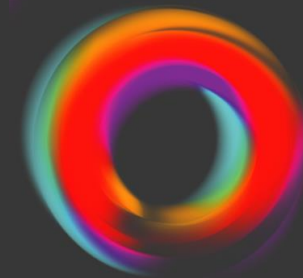


Humans x Machines

Some ideas

Alfons Cornella

Institute of Next, Barcelona



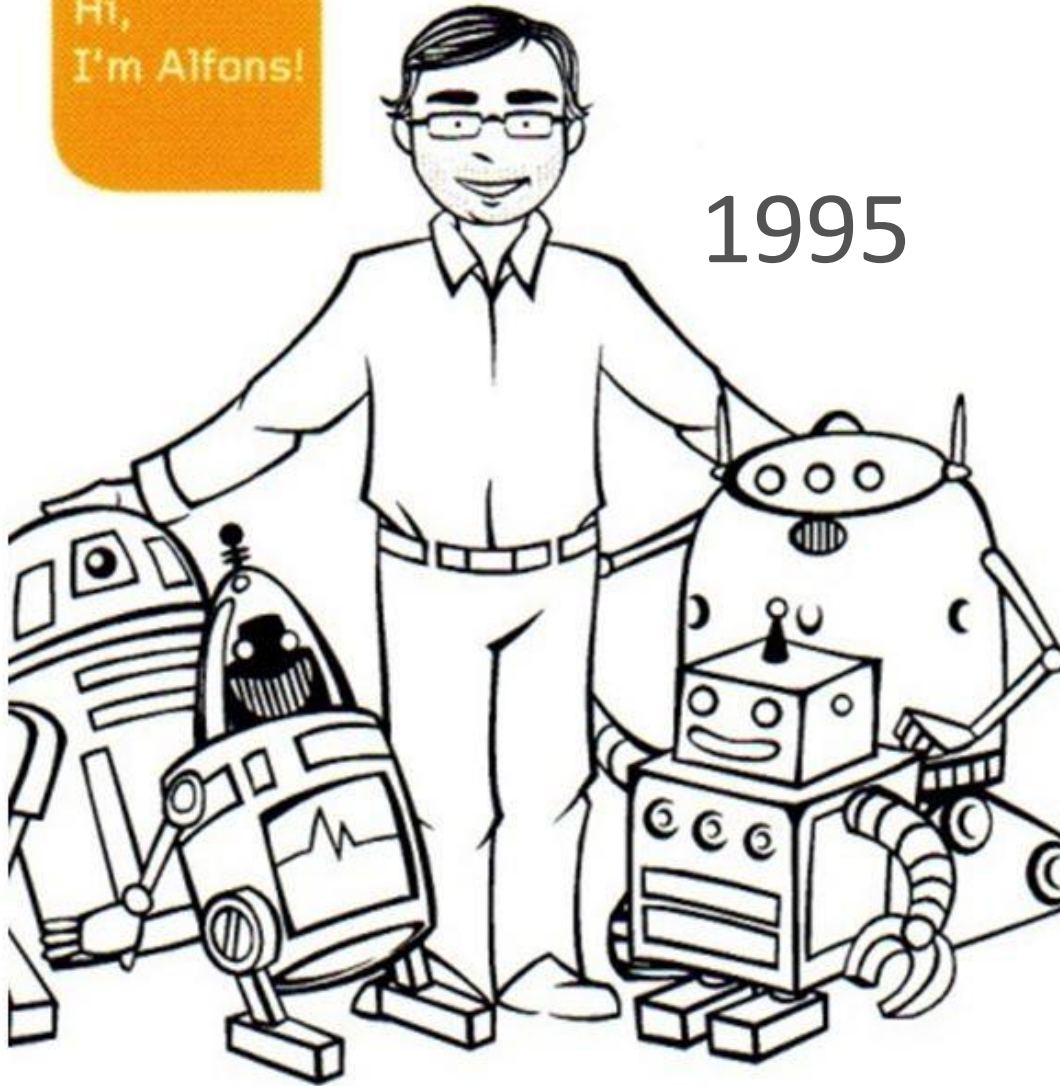
**INSTITUTE
OF NEXT**

BY INFONOMIA

Alfons Cornella

Hi,
I'm Alfons!

1995



2018





GROWTH

6x

expansion in global
GDP 1964–2014

3x

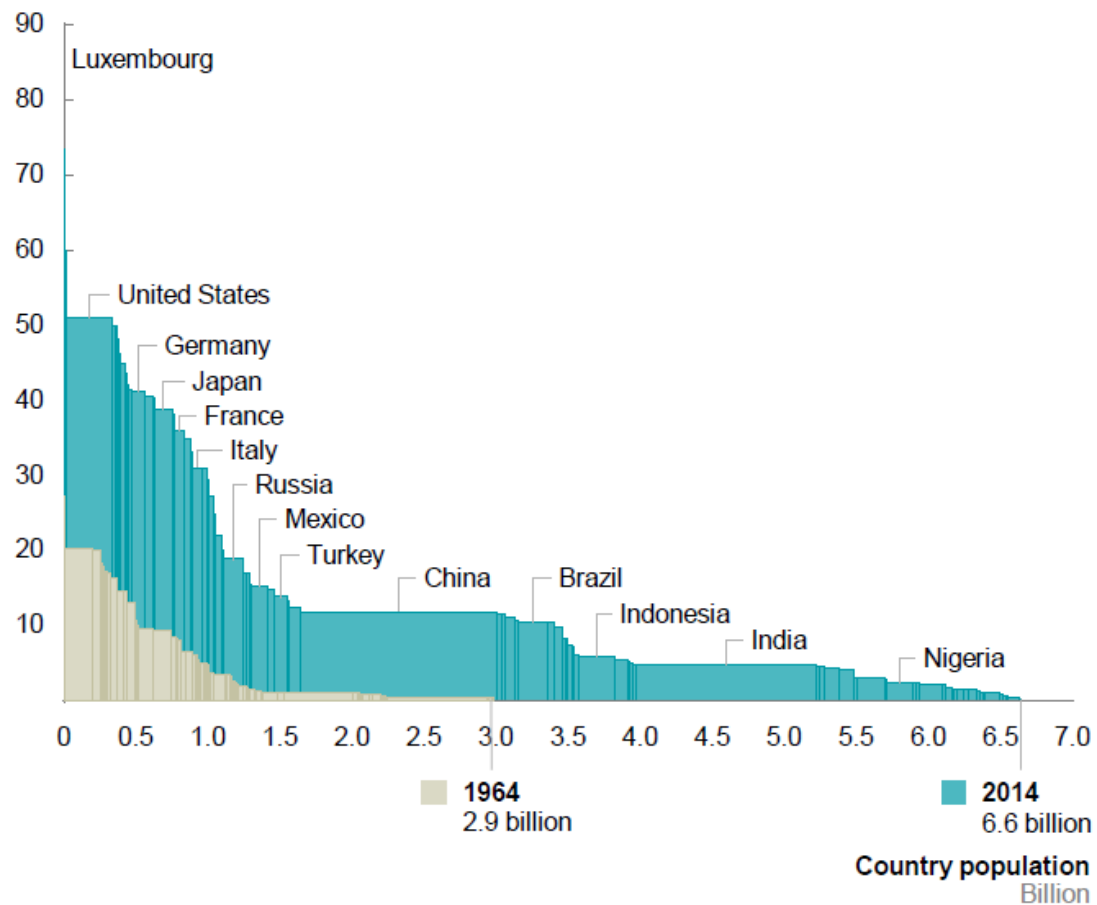
over next 50 years

Exhibit E1

Countries' population and per capita GDP have each grown strongly over the past 50 years¹

Per capita GDP

\$ thousand, 2012 purchasing power parity



¹ Based on data for 99 countries, 1964–2014.

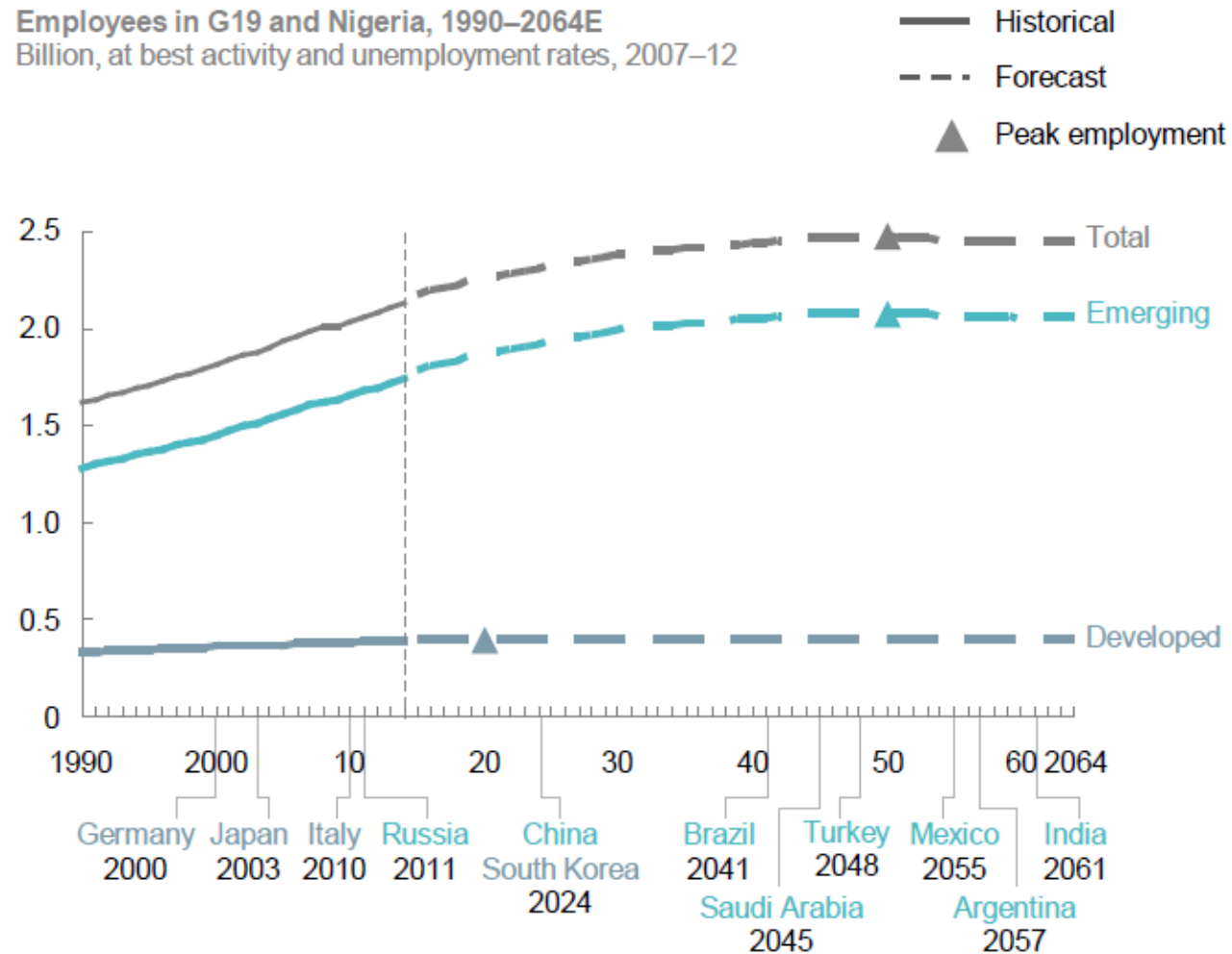
SOURCE: The Conference Board Total Economy Database; McKinsey Global Institute analysis

Exhibit E2

The global number of employees is likely to peak around 2050

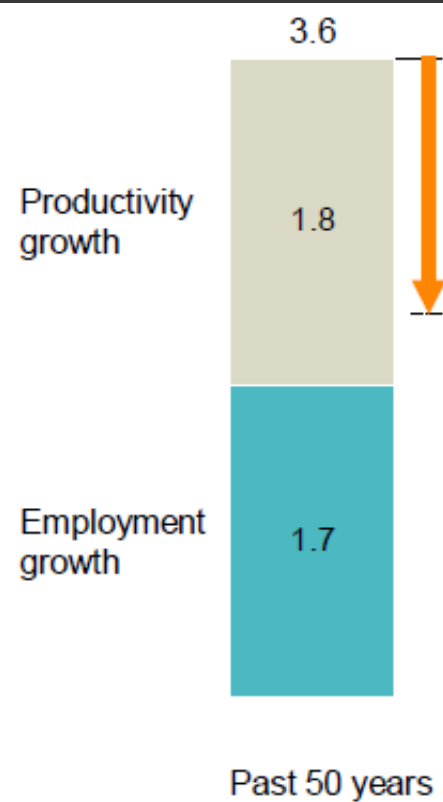
Employees in G19 and Nigeria, 1990–2064E

Billion, at best activity and unemployment rates, 2007–12



SOURCE: The Conference Board Total Economy Database; United Nations Population Division; World Bank; International Labour Organisation; McKinsey Global Institute analysis

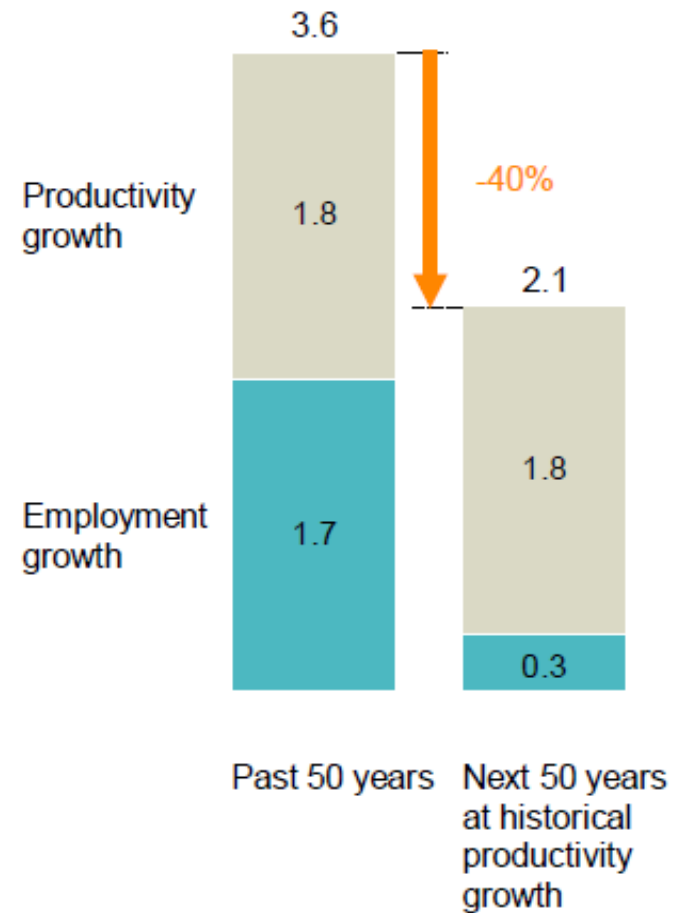
GDP growth



NOTE: Numbers may not sum due to rounding.

SOURCE: The Conference Board Total Economy Database; United Nations Population Division; McKinsey Global Institute analysis

GDP growth



NOTE: Numbers may not sum due to rounding.

SOURCE: The Conference Board Total Economy Database; United Nations Population Division; McKinsey Global Institute analysis

At past rates of productivity growth, GDP growth would slow down by about 40% in the next 50 years

Growth requires
more productivity,
which **now** means robots

ROBOTS





MEET AIDA



unsupervised.ai

Spider Workers

SIEMENS
Ingenuity for life



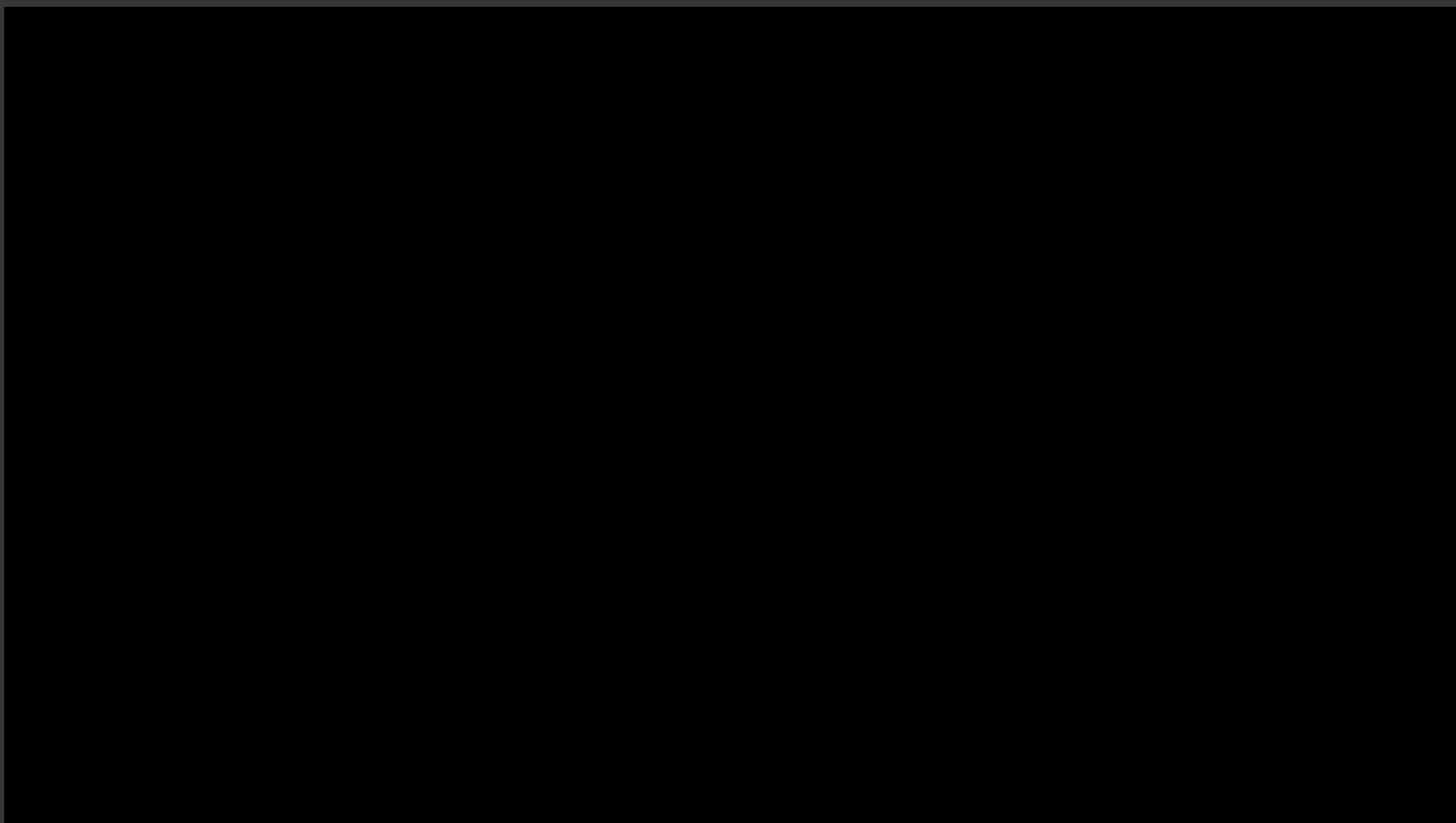
The next step in 3D printing could be something called mobile manufacturing. Siemens researchers in Princeton, New Jersey have developed prototype spider-like robots that can work collaboratively to print structures and surfaces, thus potentially accelerating production of large-scale, complex structures such as the fuselages of planes and the hulls of ships.

  Text Size



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 20 April 2016



Robotics

The Tiny Robots Revolutionizing Eye Surgery

Machines that are capable of making precise operations inside the human eye will make it possible to perform entirely new procedures.

by Simon Parkin January 19, 2017



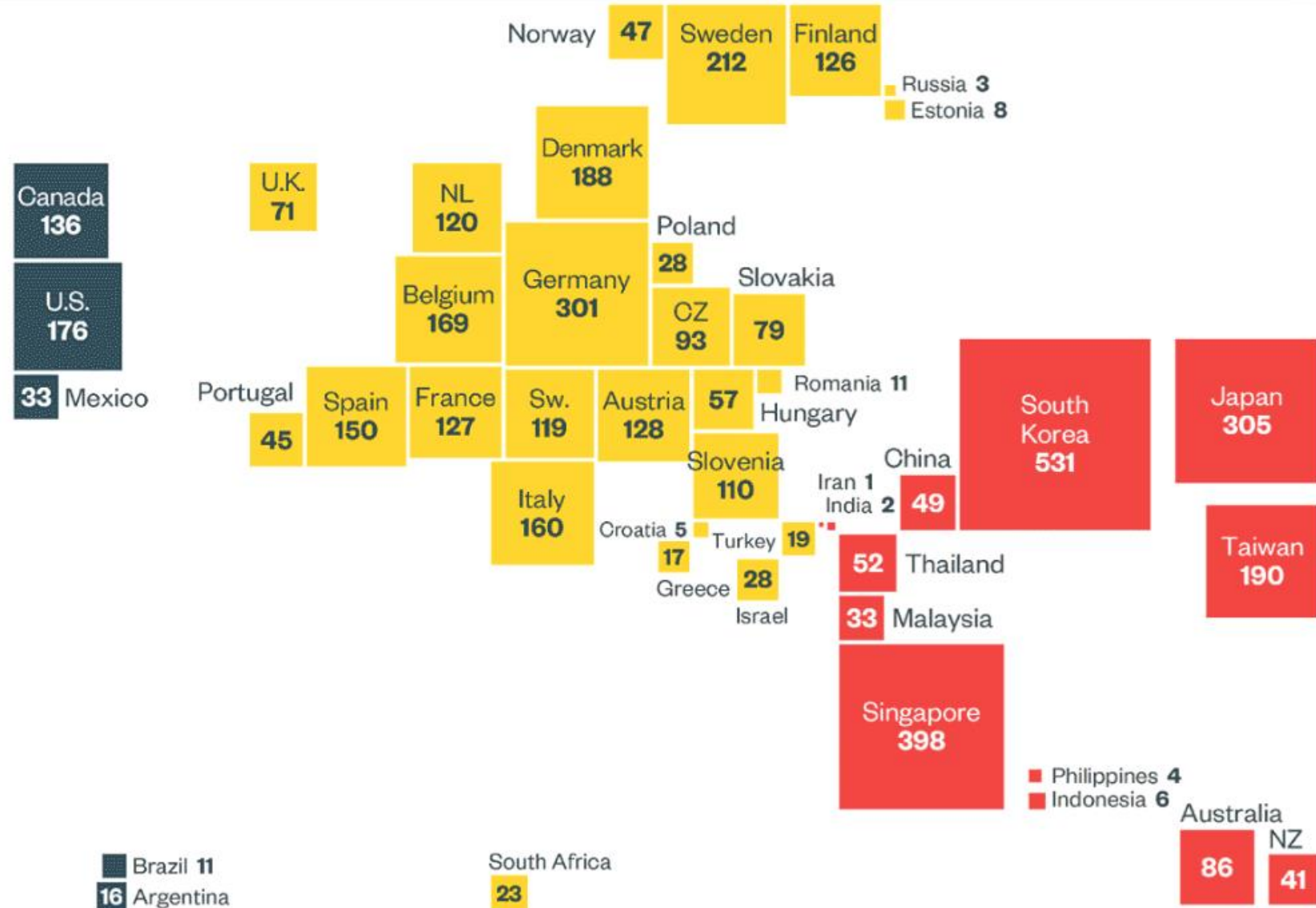
The logo for PRECETES, featuring a stylized eye icon to the left of the word "PRECETES" in a white sans-serif font. The "E" is highlighted in blue.

High-precision assistance for eye surgery

Will a robot steal
my job?

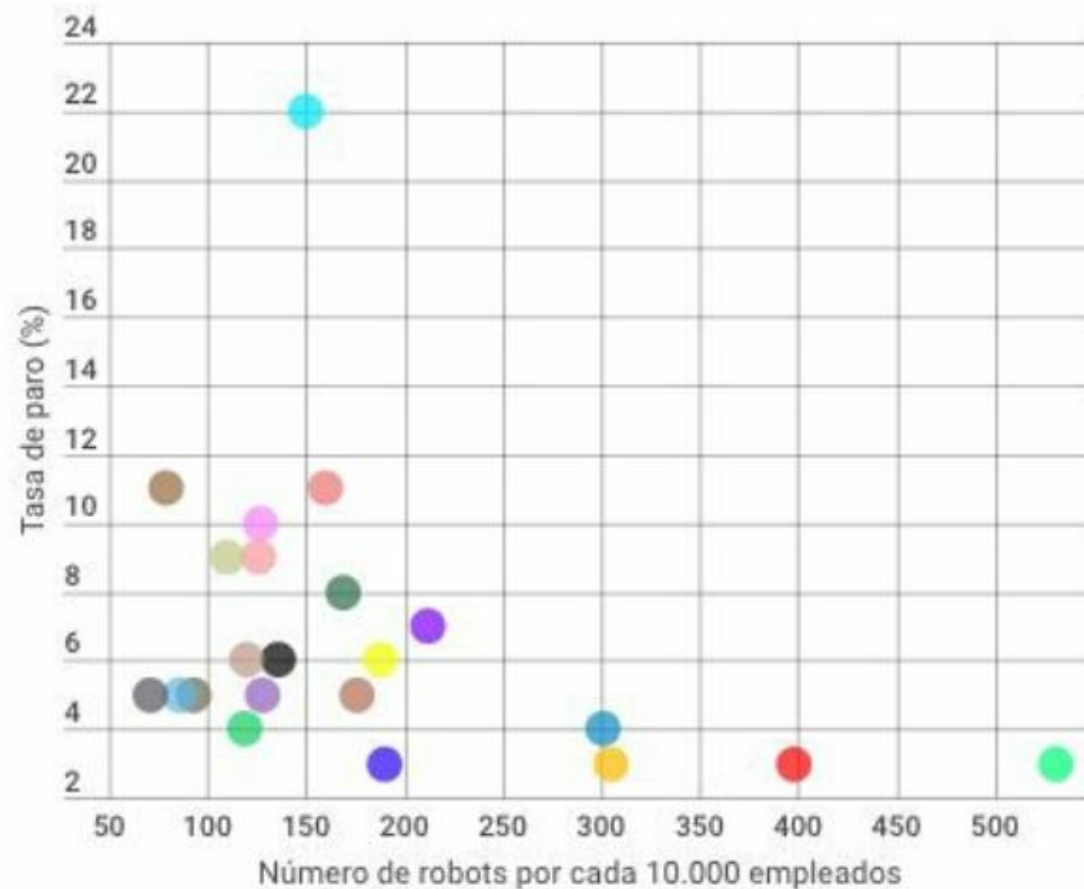
Number of industrial robots per 10,000 manufacturing workers

By region



Note: Data are estimates for multipurpose industrial robots for 2015

Densidad robótica y tasa de paro por países



Fuente: International Federation of robotics y Banco Mundial



McKinsey&Company

MCKINSEY GLOBAL INSTITUTE

JOBS LOST, JOBS GAINED: WORKFORCE TRANSITIONS IN A TIME OF AUTOMATION

DECEMBER 2017

Automating jobs
or automating activities?

HUMANS x MACHINES



John Hopkins University



Automating Augmentating



These robots play volleyball



QUARTZ

View from the Marketplace



Our Extended Sensoria. How Humans Will Connect with the Internet of Things

Mark Weiser predicted the Internet of Things in a seminal article in 1991 about how people would interact with networked computation distributed into the environments and artifacts around them.

by Joseph A. Paradiso August 1, 2017



Rewriting Life

The Surgeon Who Wants to Connect You to the Internet with a Brain Implant

Eric Leuthardt believes that in the near future we will allow doctors to insert electrodes into our brains so we can communicate directly with computers and each other.

by Adam Piore November 30, 2017

**Erik Brynjolfsson
Andrew McAfee**

Race Against The Machine



**How the Digital Revolution is Accelerating Innovation,
Driving Productivity, and Irreversibly Transforming
Employment and the Economy**

**Erik Brynjolfsson
Andrew McAfee**

Race WITH The Machine



**How the Digital Revolution is Accelerating Innovation,
Driving Productivity, and Irreversibly Transforming
Employment and the Economy**

09.05.17 | ROBOT REVOLUTION

At Toyota, The Automation Is Human-Powered

While the rest of the auto industry increasingly uses robots in manufacturing, Toyota has taken a contrarian stance by accentuating human craftsmanship.



[Photo: courtesy of Toyota]

**LETTING
HUMANS DO
WHAT HUMANS
DO BEST**





**BOTS NEED HUMANS
AS MUCH AS HUMANS
NEED BOTS**


accenture

WHAT IS REALLY HUMAN?



Building An Integrated Retail Business

Aspiration & Self Betterment

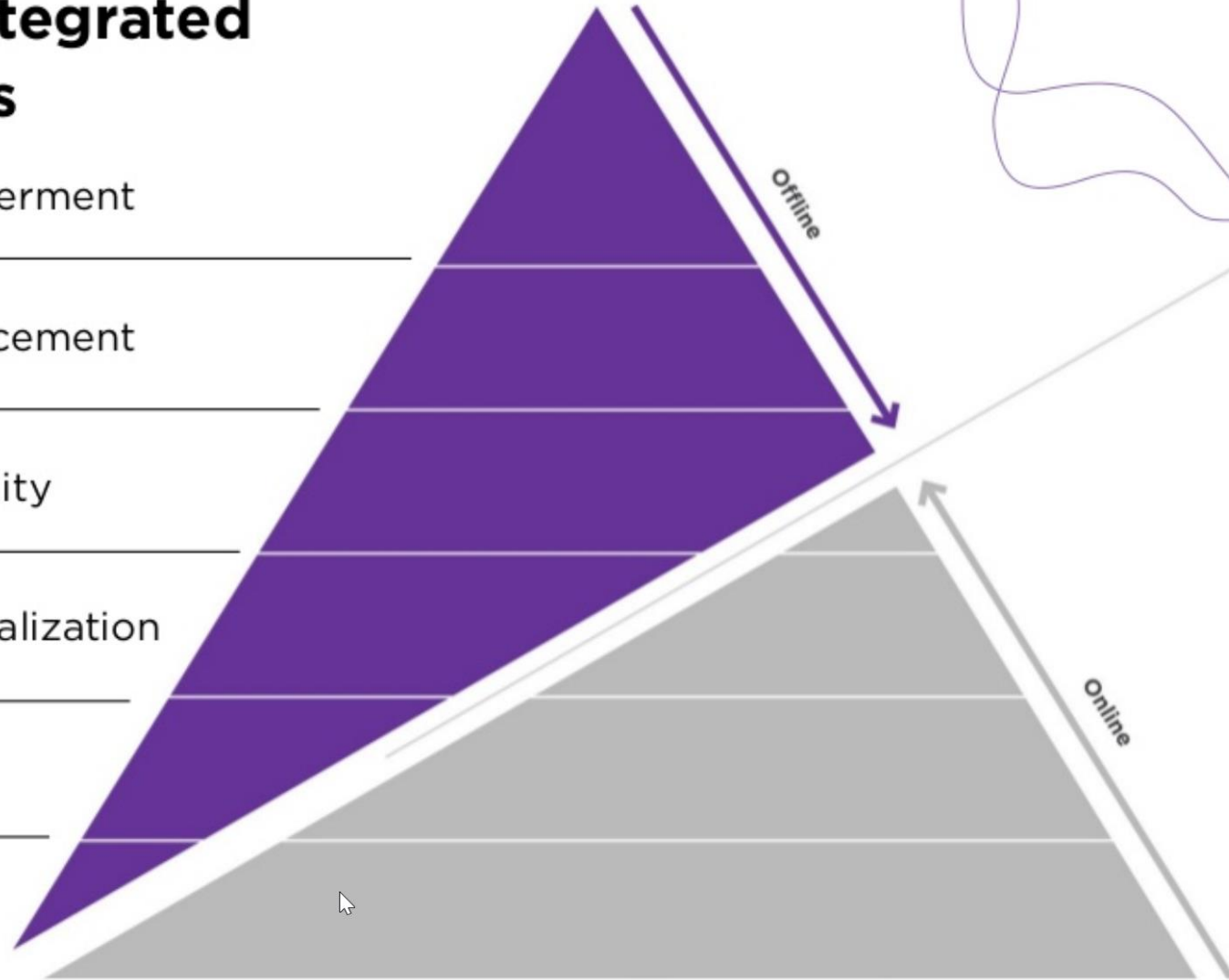
Confidence & Reinforcement

Belonging & Community

Recognition & Personalization

Access & Support

Convenience



Is working human?

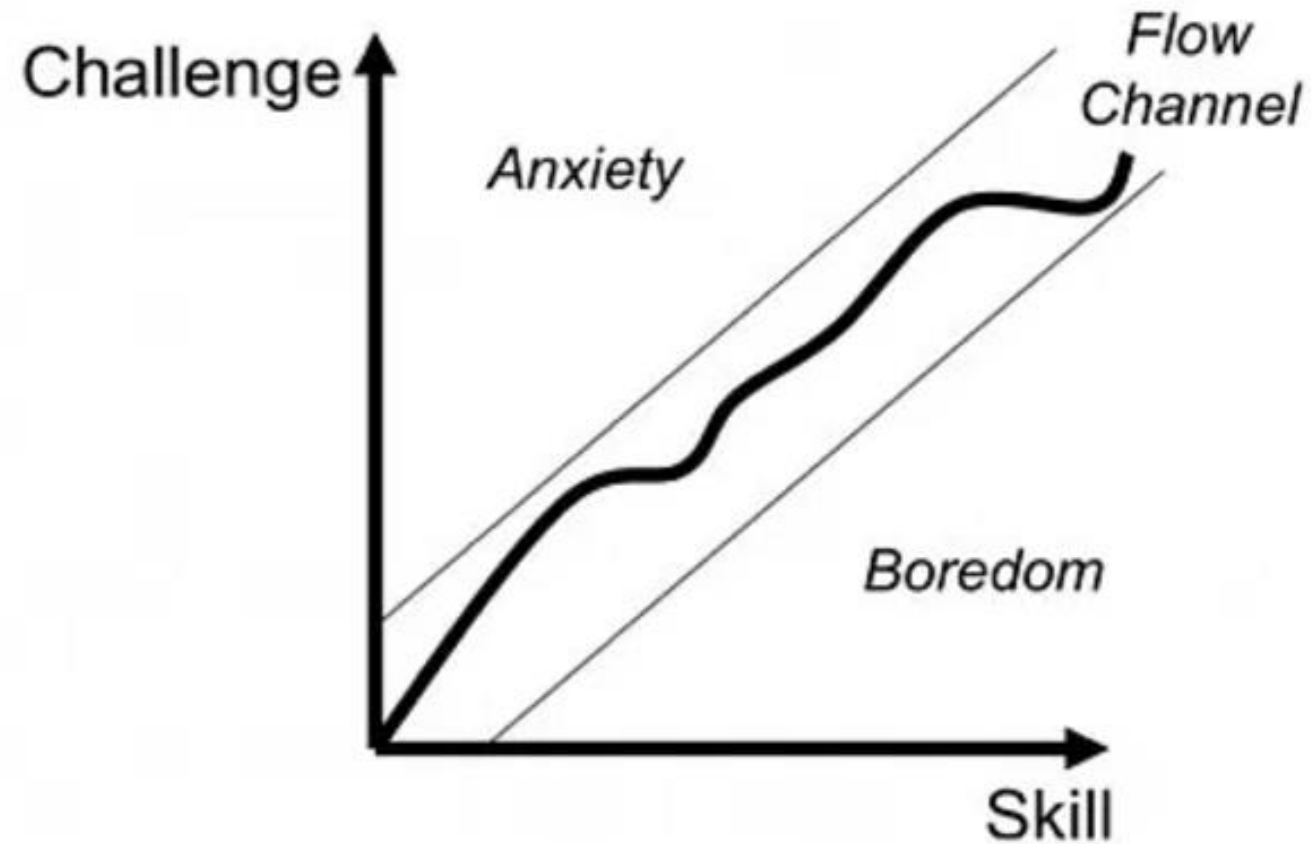
Is THIS working human?

A mad world: capitalism and the rise of mental illness

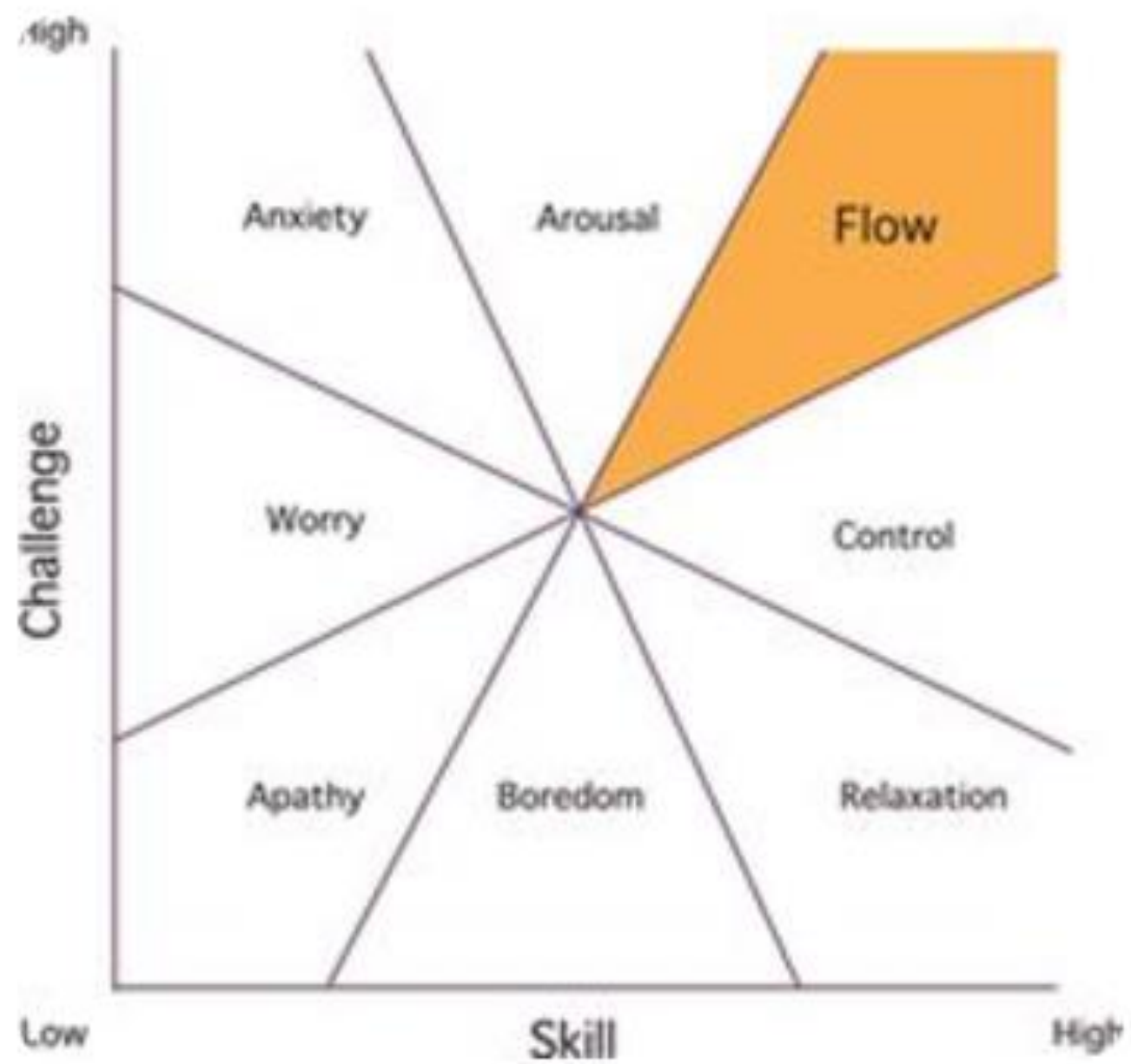
What if it's not us who are sick, asks **Rod Tweedy**, but a system at odds with who we are as social beings?

Marx's alienation

2. Challenge yourself every day



"Flow" concept by Mihaly Csikszentmihalyi. Drawn by Senia Maymin.



Do meaningful work

Let your capabilities flow

Re-skilling?

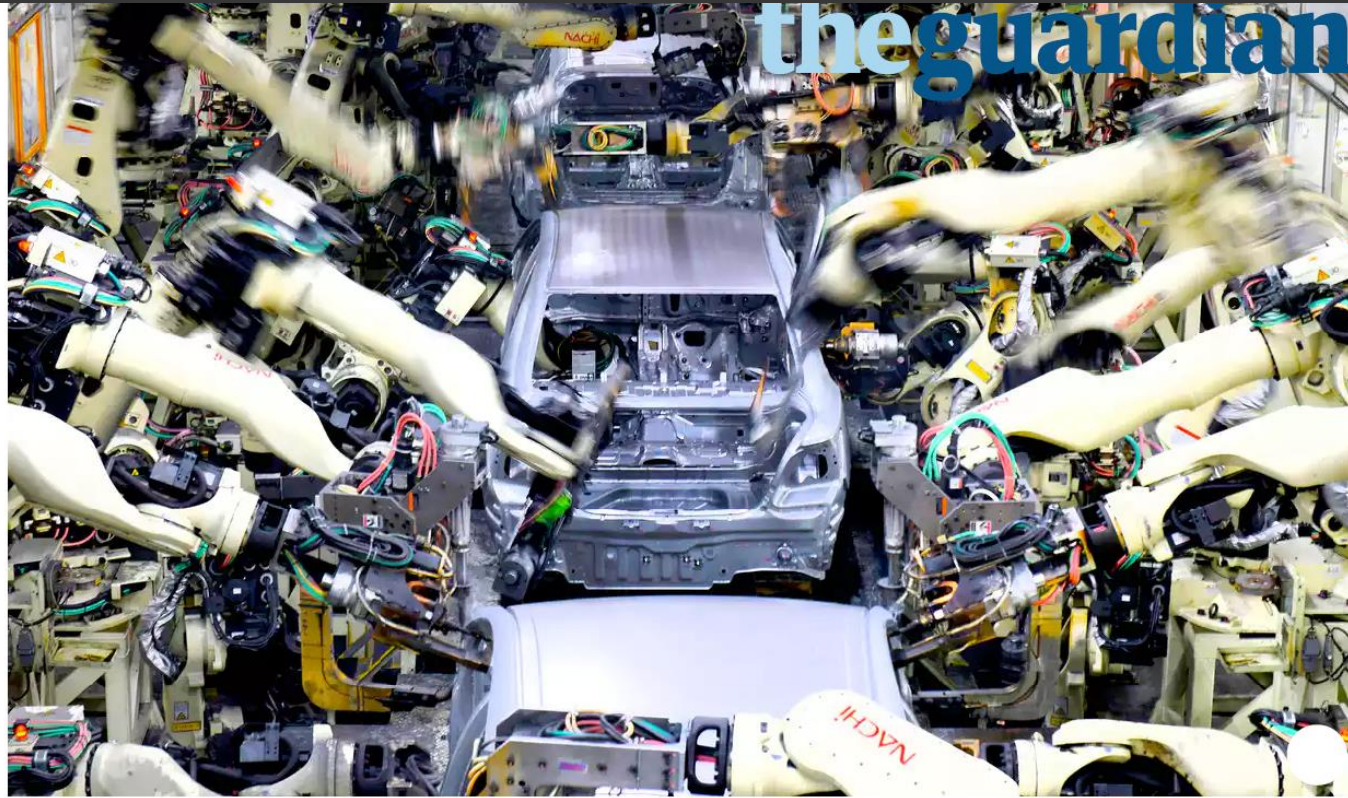
Re-humaning

Whose problem?

POST WORK?

a world with less jobs

Survive in
a world with less jobs



UK's poorest to fare worst in age of automation, thinktank warns

Machines threaten jobs generating £290bn in wages and could widen inequality gap, according to IPPR

Richard Partington Economics correspondent

Thu 28 Dec '17 00.01 GMT



Most children in UK's poorest areas now growing up in poverty

End Child Poverty says years-long freeze on benefits is major factor in emerging crisis

Patrick Butler *Social policy editor*

Wed 24 Jan 2018 00.01 GMT

Do American workers feel they can 'make it'?

McKinsey Global Institute August 2017

Whether people in the United States believe they can thrive economically in a digitally disrupted world depends strongly on the amount of education they've attained, according to a new survey.

Only 42 percent of Americans **with a high-school diploma or less** say they have the right skills to succeed in the 21st century.

That is striking compared with the 71 percent of Americans **who have college degrees** or more and are confident about their skills.

Thrive in
a world with less jobs

Thrive
because you are a human

Learn to **enjoy**
non-working time

ECONOMY = WORKISM

Whose problem?

A new sort of education

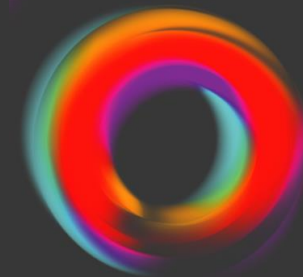
Crafting humans

Humans x Machines

Some ideas

Alfons Cornella

Institute of Next, Barcelona



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BY INFONOMIA