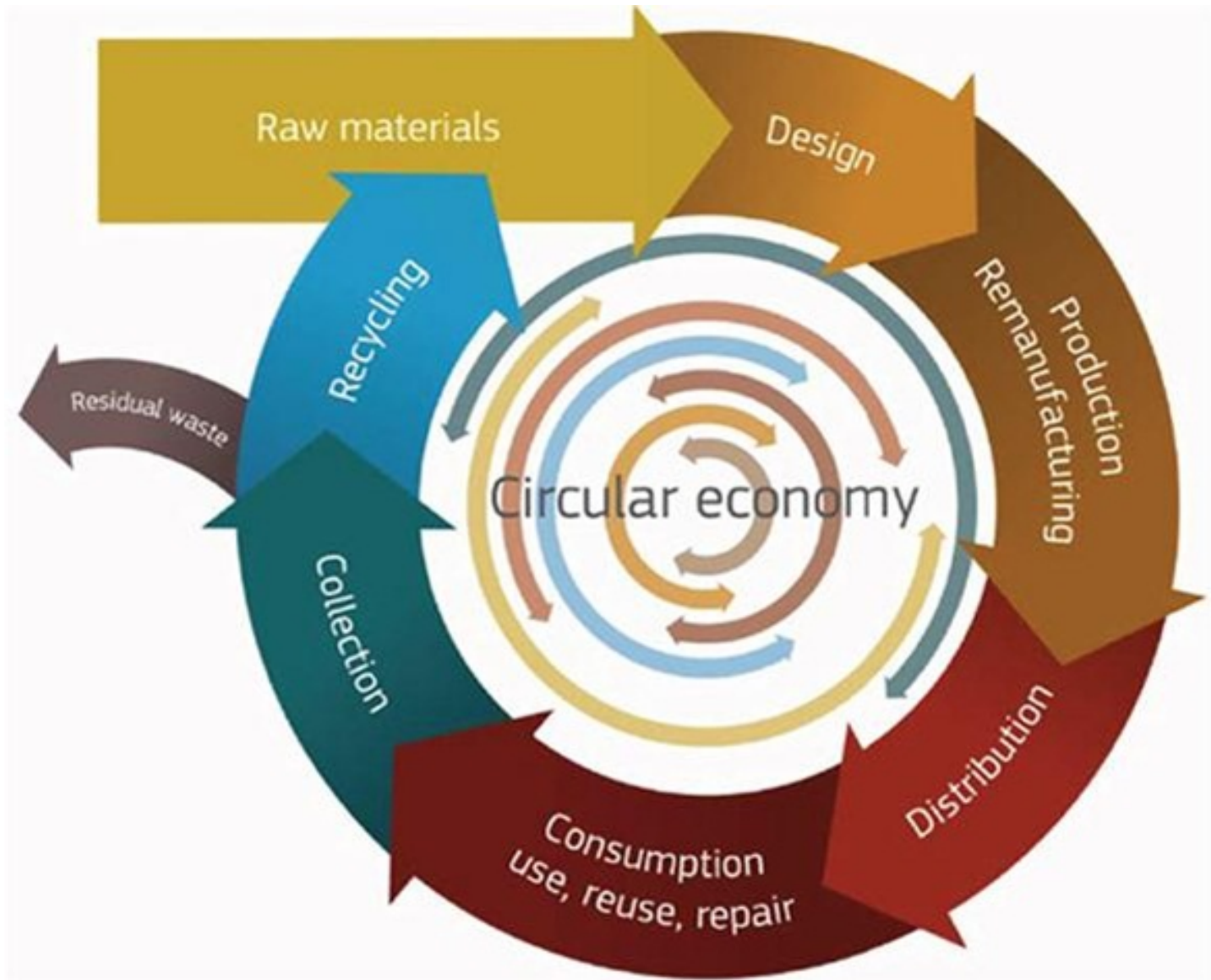


It is now possible to create such new money(s), as BitCoin has shown





Circular Economy



Opportunities Instead of Property:
Fair Access to Goods and Services rather than
Ownership







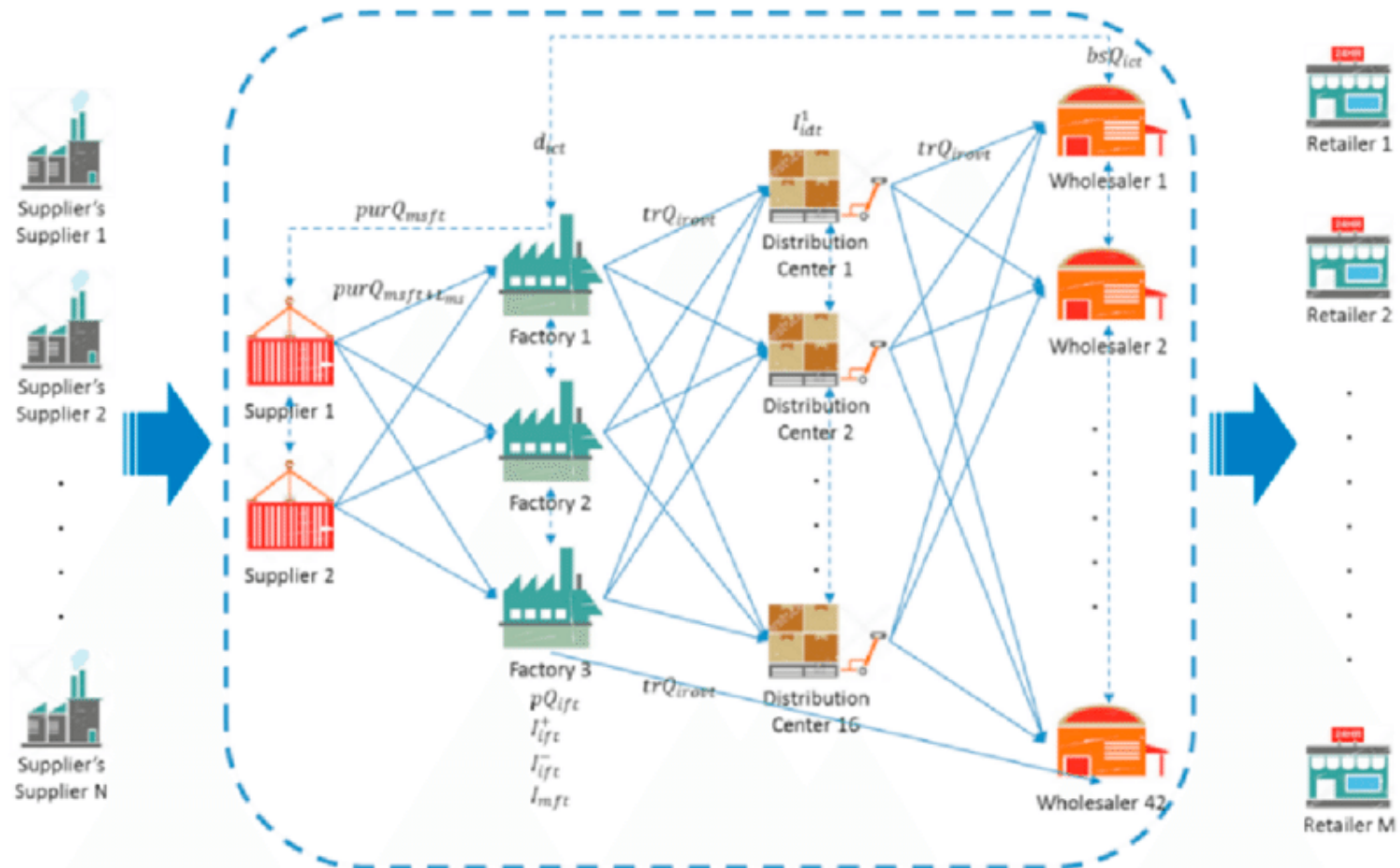


So Many Goals...

- Prosperity
- Sustainability
- Health
- Education
- Culture
- ...

However, optimization neglects all goals but one!

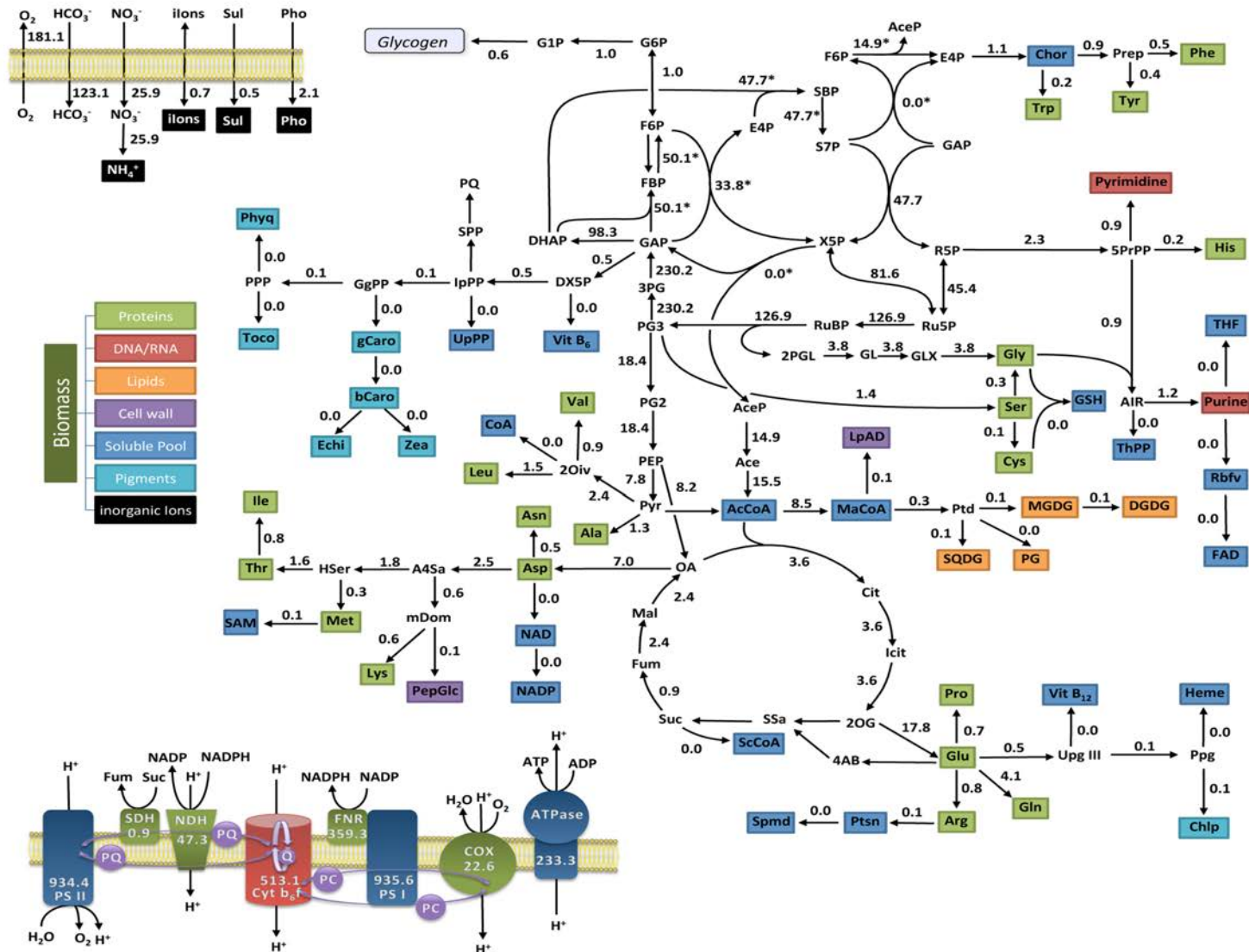
A Typical Supply Network Today



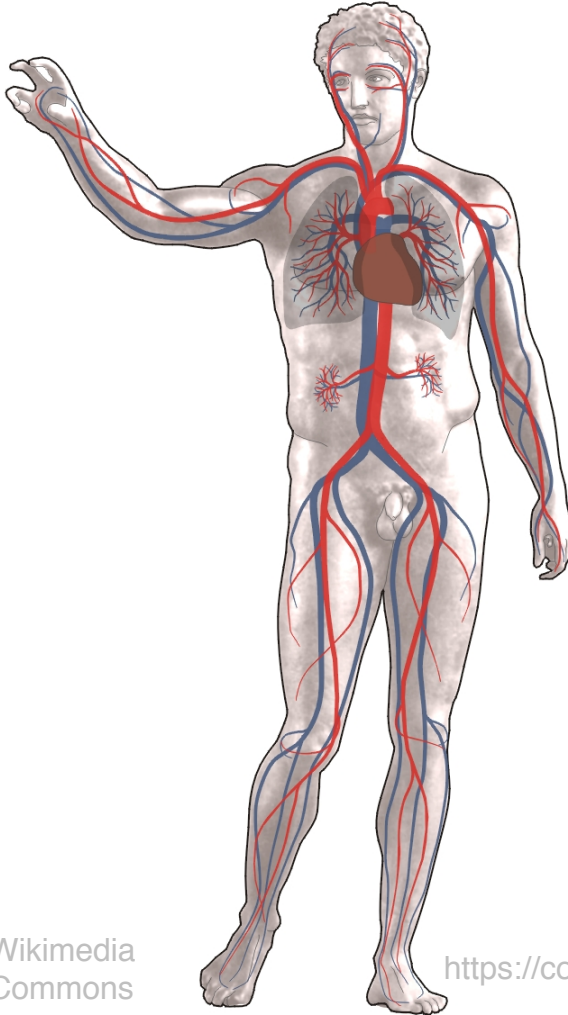
m: raw materials, s: raw material supplier, f: factory, i: product, r: rout, o: shipping supplier, d: distribution center, v: vehicle, t: time, c: customer

Information Flow \longleftrightarrow Material Flow \longleftrightarrow

A Typical Metabolic Network



Multi-Dimensional Feedback, Not One-Dimensional Control



We are living not
just on one thing,
say water.

We need

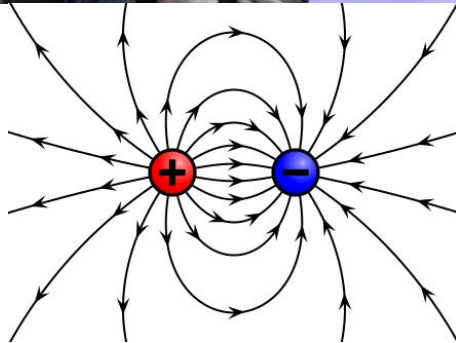
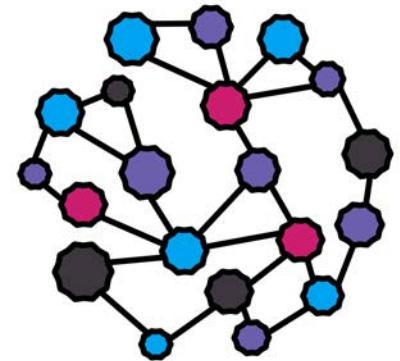
- carbohydrates
- proteins
- vitamins
- minerals

A Paradigm Change

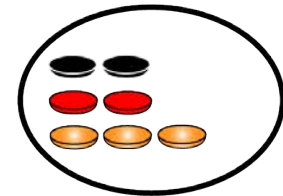
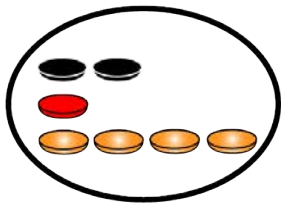
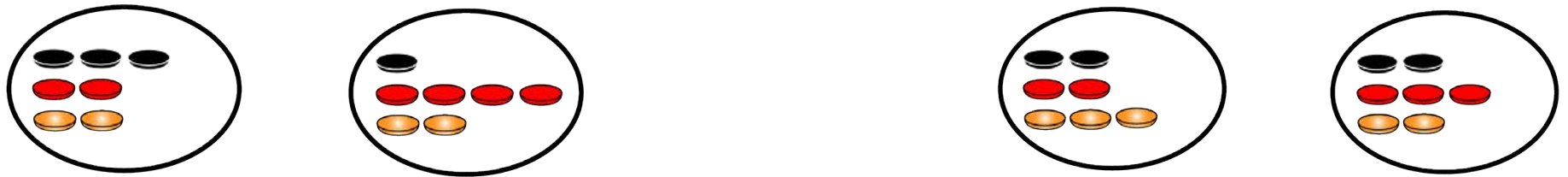
With a multi-dimensional value (exchange) system, there are many more possibilities to find solutions that benefit all. The space of possible solutions is significantly increased.

Socio-Ecological Finance FIN4.0+:

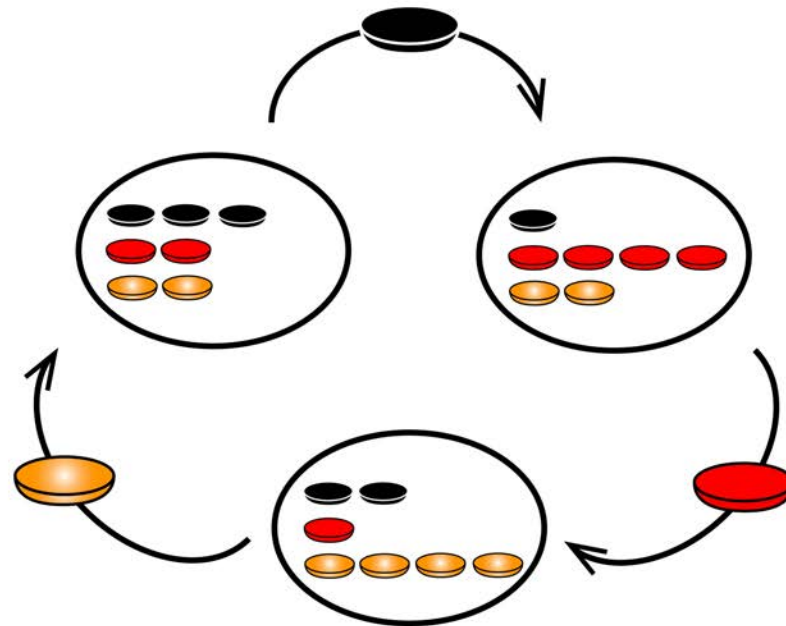
Participatory sustainability







More
balanced
accounts



Support Desirable Interactions with Personal Digital Assistants

There are several different kinds of interactions/scenarios:

	Socially unfavorable	Socially favorable
Symmetric	Lose-lose Avoid	Win-win Improve fairness, if needed
Asymmetric	Bad win-lose Protect from exploitation	Good win-lose Turn into win-win by value transfer

Pending Patent: **Interaction Support Processor**

New paradigm:
From top-down
control and
manipulation to
empowerment and
coordination



(Image: dmd/ADAC)

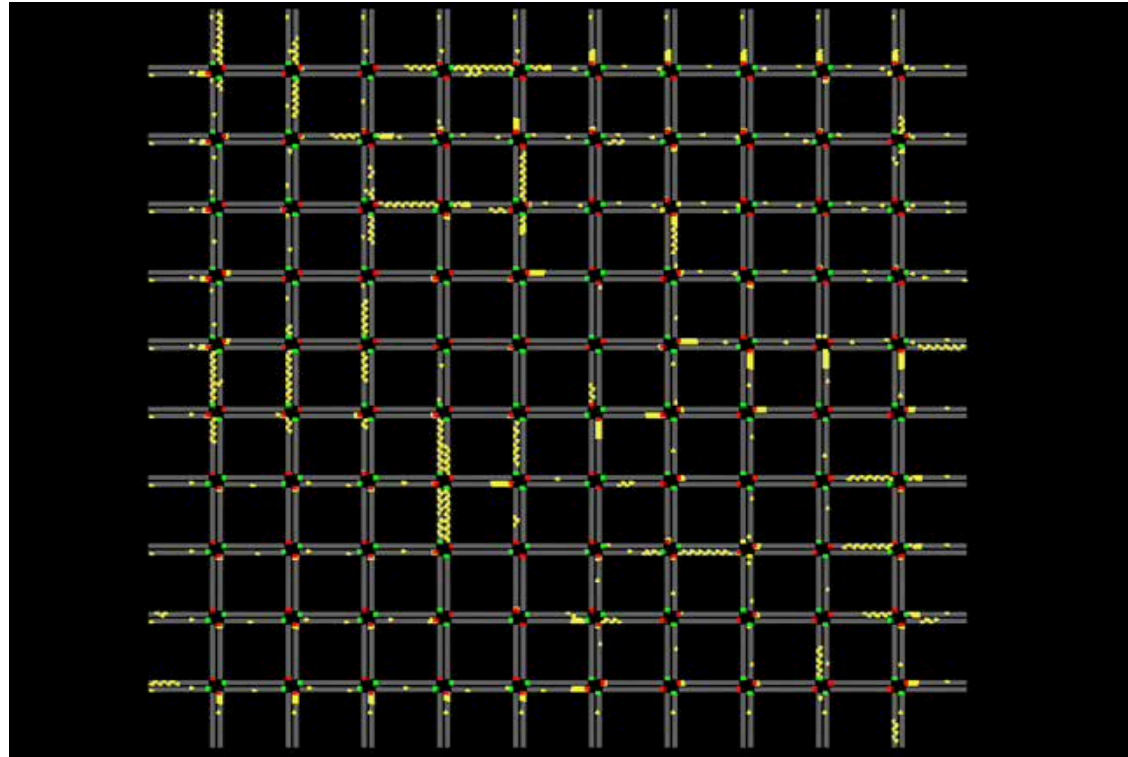
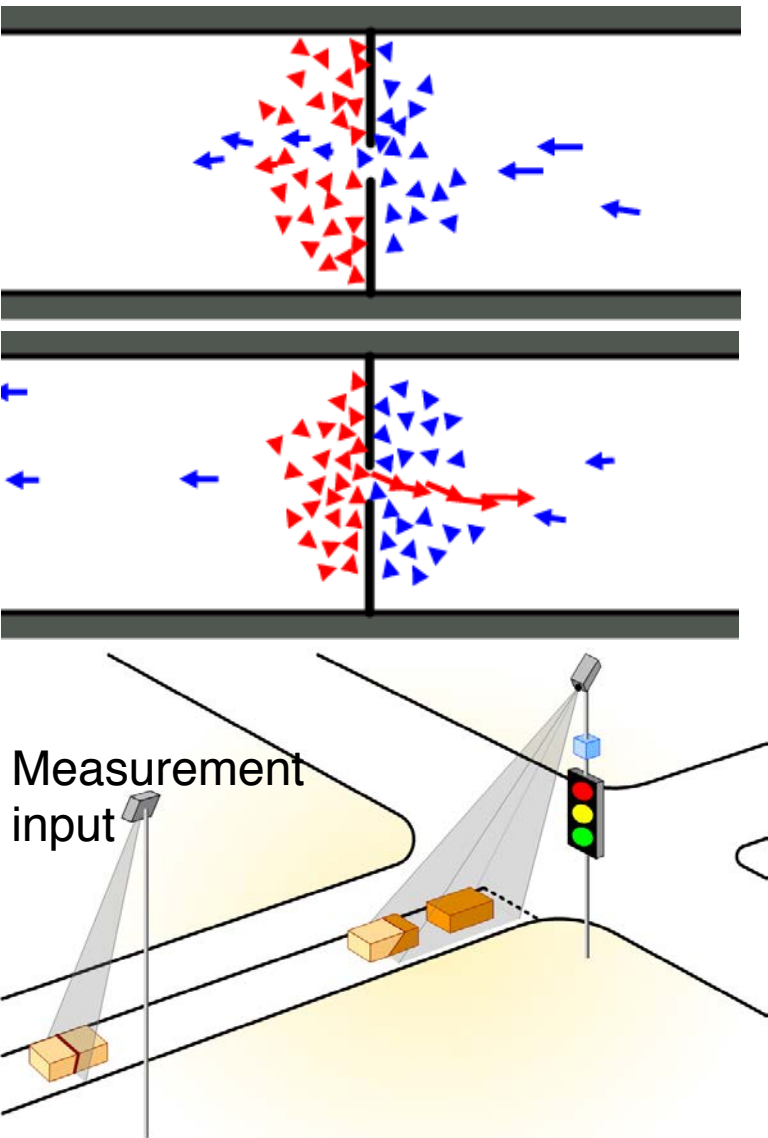






300 years, after the
“Invisible Hand” was
incepted, the “Internet
of Things” can make it
work!

Harnessing Complexity by Decentralization



Self-regulating green waves.
Patent available.

Decentralized Can Outsmart Centralized Control



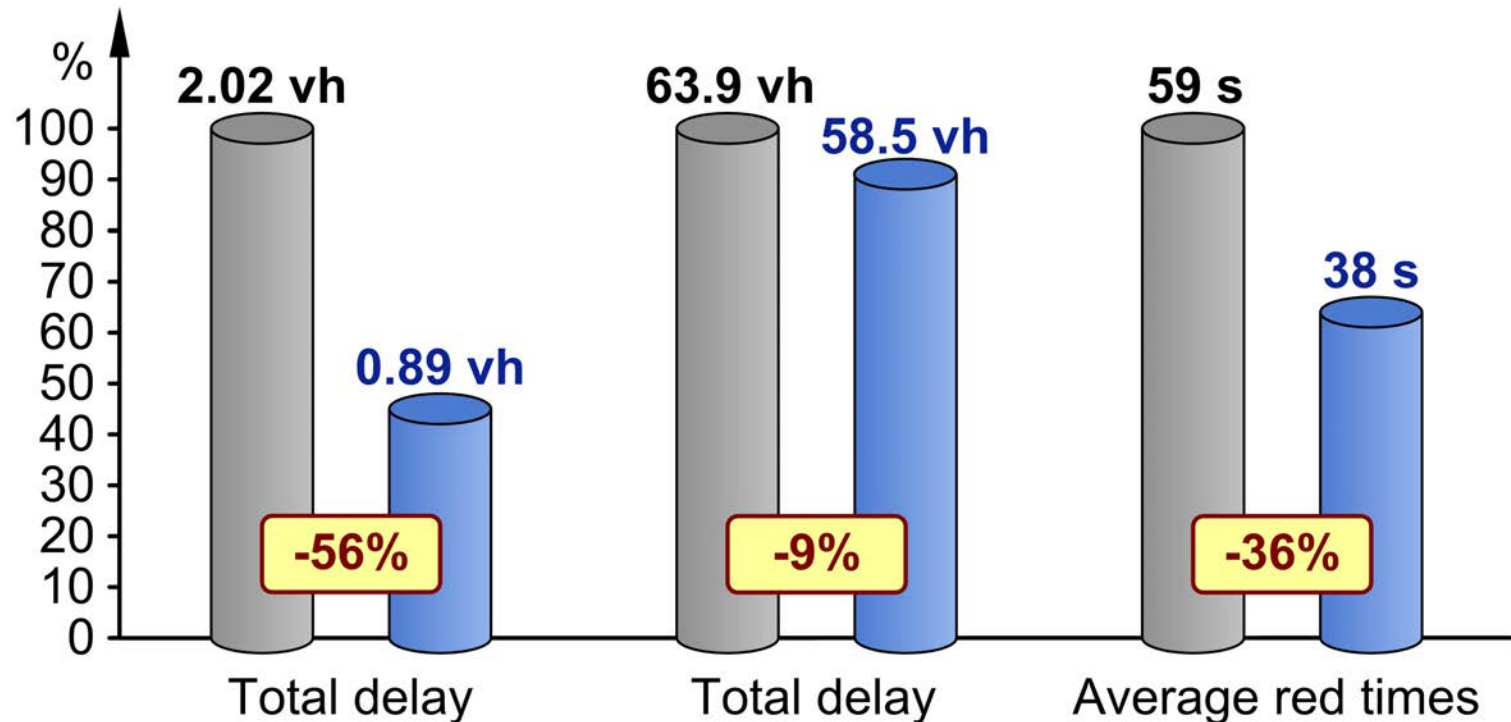
Public transport



Motorized traffic



Pedestrians and Cyclists



Digital Democracy:

Boosting collective intelligence

What Does Democracy Mean?

- Human rights, human dignity
- Freedom
- Self-determination
- Pluralism
- Protection of minorities
- Division of power
- Checks and Balances
- Participation
- Transparency
- Fairness
- Justice
- Legitimacy

Design for values,
democracy by design

- Privacy
- ✓ Protection from misuse/exposure
- ✓ Right to be left alone



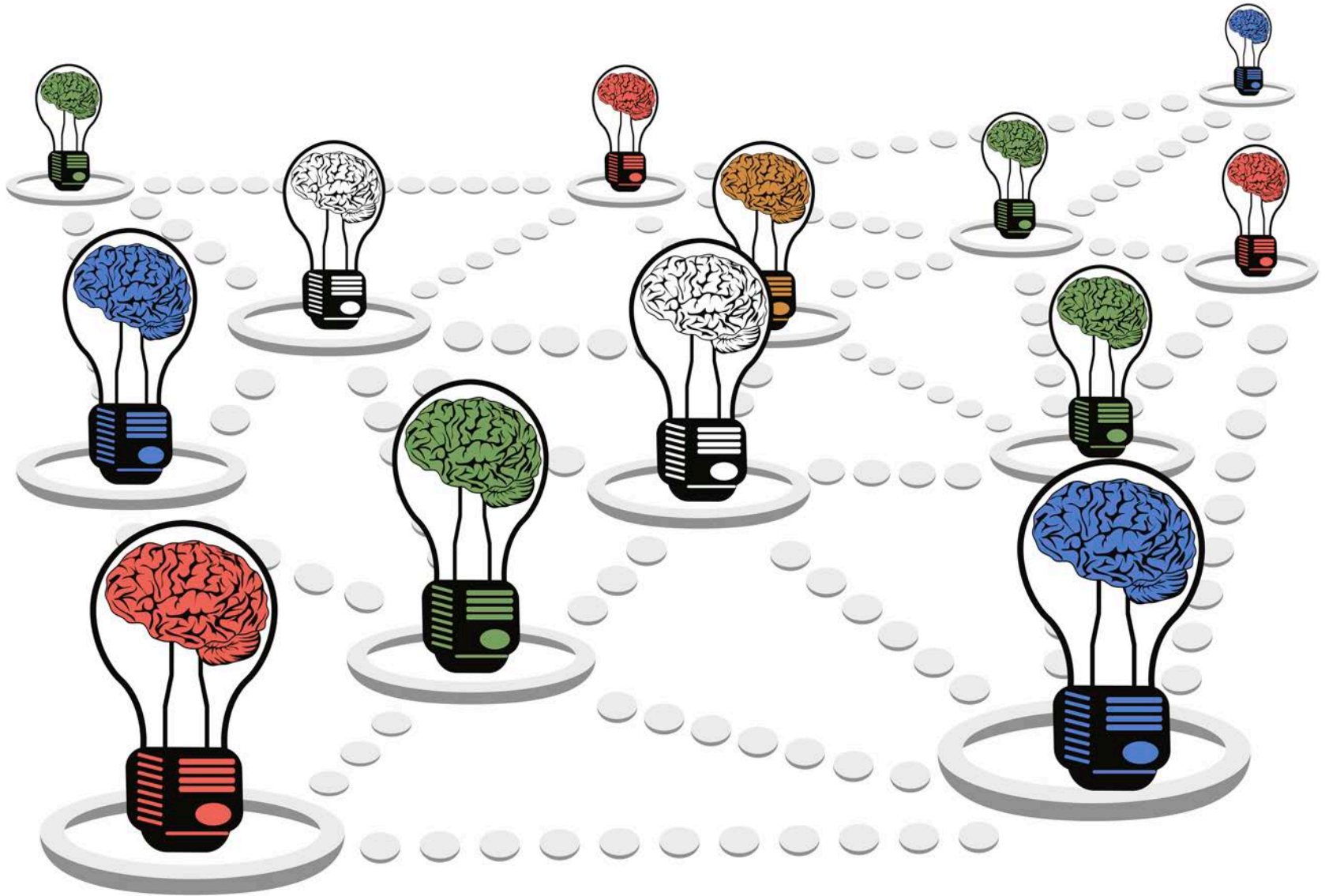
IMAGINECHINA/CORBIS

Many choices that people consider their own are already determined by algorithms.

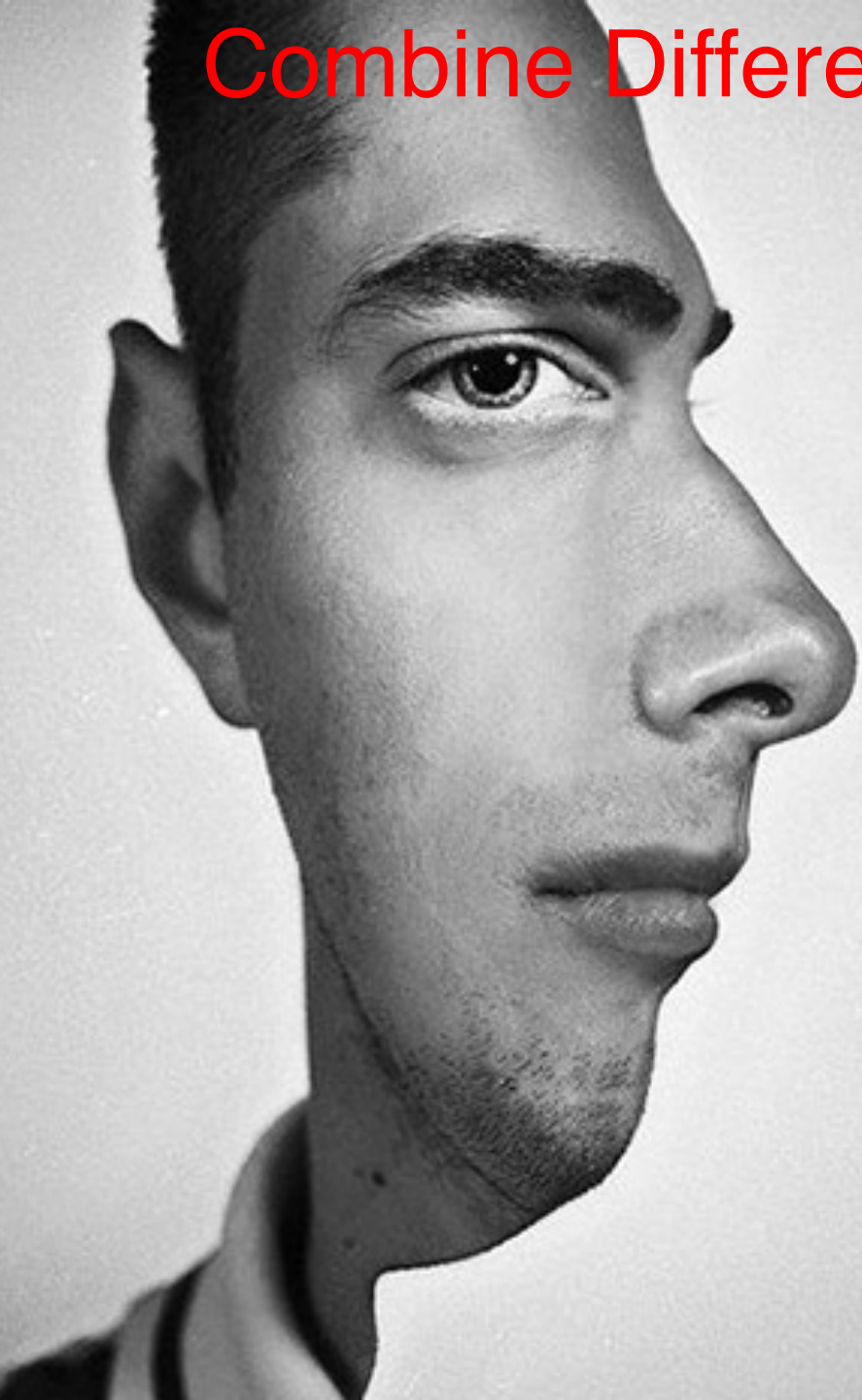
Build digital democracy

Open sharing of data that are collected with smart devices would empower citizens and create jobs, say **Dirk Helbing** and **Evangelos Pournaras**.

Bring the Best Ideas of Many Minds Together



Combine Different Perspectives



Diversity Wins, Not the Best



Leaderboard

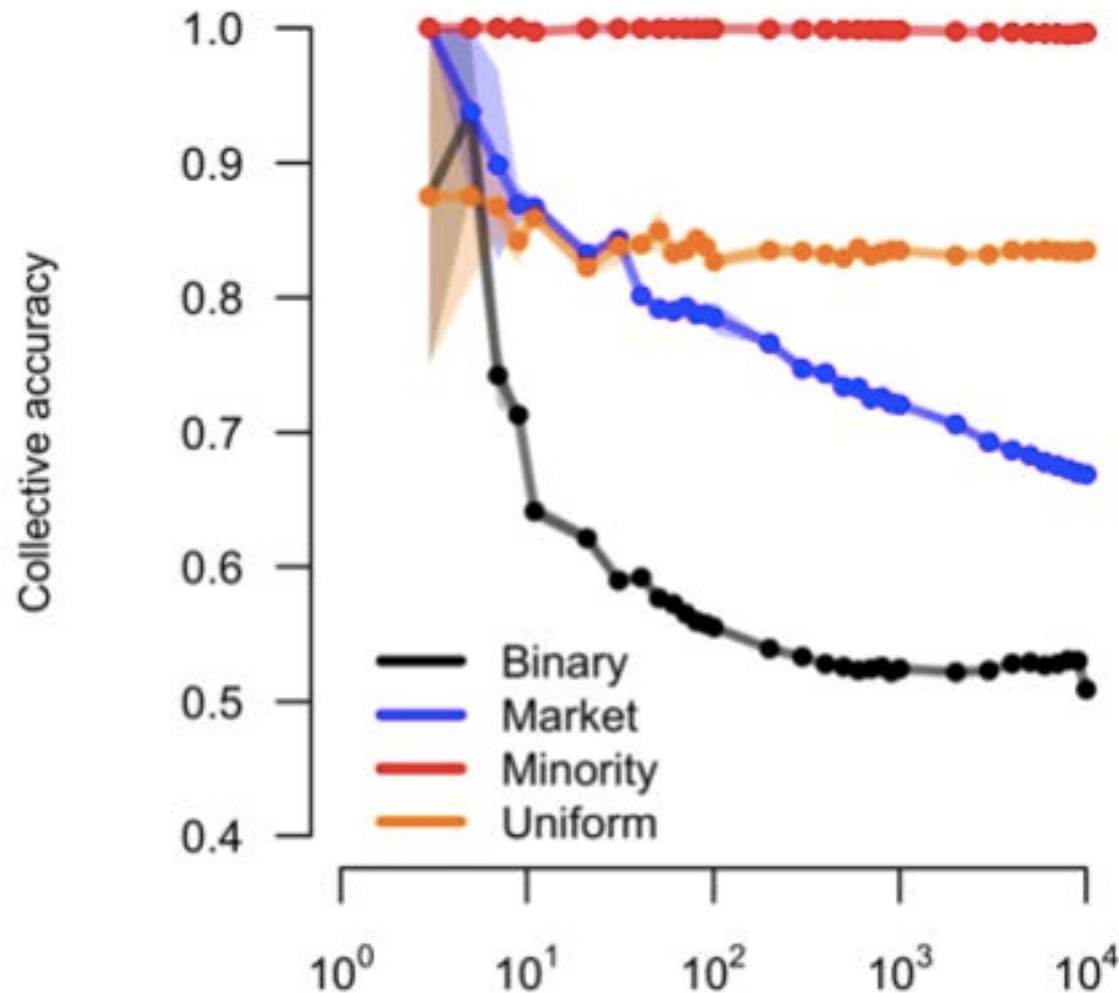
Display top leaders.

Rank	Team Name	Best Score	% Improvement	Last Submit Time
1	BellKor's Pragmatic Chaos	0.8558	10.05	2009-06-26 18:42:37
Grand Prize - RMSE \leq 0.8563				
2	PragmaticTheory	0.8582	9.80	2009-06-25 22:15:51
3	BellKor in BigChaos	0.8590	9.71	2009-05-13 08:14:09
4	Grand Prize Team	0.8593	9.68	2009-06-12 08:20:24
5	Dace	0.8604	9.56	2009-04-22 05:57:03
6	BigChaos	0.8613	9.47	2009-06-23 23:06:52
Progress Prize 2008 - RMSE = 0.8616 - Winning Team: BellKor in BigChaos				
7	BellKor	0.8620	9.40	2009-06-24 07:16:02
8	Gravity	0.8634	9.25	2009-04-22 18:31:32
9	Opera Solutions	0.8638	9.21	2009-06-22 05:53:30
10	xlvectur	0.8639	9.20	2009-06-26 13:49:04
11	xiangliang	0.8639	9.20	2009-06-26 07:47:34
12	BruceDengDaoCiYiYou	0.8641	9.18	2009-06-02 17:08:31
13	Ces	0.8642	9.17	2009-06-24 14:34:14
14	majia2	0.8642	9.17	2009-06-23 08:07:50

Top-down
and majority
decisions
obstruct
collective
intelligence

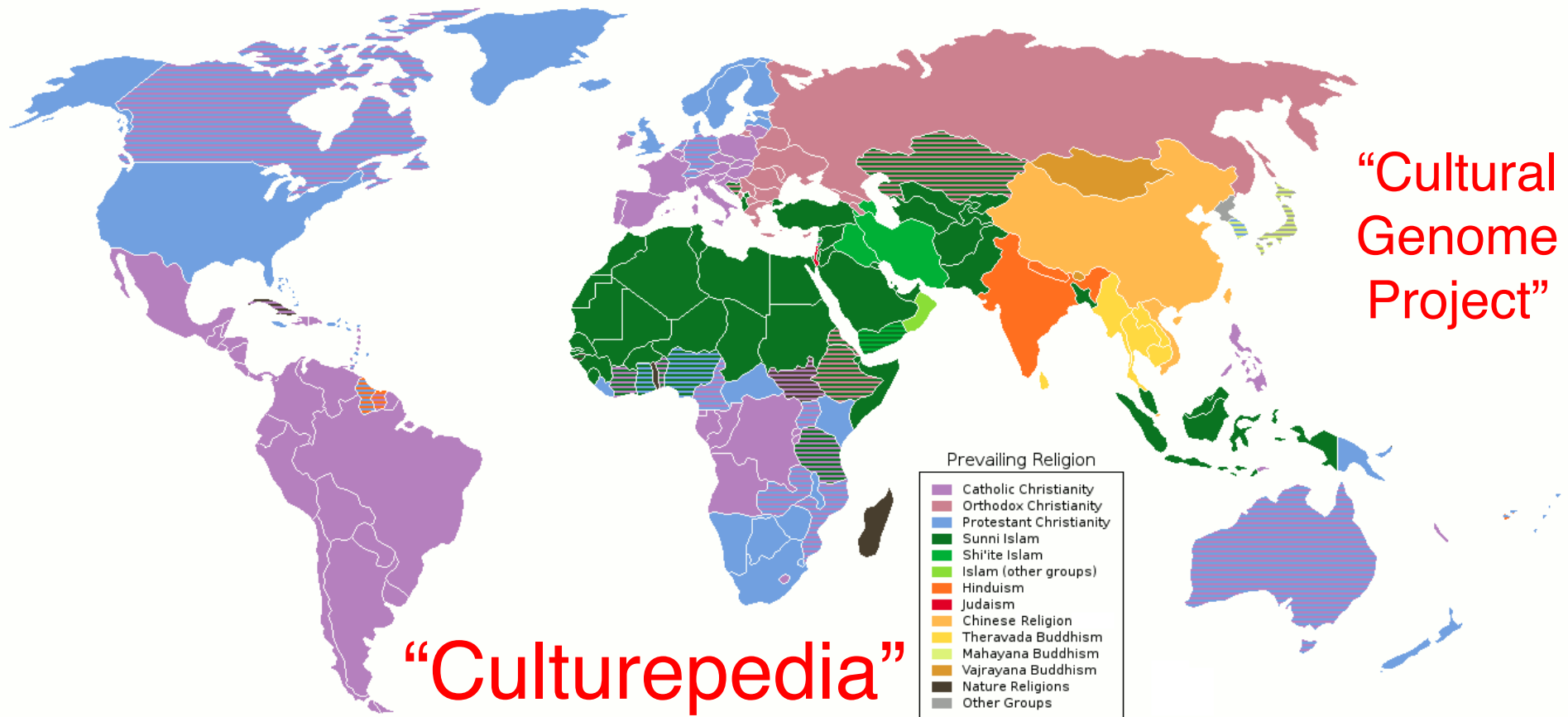
Wisdom of
crowds
requires
independent
exploration
and then
integration

Optimal Incentives: “Minorities Report” Strategy Can Outperform Yes/No- Democracies and Markets!



R. Mann and DH:
Minorities Report:
Optimal Incentives
for Collective
Intelligence,
Preprint (2016)

Discover, Use and Combine the Success Principles Underlying Different Cultures



Overcome the large degree of “cultural analphabetism”

Network Effects Make All the Difference

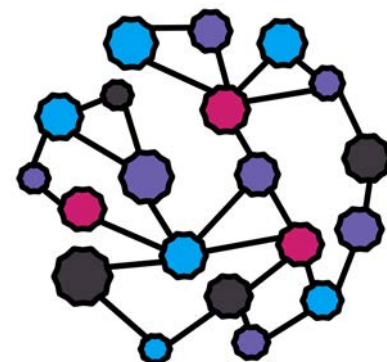
We experience
a transition
from a
component-
dominated to
an interaction-
dominated
world.



Combinatorial innovation
(information ecosystems)
for the economy

Collective intelligence
(digital democracy)
for our society

**Multi-dimensional
real-time feedback**
(FIN4+) for nature



Finance 4.0

Be a game changer!





Next Civilization

'Digital transformation' sounds harmless, given that the explosion in data volumes, processing power and Artificial Intelligence has driven humanity and the entire world to a point of no return. We will surely see a new civilization, but we are at a crossroads. The future needs to be re-invented, decisions must be taken.

After the automation of factories and the creation of self-driving cars, the automation of society is on its way. But there are two kinds of automation: a centralized top-down control of the world and a distributed control approach, supporting local self-organization. Using the power of today's information systems, governments and big tech companies seem to engage in the first approach. Might they even build a 'digital Crystal Ball' that knows almost everything, including your personality, and a superintelligent 'digital God' to control what we do?

We are much closer to such 'science fiction scenarios' than you probably think. In this much expanded second edition of *The Automation of Society is Next: How to Survive the Digital Revolution* (2015), the author discusses lessons learned on digital democracy, aspects of transhumanism and far-reaching thoughts about life in the digital age and what it may mean to be human in the future.

Dirk Helbing



Next Civilization

Next Civilization

Dirk Helbing

Digital Democracy and
Socio-Ecological Finance

—
How to Avoid Dystopia
and Upgrade Society
by Digital Means

ISBN 978-3-030-62329-6



► [springer.com](https://www.springer.com)



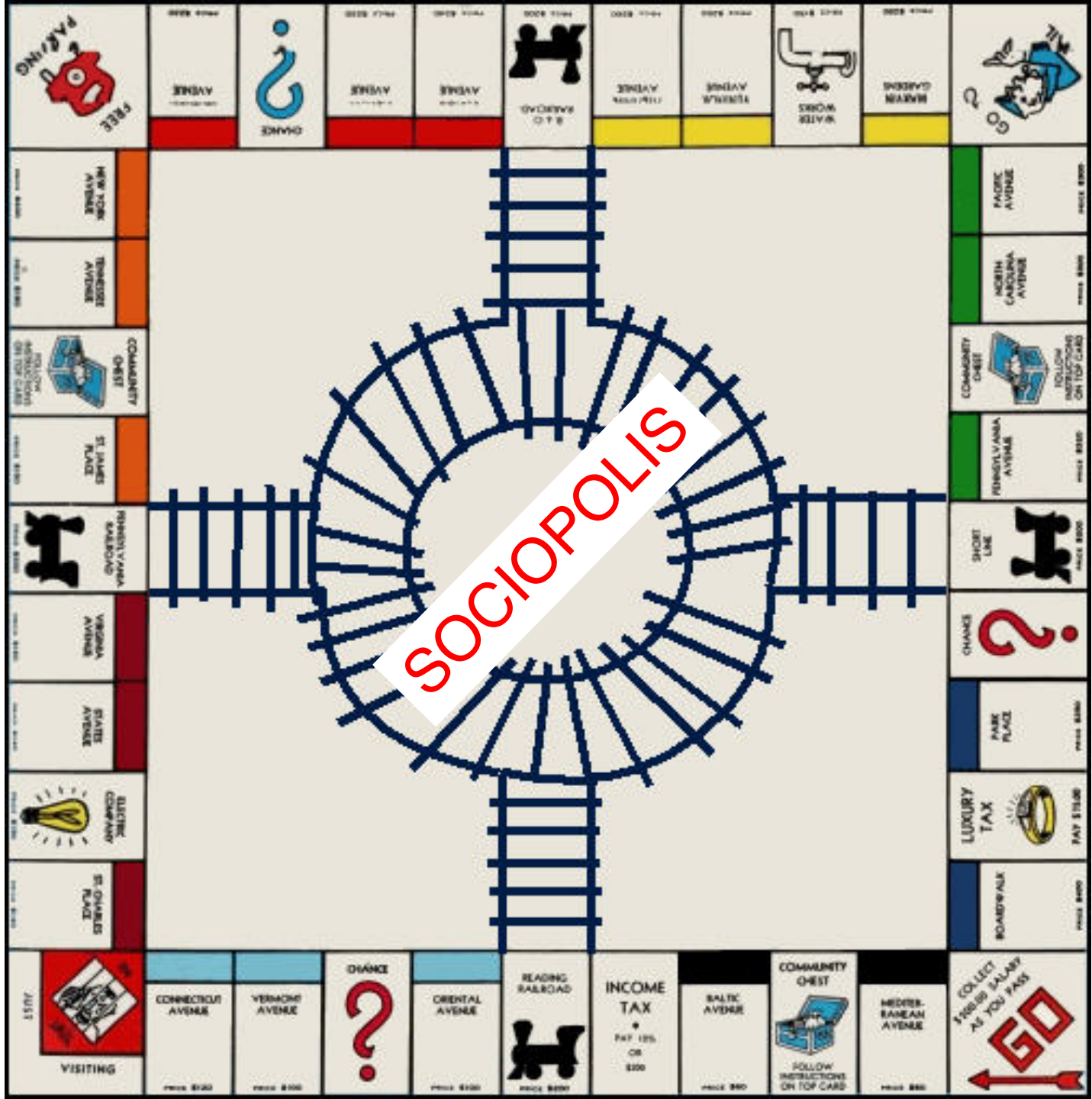
Springer

<div>GO</div> <div>COLLECT NO SALARY AS YOUR EMPLOYER IS IN ADMINISTRATION</div>		<div>POUNDLAND (USED TO BE BORDERS)</div> <div>PRICE £50</div>		<div>COMMUNITY CHEST</div> <div><div><div><div></div></div></div><div>FOLLOW INSTRUCTIONS ON TOP CARD</div></div> <div>PRICE £60</div>		<div>BUSINESS TAX</div> <div>PAY ANYTHING BETWEEN £10,000 AND 2P</div> <div>PRICE £200</div>		<div>STARBUCKS</div> <div><div><div></div></div></div> <div>PRICE £100</div>		<div>CHANCE</div> <div><div><div></div></div></div> <div>PRICE £100</div>		<div>TESCO EXTRA</div> <div>PRICE £100</div>		<div>AN EXTRA TESCO METRO</div> <div>PRICE £120</div>					
<div>EVER SEEN DAWN OF THE DEAD? THE WALL FROM THAT, BASICALLY.</div> <div>PRICE £400</div>		<div>PAY YOUR ACCOUNTANT</div> <div>PRICE £200</div>		<div>EMPTY VIRGIN MEGASTORE ECHOING WITH THE MOANS OF TORTURED SOULS</div> <div>PRICE £350</div>		<div>CHANCE</div> <div><div><div></div></div></div> <div>PRICE £500</div>		<div>CHRIST ALMIGHTY NOT ANOTHER ONE</div> <div><div><div></div></div></div> <div>PRICE £200</div>		<div>RBS (MOVE ALONG, NOTHING TO SEE HERE)</div> <div>PRICE £380</div>		<div>COMMUNITY CHEST</div> <div><div><div><div></div></div></div><div>FOLLOW INSTRUCTIONS ON TOP CARD</div></div> <div>PRICE £300</div>		<div>NATWEST (EVERYTHING TICKETTYBOO)</div> <div>PRICE £300</div>		<div>BARCLAYS (DOING JUST FINE)</div> <div>PRICE £300</div>		<div>Ugh! administrators!</div>	
<div>FORMER HABITAT (NOW CRACK DEN)</div> <div>PRICE £280</div>		<div>LEAKY WATER COMPANY</div> <div><div><div></div></div></div> <div>PRICE £150</div>		<div>GAME (HOME TO EERIE NOISES THAT YOU HOPE IS JUST A FOX)</div> <div>PRICE £260</div>		<div>BOARDED UP AD SPORTS (HOME TO SOME PIGEONS)</div> <div>PRICE £260</div>		<div>YET ANOTHER STARBUCKS</div> <div><div><div></div></div></div> <div>PRICE £200</div>		<div>EMPTY BOOK SHOP (BOOKS WERE MADE OF PAPER, BUT FOR BOOKS)</div> <div>PRICE £240</div>		<div>EMPTY LIBRARY (THEY WERE LIKE IMAGINE)</div> <div>PRICE £220</div>		<div>CHANCE</div> <div><div><div></div></div></div> <div>PRICE £290</div>		<div>EMPTY BLOOGHUSTER</div> <div>PRICE £290</div>		<div>OVERPRICED</div> <div><div><div></div></div></div> <div>PRICE £200</div>	

MONOPOLY

COMMUNITY CHEST

CHANCE



Schäuble sieht in Bürgerrat neue Impulse für die repräsentative Demokratie



Bundestagspräsident Dr. Wolfgang Schäuble sieht in **Bürgerräten** eine Möglichkeit, die Bevölkerung stärker in die Politik einzubinden. „Diese besondere Form der Beteiligung kann das Vertrauen in die Politik stärken und der repräsentativen Demokratie neue Impulse geben“, sagte Schäuble am **Mittwoch, 13. Januar 2021**, in der Bundespressekonferenz zum Auftakt des zweiten bundesweiten Bürgerrates „Deutschlands Rolle in der Welt“.



Dirk Helbing, Contributor

Professor of Computational Social Science, complex systems expert, member of the German Academy of Sciences "Leopoldina"

How to make democracy work in the digital age

08/04/2016 06:44 am ET

By Prof. Dirk Helbing and Stefan Krauser, ETH Zurich

Recently, we have heard many complaints about how democracy works these days – or maybe rather why it doesn't work. In a recent Huffington post article, Dhruva Jaishankar, a Fellow at the Brookings Institution in India, claimed that digital democracy is the evil that makes our world ungovernable.[\[1\]](#) We argue that Jaishankar defines digital democracy in a flawed and misleading way. This could cause serious misunderstandings of what the problems are and what are the possible solutions. In the following we will show that digital democracy – if properly understood[\[2\]](#) – is the most promising way to build prosperous societies in the digital age.

Taiwan is making democracy work again. It's time we paid attention

Social media has opened up vast social divisions and brought democracy to its knees. In Taiwan, the people are fighting back

By **CARL MILLER**

26 Nov 2019



How Taiwan became a lab for digital democracy





The upside

How Taiwan's 'civic hackers' helped find a new way to run the country

New social media platform Polis cuts through noise and trolling to establish consensus - and create new laws

Success Principles in a Complex, Digital World

- Co-learning
- Co-creation
- Co-ordination
- Co-operation
- Co-evolution

Let's Do This Now!



Image Source: <http://demosite.in/applicationdevelopment.php>