

Fremtiden

Johan Peter Paludan

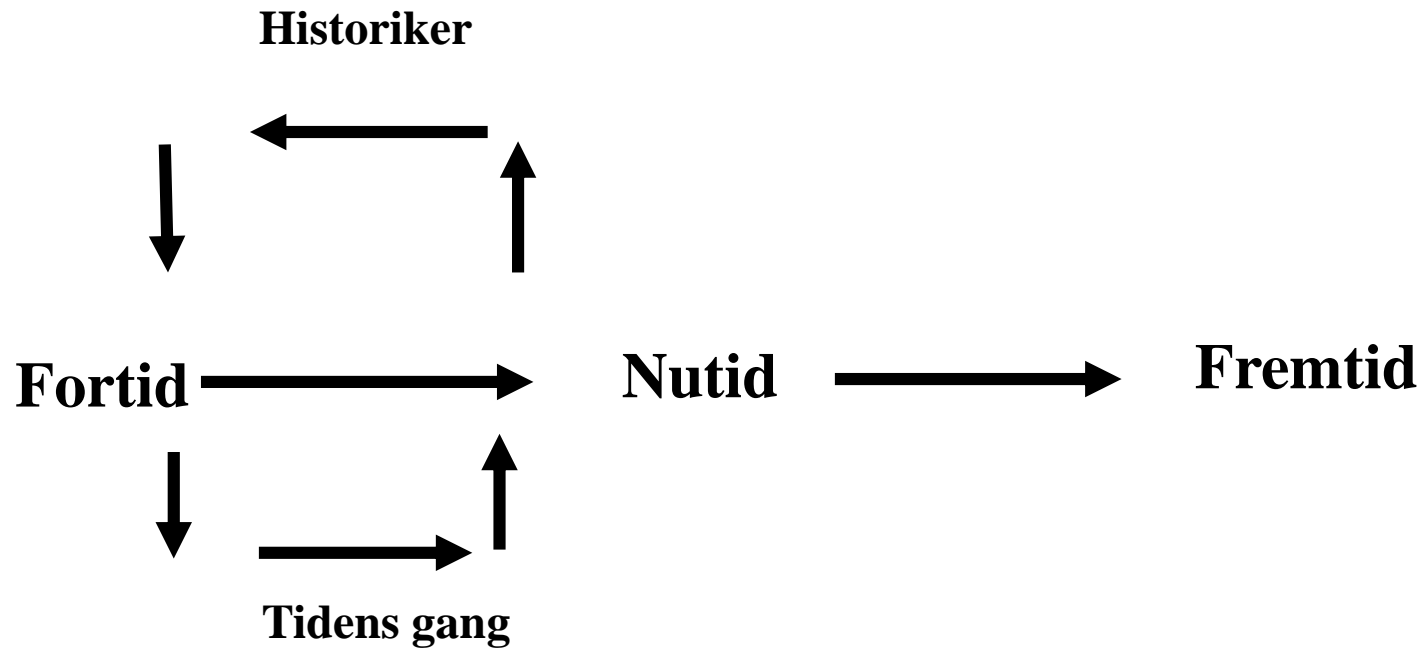
Fremtidsforskning



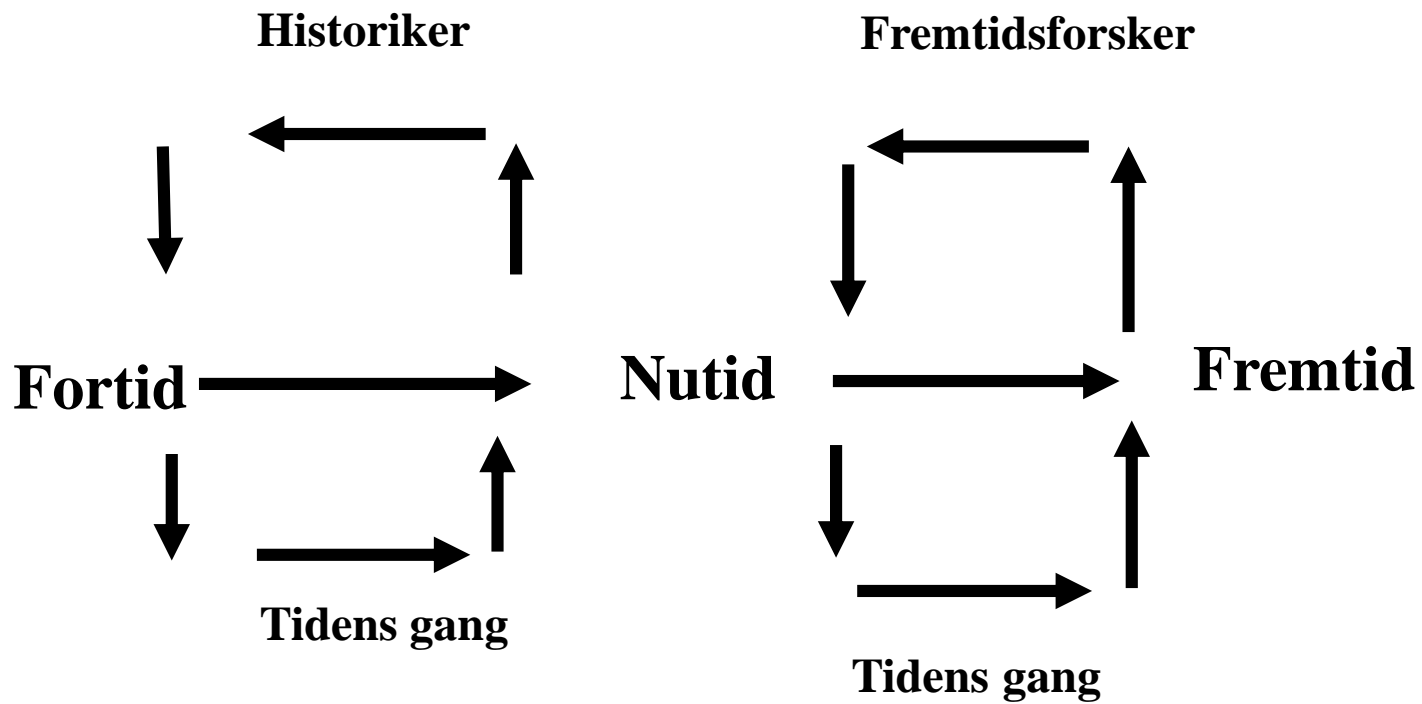
Tidsbegrebet



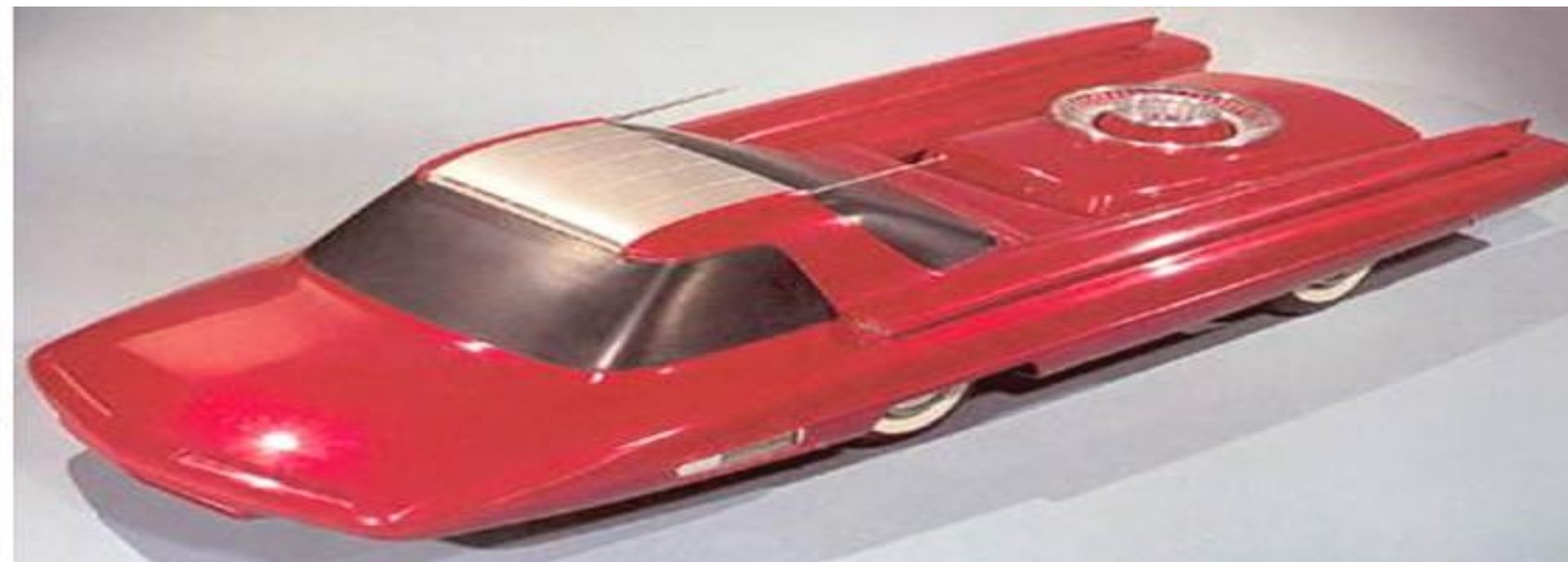
Tidsbegrebet



Tidsbegrebet







USA, 1958: "This is your future"

3D Color TV
Wall-Panel

Slide-back Roof

Personal Helicopter &
Roof Landing Area

Moving Stairway

House-control
Panel



Glass Walls

Dust-free Floors

Menu Selector &
Microwave Stove

Giant-size
Fruit

Ultrasonic
Laundry

Electrical
Heat Unit

Phono-vision
Receiver

Mænd er i køkkenet fordi:

- De er singler længere
- Det er et sikkert scoretrik
- Vinde nyt land: køkken + grill året rundt
- Der er maskiner
- Patetisk forsøg på at opnå en synlig identitet
- Man der kan småpimpe i fred
- Laver man maden, skal man ikke passe børnene
 - madlavning som flugtmekanisme

Veje ind i fremtiden

- Prognoser
- Trends
- Megatrends
- Scenarier
- Wildcards



Vidensekspllosion

- 80 % af alle videnskabsfolk, der har levet, lever stadig
- Under 7 % af alle, der har levet, lever
- Hvert minut lægges 2.000 sider til
- Det vil tage en person 5 år at læse en dags videnskabelig produktion

Adgang til viden



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Knowledge

From Wikipedia, the free encyclopedia

For other uses, see [Knowledge \(disambiguation\)](#).

Knowledge is a familiarity, awareness or understanding of someone or something, such as [facts](#), [information](#), [descriptions](#), or [skills](#), which is acquired through [experience](#) or [education](#) by [perceiving](#), [discovering](#), or [learning](#). Knowledge can refer to a theoretical or practical understanding of a subject. It can be implicit (as with practical skill or expertise) or explicit (as with the theoretical understanding of a subject); it can be more or less formal or systematic.^[1] In [philosophy](#), the study of knowledge is called [epistemology](#); the philosopher [Plato](#) famously defined knowledge as "justified true belief". However, no single definition of knowledge exists, though there are numerous theories to explain it.

Knowledge acquisition involves complex [cognitive](#) processes: [perception](#), communication, association and [reasoning](#); while knowledge is also said to be related to the capacity of *acknowledgment* in human beings.^[2]

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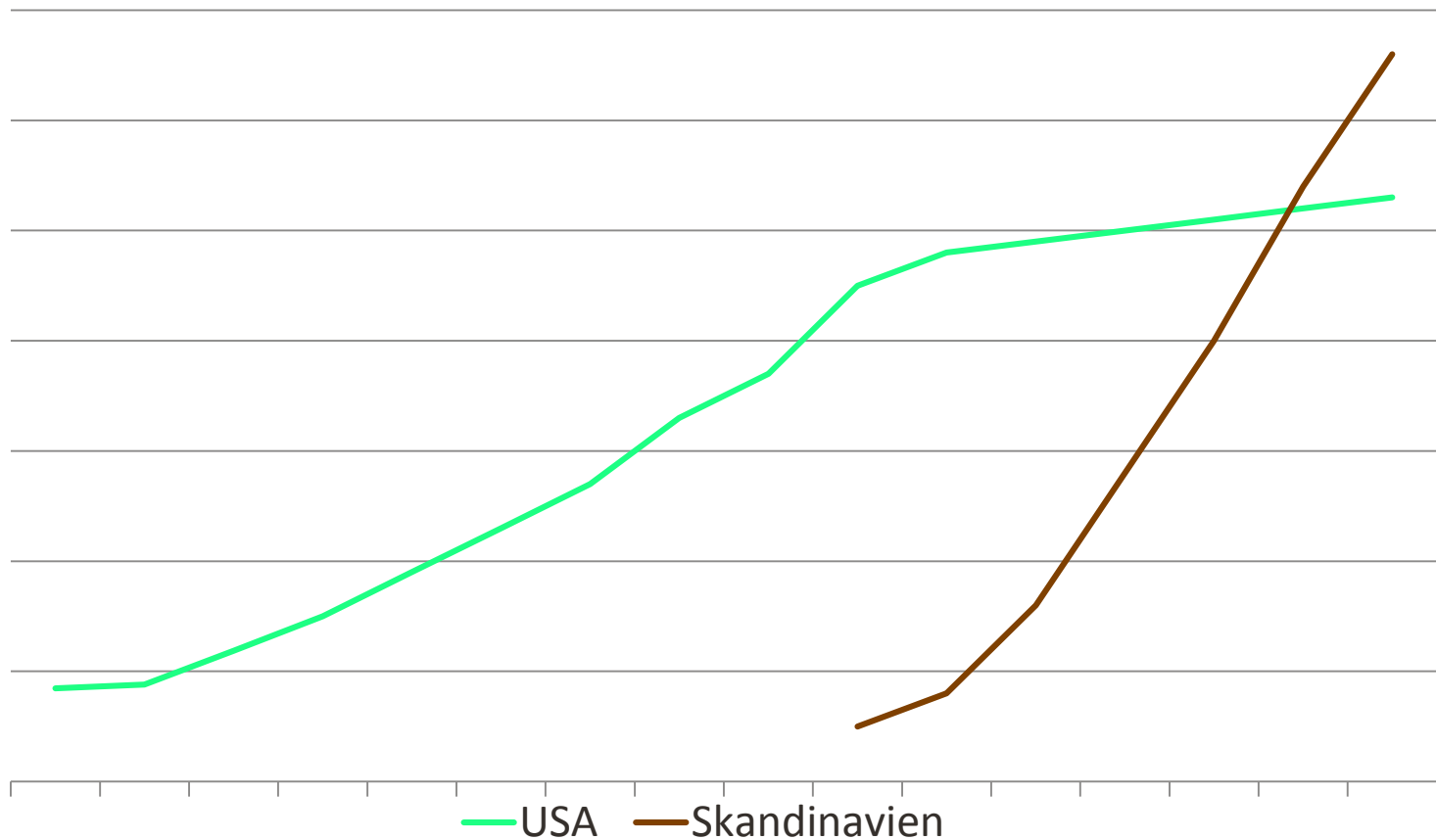
- [1 Theories of knowledge](#)
- [2 Communicating knowledge](#)
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- [4 Partial knowledge](#)
- [5 Scientific knowledge](#)
- [6 Religious meaning of knowledge](#)
 - [6.1 As a measure of religiosity \(in sociology of religion\)](#)
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Acceleration

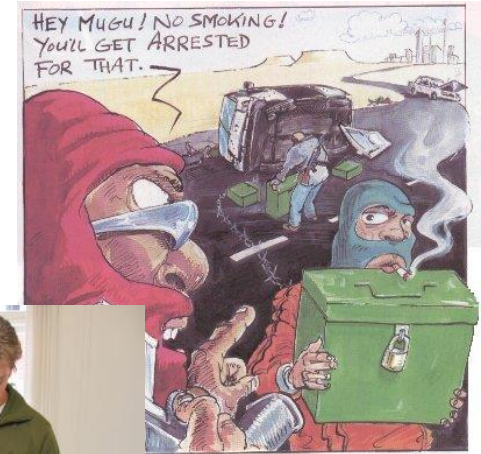


Forandringer i USA vs. Skandinavien





Zombies:



Bliver der tid til at danse i fremtiden? Livslang læring kommer til at spille en stadig større rolle for voksne i England, Australien og New Zealand har man sågar designet "læringspubler" for at fremme læring mellem forældre og børn og bedsteforeldre og børnebørn.

15



April 26, 2008





Disruptive Technologies

McKinsey & Company
 McKinsey Global Institute

12 Disruptive Technologies

Renewable energy

- 21,000 TWh annual global electricity consumption
- 13 billion tons in annual carbon dioxide emission from electricity generation
- \$3.5 trillion value of global electricity consumption
- 85% lower price for solar photovoltaic cell per watt since 2000

Advanced oil & gas exploration & recovery

- 3x increase in efficiency of US gas wells between 2007 & 2011; 2x increase for oil wells over the same period
- 30 billion barrels of crude oil produced globally
- \$3.4 billion revenue from global sales of crude oil

Advanced materials

- \$1,000 vs \$50: Price difference of 1 gram of nanotube over a decade
- 115x strength-to-weight ratio of carbon nanotubes vs steel
- \$4 billion revenue from global carbon fibre sales

3D printing

- 10% decrease in price of home 3D printers compared to 2007
- \$11 billion worth in global manufacturing GDP
- 8 billion pieces of toys manufactured globally a year

Energy storage

- 40% price decline in Lithium-ion battery pack in an electric vehicle since 2009
- \$100 billion estimated value of site electricity for households currently without access
- 12 billion people without access to electricity

Next-generation genomics

- 10 months to double sequencing speed per dollar
- \$4.5 billion global health-care costs
- 100% increase in acreage of genetically modified crops between 1994 to 2012; 2.5 billion people employed in agriculture

Mobile Internet

- Fastest supercomputer in 1975 cost \$5m; with equal performance as iPhone 4, which cost \$400
- 4.3 billion people yet to be connected to the Internet today
- \$1.7 billion worth of GDP related to the Internet

Automation of knowledge work

- 100% increase in computing power from IBM's Deep Blue (1997) to Watson (2011)
- 1.1 billion smartphone users, with potential to use automated digital assistance apps
- \$9+ billion global costs of employing knowledge workers, which is 20% of global employment costs

Internet of Things

- 300% increase in connected machine-to-machine devices since 2008
- 1 billion things that could be connected to the Internet across different industries
- \$34 billion operating costs of key affected industries (mining, health-care, manufacturing)

Cloud technology

- 16 months to double server performance per dollar
- 2.7 billion Internet users served by 50 million servers worldwide
- \$3 billion spending by enterprises on information technology

Advanced robotics

- 170% growth in sales of industrial robots between 2009 and 2011
- 320 million manufacturing workers may be potentially affected
- \$6 billion in global manufacturing employment costs, which is 1% of global workforce

Autonomous and near-autonomous vehicles

- \$4 billion automobile industry revenues
- 350,000+ miles driven by Google's autonomous cars with only 1 accident (which was human-caused)
- 1 billion cars & trucks, 450,000 civilian, military & general aviation aircraft globally

Created by:
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 May 2013 Singapore
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 @tayxiongsheng

Kunstig intelligens



IBM Watson: Milestones in Healthcare

“In less than 3 seconds, Watson can sift through the equivalent of about 200 million pages, analyze the information, and provide precise responses.”



The accelerating rate of change

**When the rate of change outside
exceeds the rate of change inside**

**When the rate of change outside
exceeds the rate of change inside
-the end is in sight**

Jack Welsh, GE



The good wife's guide

- Have dinner ready. Plan ahead, even the night before, to have a delicious meal ready, on time for his return. This is a way of letting him know that you have been thinking about him and are concerned about his needs. Most men are hungry when they come home and the prospect of a good meal (especially his favourite dish) is part of the warm welcome needed.
- Prepare yourself. Take 15 minutes to rest so you'll be refreshed when he arrives. Touch up your make-up, put a ribbon in your hair and be fresh-looking. He has just been with a lot of work-weary people.
- Be a little gay and a little more interesting for him. His boring day may need a lift and one of your duties is to provide it.
- Clear away the clutter. Make one last trip through the main part of the house just before your husband arrives.

- Gather up schoolbooks, toys, paper etc and then run a dustcloth over the tables.
- Over the cooler months of the year you should prepare and light a fire for him to unwind by. Your husband will feel he has reached a haven of rest and order, and it will give you a lift too. After all, catering for his comfort will provide you with immense personal satisfaction.
- Prepare the children. Take a few minutes to wash the children's hands and faces (if they are small), comb their hair and, if necessary, change their clothes. They are little treasures and he would like to see them playing the part. Minimise all noise. At the time of his arrival, eliminate all noise of the washer, dryer or vacuum. Try to encourage the children to be quiet.
- Be happy to see him.
- Greet him with a warm smile and show sincerity in your desire to please him.
- Listen to him. You may have a dozen important things to tell him, but the moment of his arrival is not the time. Let him talk first - remember, his topics of conversation are more important than yours.
- Make the evening his. Never complain if he comes home late or goes out to dinner, or other places of entertainment without you. Instead, try to understand his world of strain and pressure and his very real need to be at home and relax.
- Your goal: Try to make sure your home is a place of peace, order and tranquillity where your husband can renew himself in body and spirit.
- Don't greet him with complaints and problems.
- Don't complain if he's late home for dinner or even if he stays out all night. Count this as minor compared to what he might have gone through that day.
- Make him comfortable. Have him lean back in a comfortable chair or have him lie down in the bedroom. Have a cool or warm drink ready for him.
- Arrange his pillow and offer to take off his shoes. Speak in a low, soothing and pleasant voice.
- Don't ask him questions about his actions or question his judgment or integrity. Remember, he is the master of the house and as such will always exercise his will with fairness and truthfulness. You have no right to question him.
- A good wife always knows her place.



- og?

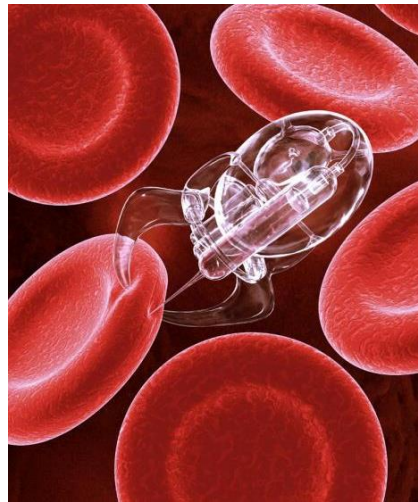
- Altings forældelse
- Uendelighedsproblematikken

New Technology

Biotech



Nanotech



IT / Digitalisation



SIX CHIX

BY RINA PICCOLO

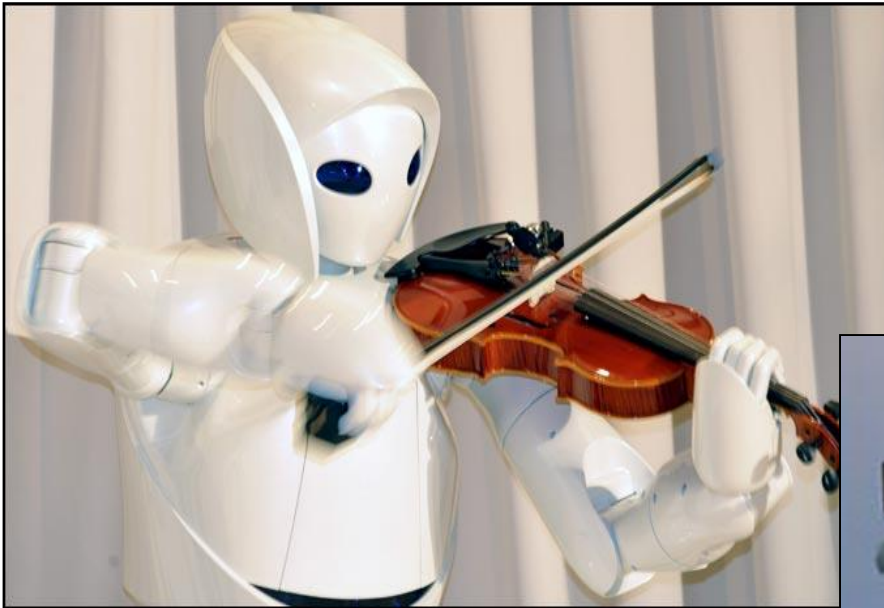


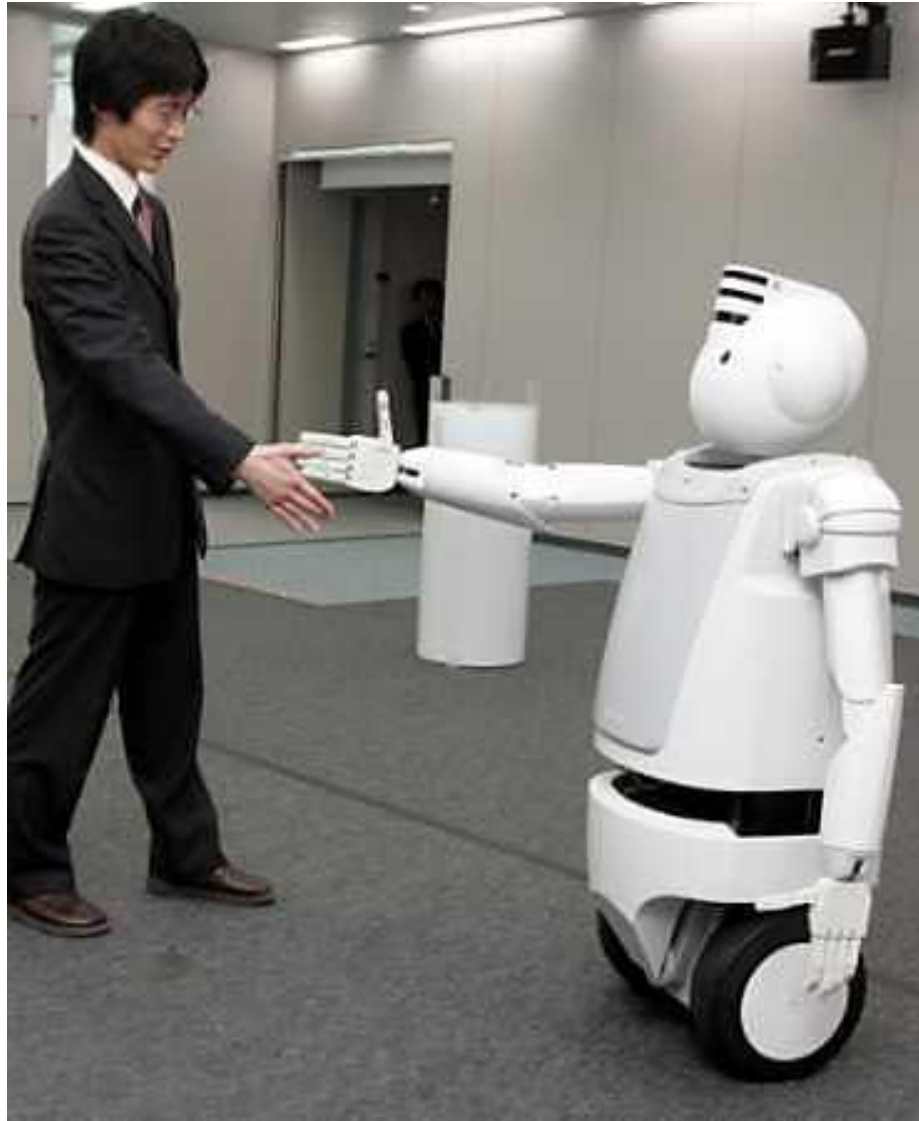
Disruptive technologies

- Mobilt internet
- Automatisering af vidensarbejde
- Internet of things
- Cloud
- Avancerede robotter
- Genomics
- Selvkørende biler
- Energilagring
- 3D-printing
- Nye materialer
- Avanceret olie- og gasefterforskning
- Vedvarende energi

Automatisering:

”Alt hvad du kan, kan jeg gøre bedre...”





Den nye mægler bydes velkommen

Drabet på afstanden



Et wildcard: fremtidens møde?



QB – din avatar



Telepresence robotter



Bygger huset på 1 dag.



Extreme customization– emergence of 3D food printing



Levering med drone



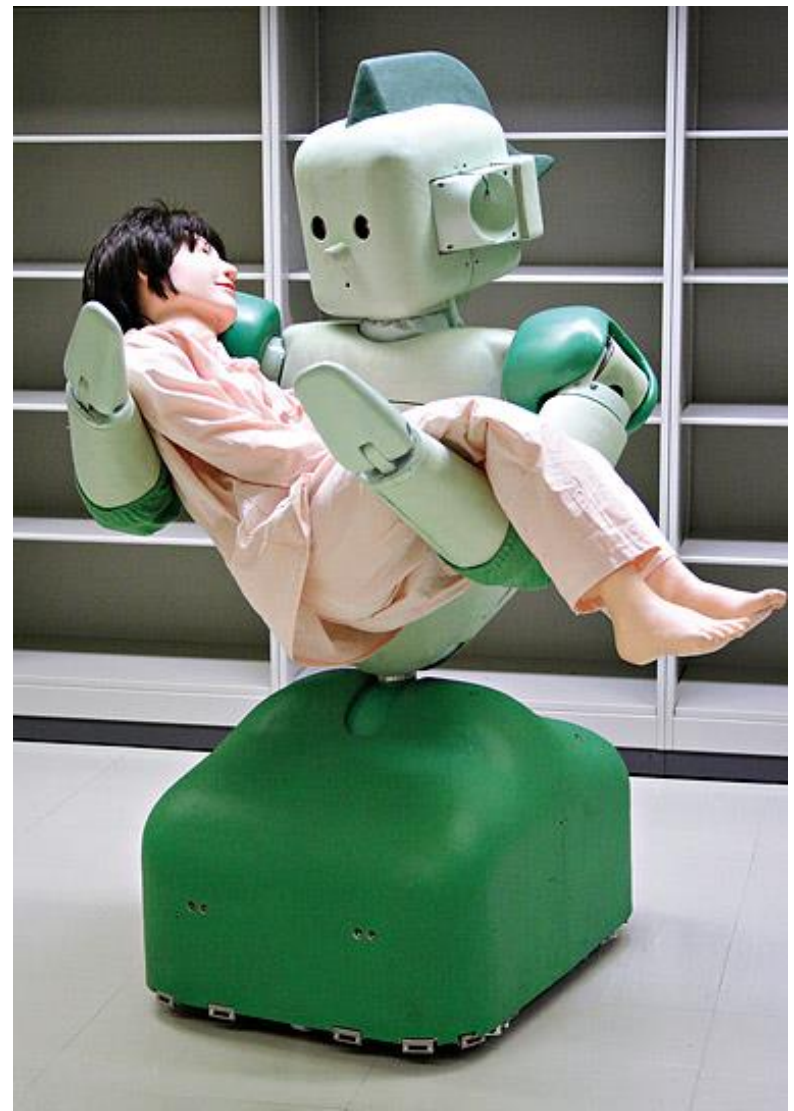
RobotCab – googlecar





Fremtidens sosuassistent?

Robotterne kommer!



Automatisering:

Fremtidens hjertekirurg?



Vaskerobot



”Dr. Toilet”

Toto
Intelligence
toilet

www.toto.co.jp



Microsoft lingerie



Megashifts

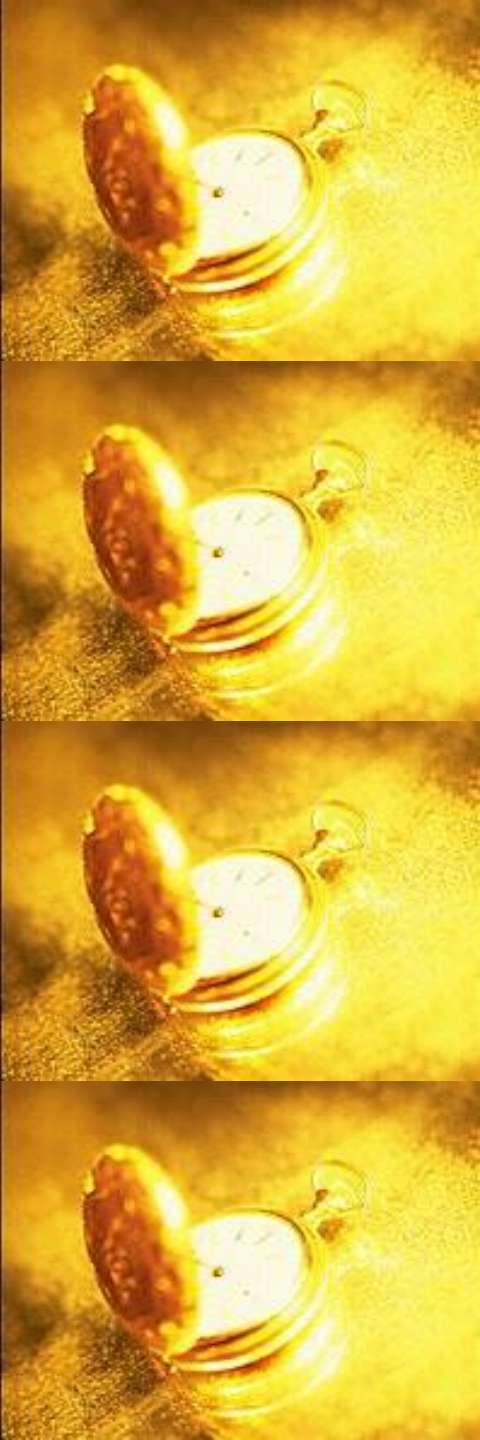
- from science fiction to science fact

- Digitization
 - cheaper products
 - scramble for new business models
- Mobilization
 - mobile, wearable, hearable.
- Screenification
 - from f2f to screen
- Disintermediation
 - the death of a middleman
- Datafication
 - everything is on record

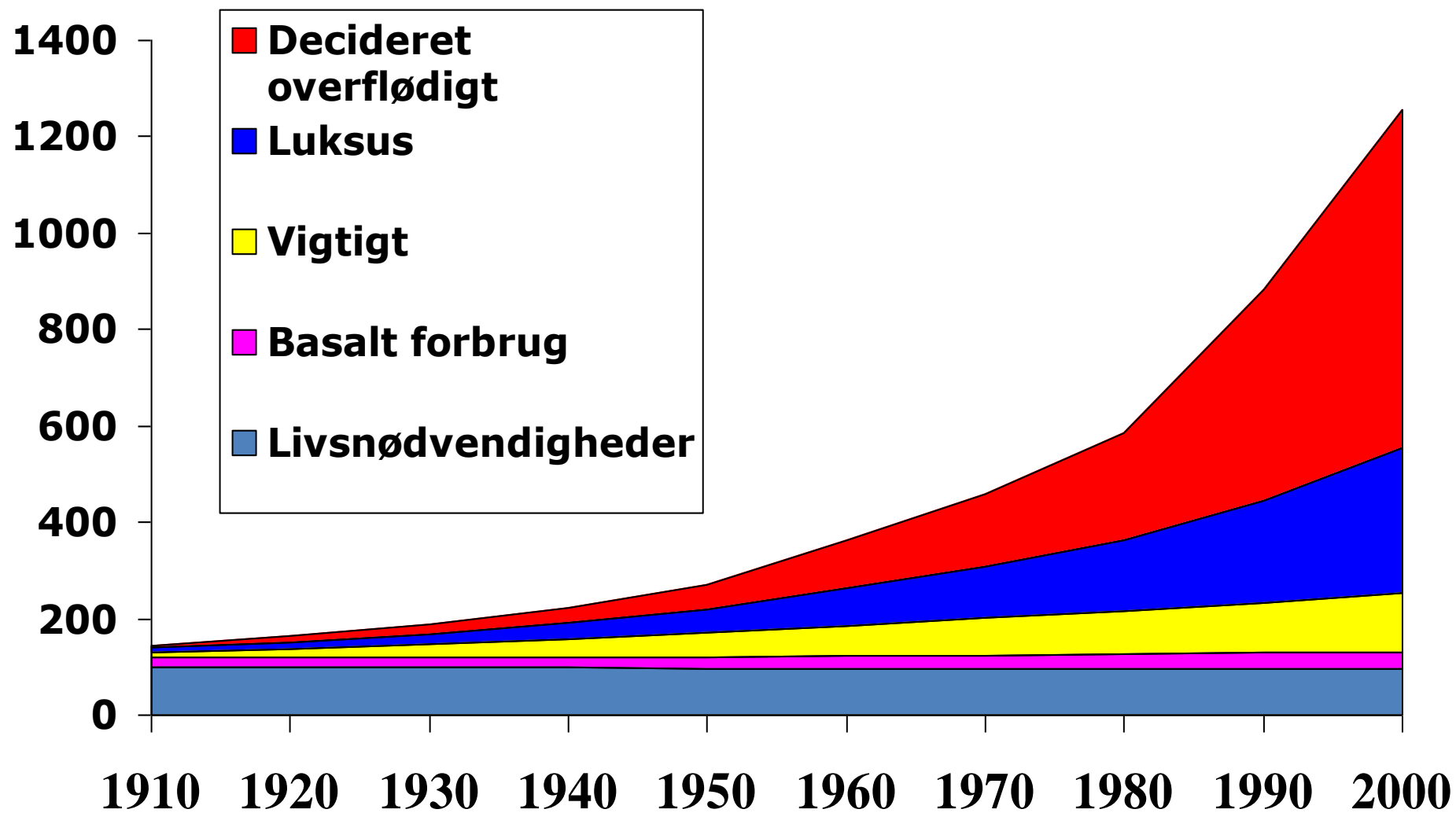
From science fiction to science fact, cont.

- Intelligization
 - 'you talking to me`?'
- Automatization
 - what can be, will be
- Virtualization
 - reality isn't what it used to be
- Augmentation
 - in the end brain-computer interface
- Anticipation
 - for better and for worse
- Robotification
 - nobody is robot immune
- From dehumanization to re-humanization?

Økonomisk vækst



Forbrugets udvikling





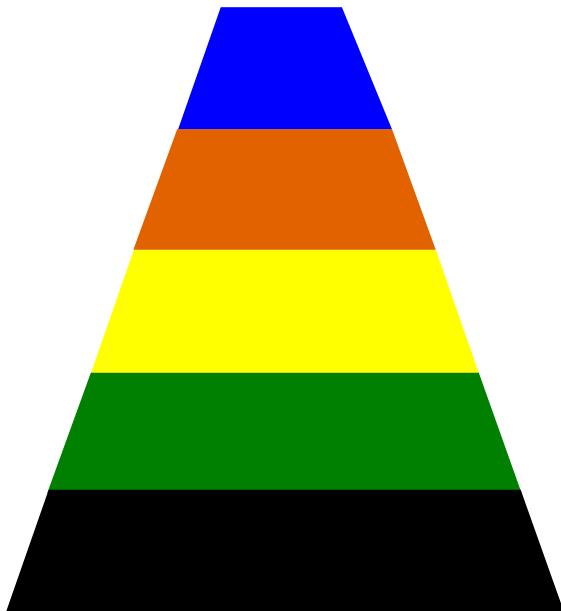
100 ml 43Euro

Ressourcer i det kommende samfund

- Overflod:
 - information
 - produkter
 - kanaler
 - muligheder
 - tilfredsstillelse
 - gode historier
- Knappe:
 - opmærksomhed
 - omsorg
 - ægte interesse
 - tid
 - tillid
 - mening

Maslows behovshierarki

Traditionel udformning



Selvrealisering

Anerkendelse

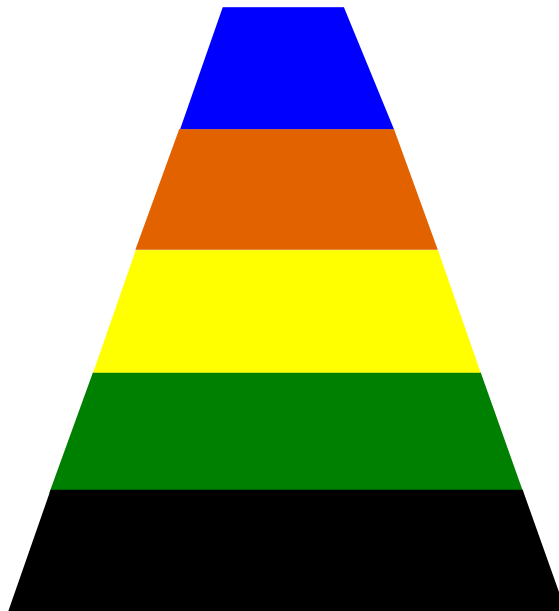
Sociale behov

Sikkerhed

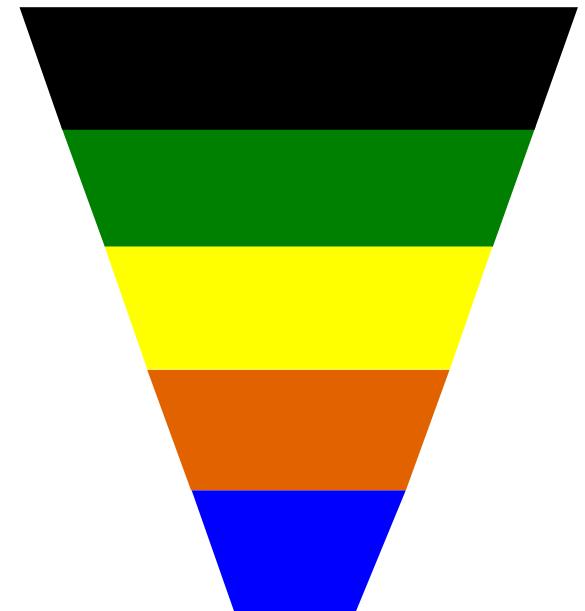
Fysiske behov

Maslows behovshierarki

Traditionel udformning



Moderne udformning



Selvrealisering

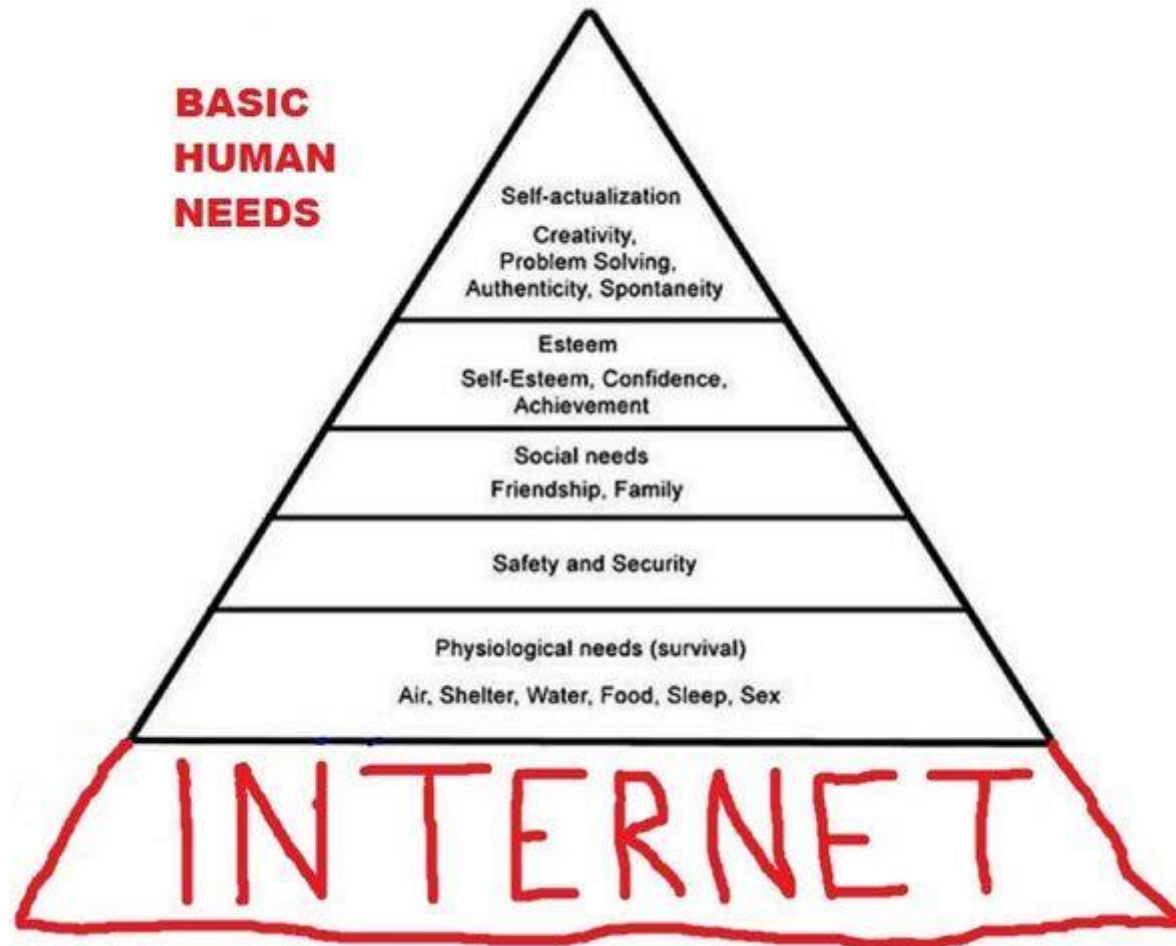
Anerkendelse

Sociale behov

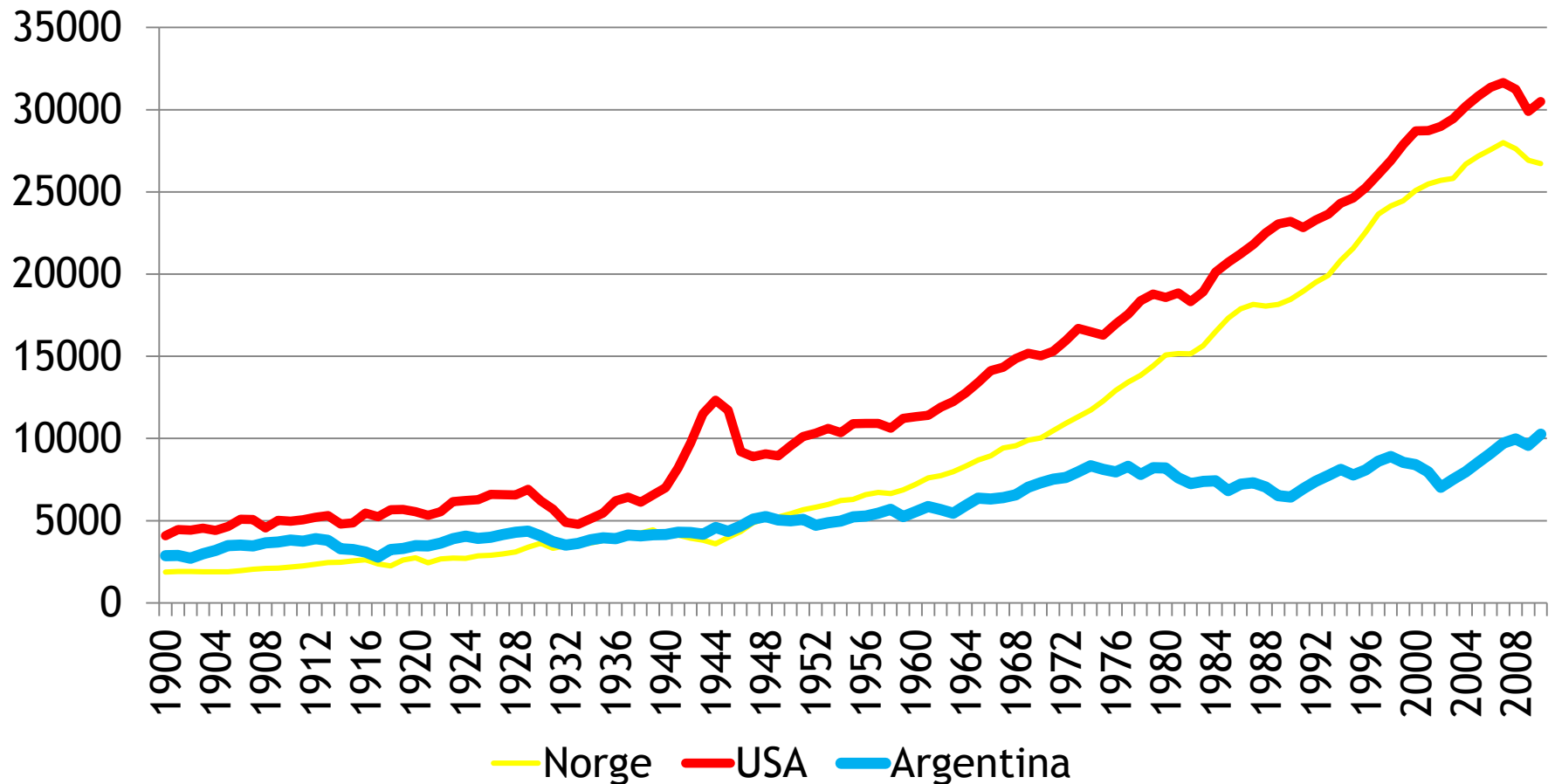
Sikkerhed

Fysiske behov

Den yngre generations version



BNP pr. indbygger, faste priser



Kilde: Angus Maddison

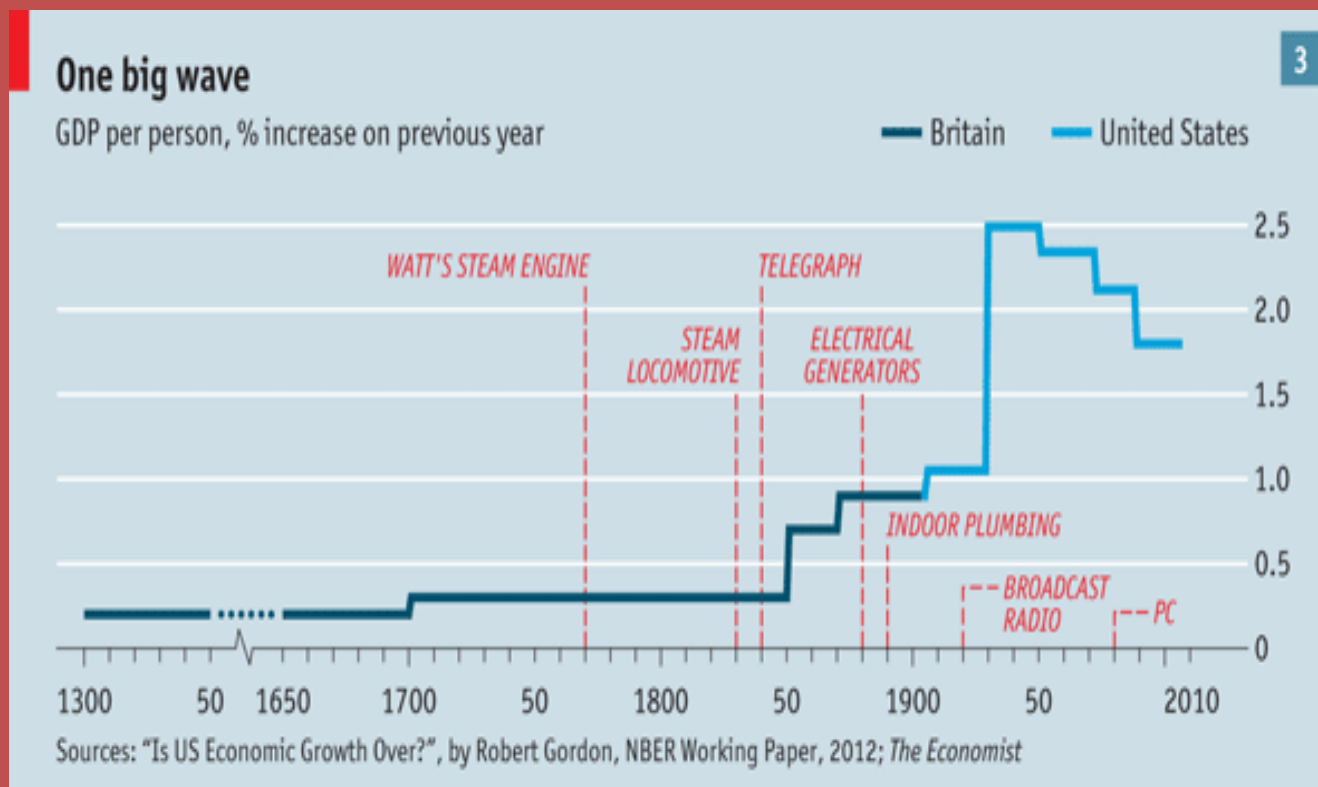
Has innovation stopped?

- Two types of growth
 - extensive: more labour, capital, resources: but the law of diminishing returns
 - intensive: don't work harder, work smarter: technology leading to growth in GNP/cap – but seems to be slowing



From low growth to low growth?

- The big wave ebbing out?



Supercycles (Nicolai Kondratiev)

- The Industrial Revolution (~1780-~1840)
- The Second Kondratiev Wave (~1840-~1900)
- The Third Kondratiev Wave (~1900-~1950)
- The Fourth Kondratiev Wave (~1950-?)

Spring	Expansion High growth, technological progress, some inflation, nice profits	1950-1975	
Summer	Stagflation, higher prices and interests, growth stagnating	1975-1990	
Autumn	Renewed but unstable growth, higher levels of debt, falling interests and bubbles	1990-2007	
Winter	Depression, higher inflation, falling profits, bursting bubbles, bursting bubbles, financial scandals, conflicts and wars	2007-?	

- og?

- Opsving, men fortsat kamp om ressourcerne
- Næste krise?

Polarisering



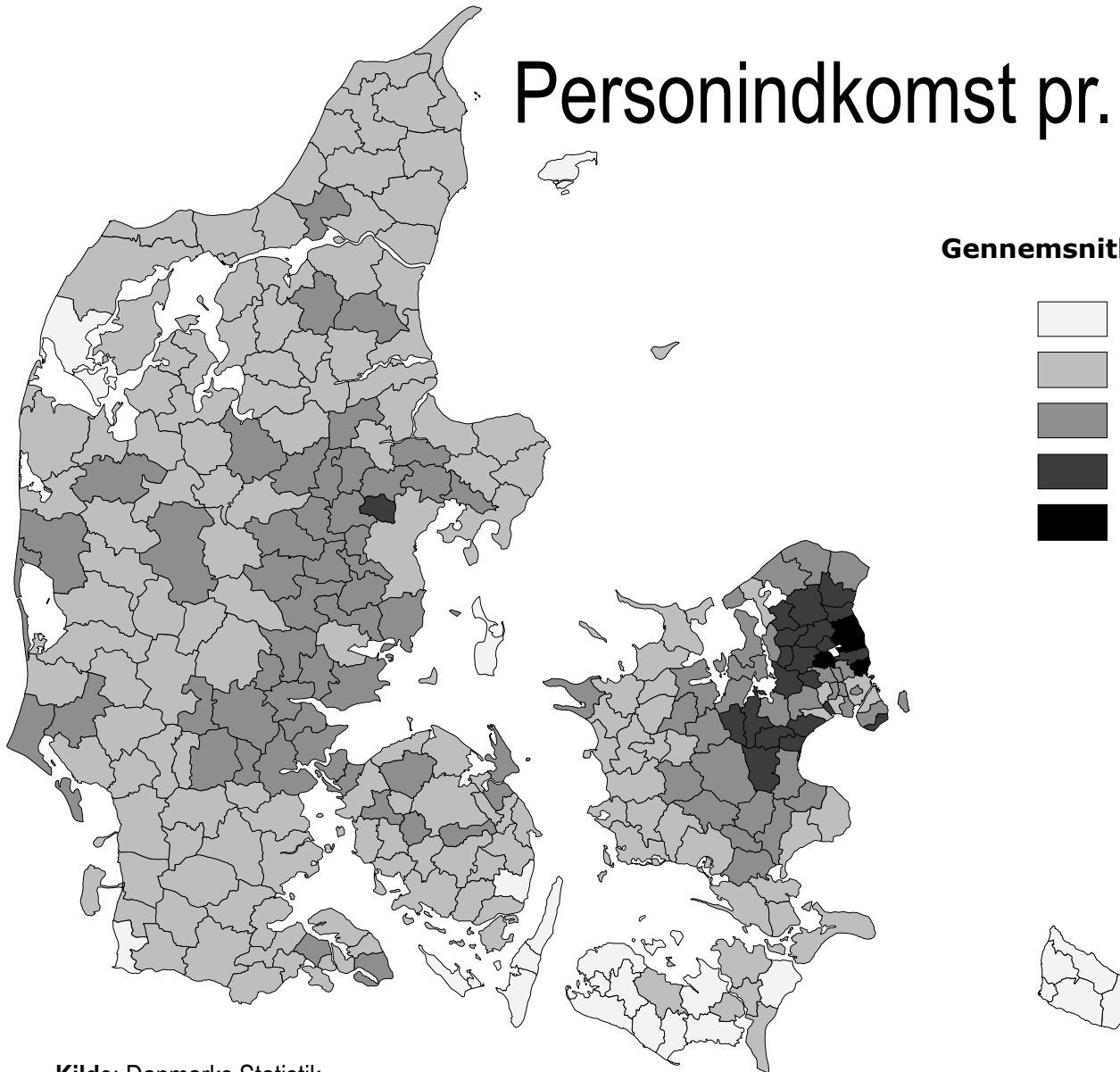
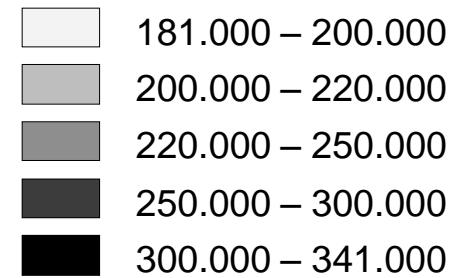
prikk:)



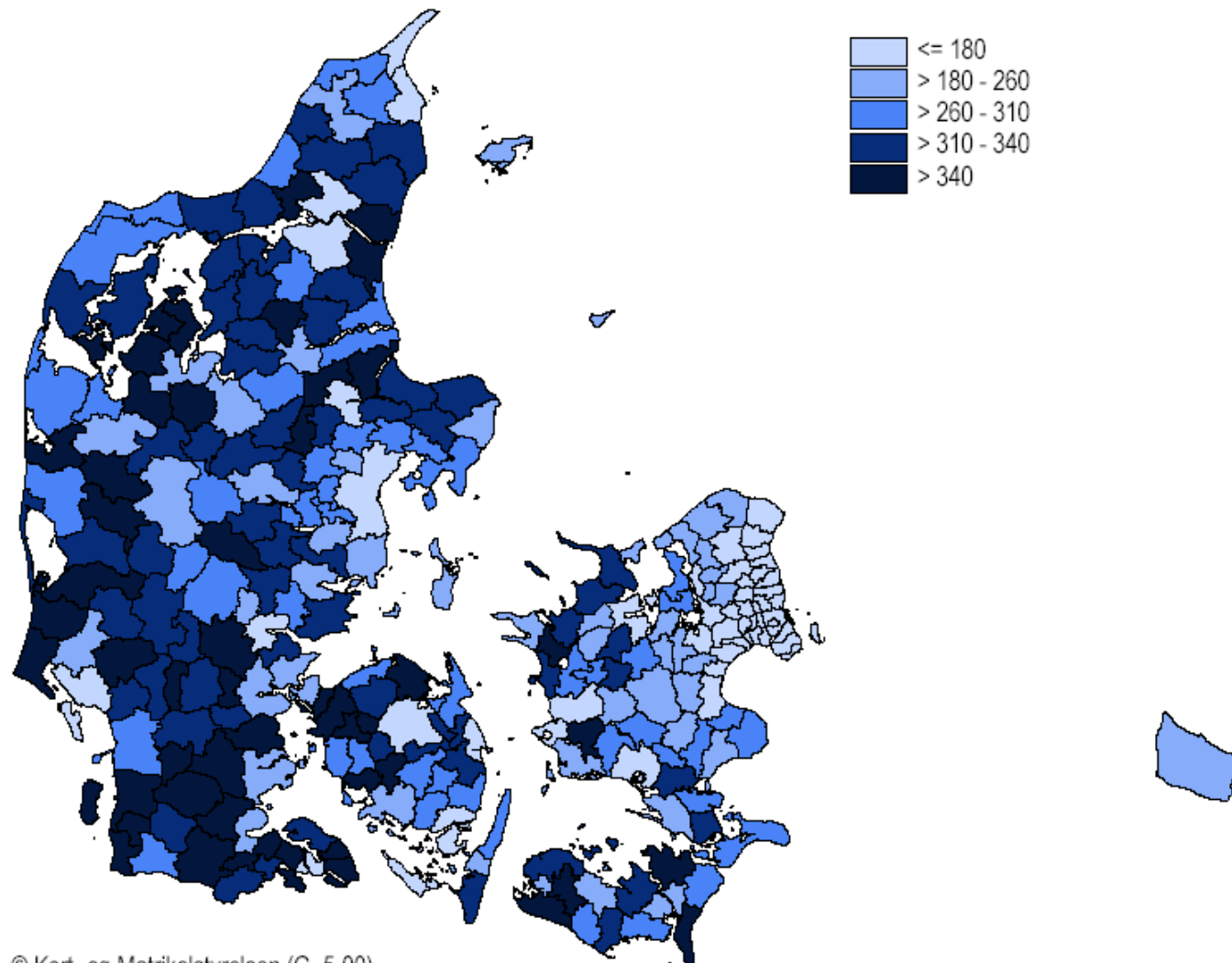
McDonald's

Personindkomst pr. person, 2003

Gennemsnitlig personindkomst pr. person



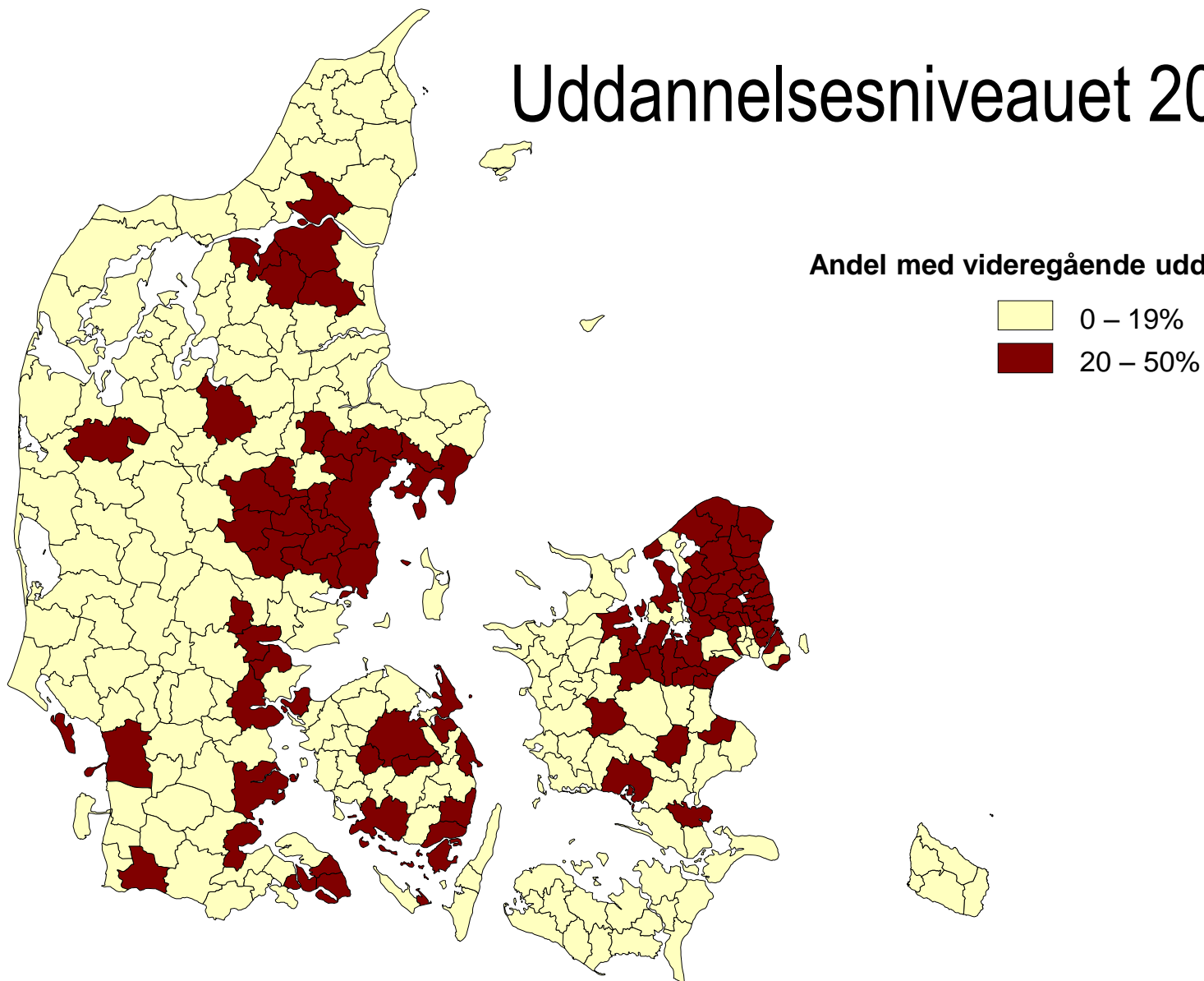
Trailere¹ pr. 1.000 familier i kommunerne. Ultimo 2005



© Kort- og Matrikelstyrelsen (G. 5-00)

Uddannelsesniveaueet 2005

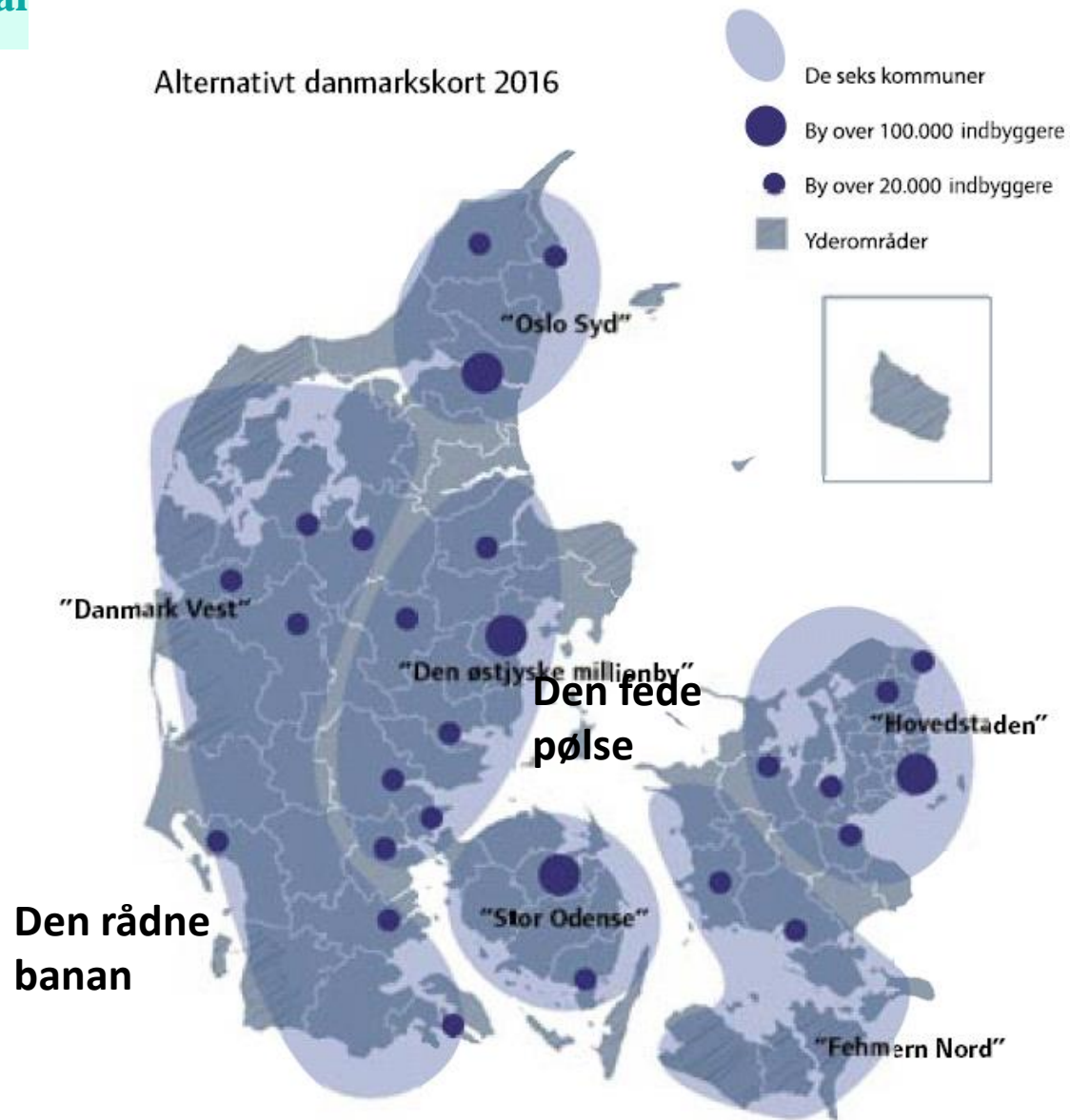
Andel med videregående uddannelse 2005





Medlems- skab af folkekirken

Alternativt danmarkskort 2016

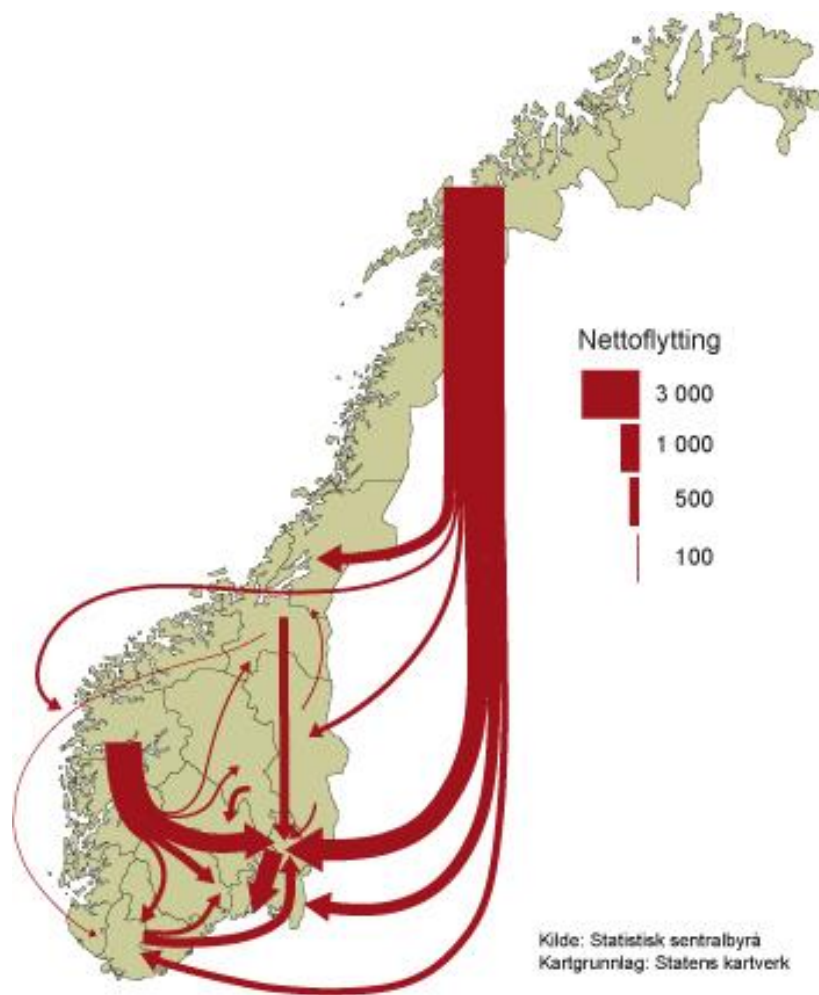


Kilde: Egen tilvirkning (hypotetisk fremskrivning)



Urbanisering

Nettoflytning i Norge



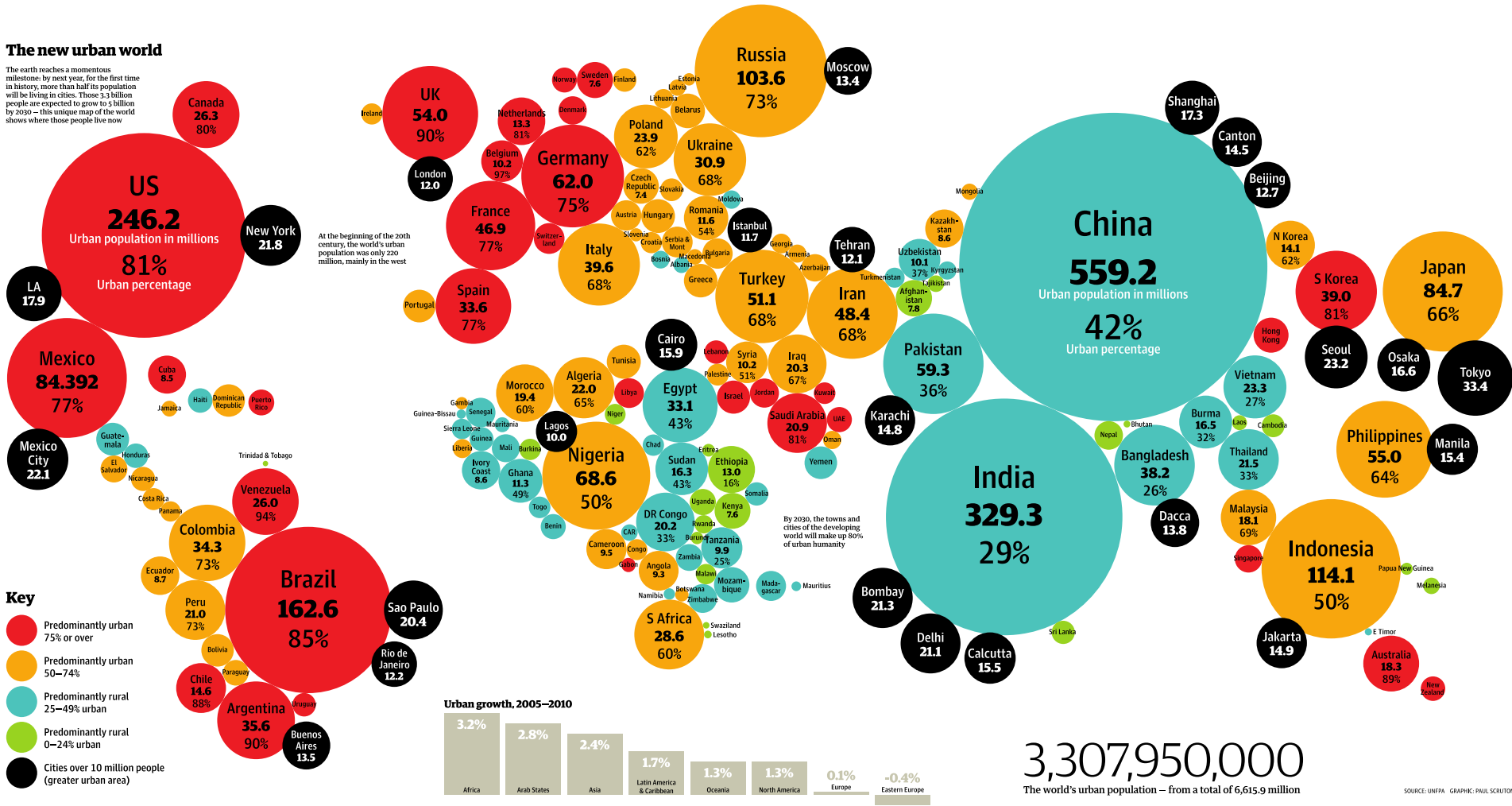
Urbanising

The new urban world

The earth reaches a momentous milestone: by next year, for the first time in history, more than half its population will be living in cities. Those 3.3 billion people are expected to grow to 5 billion by 2030 – this unique map of the world shows where those people live now

At the beginning of the 20th century, the world's urban population was only 220 million, mainly in the west

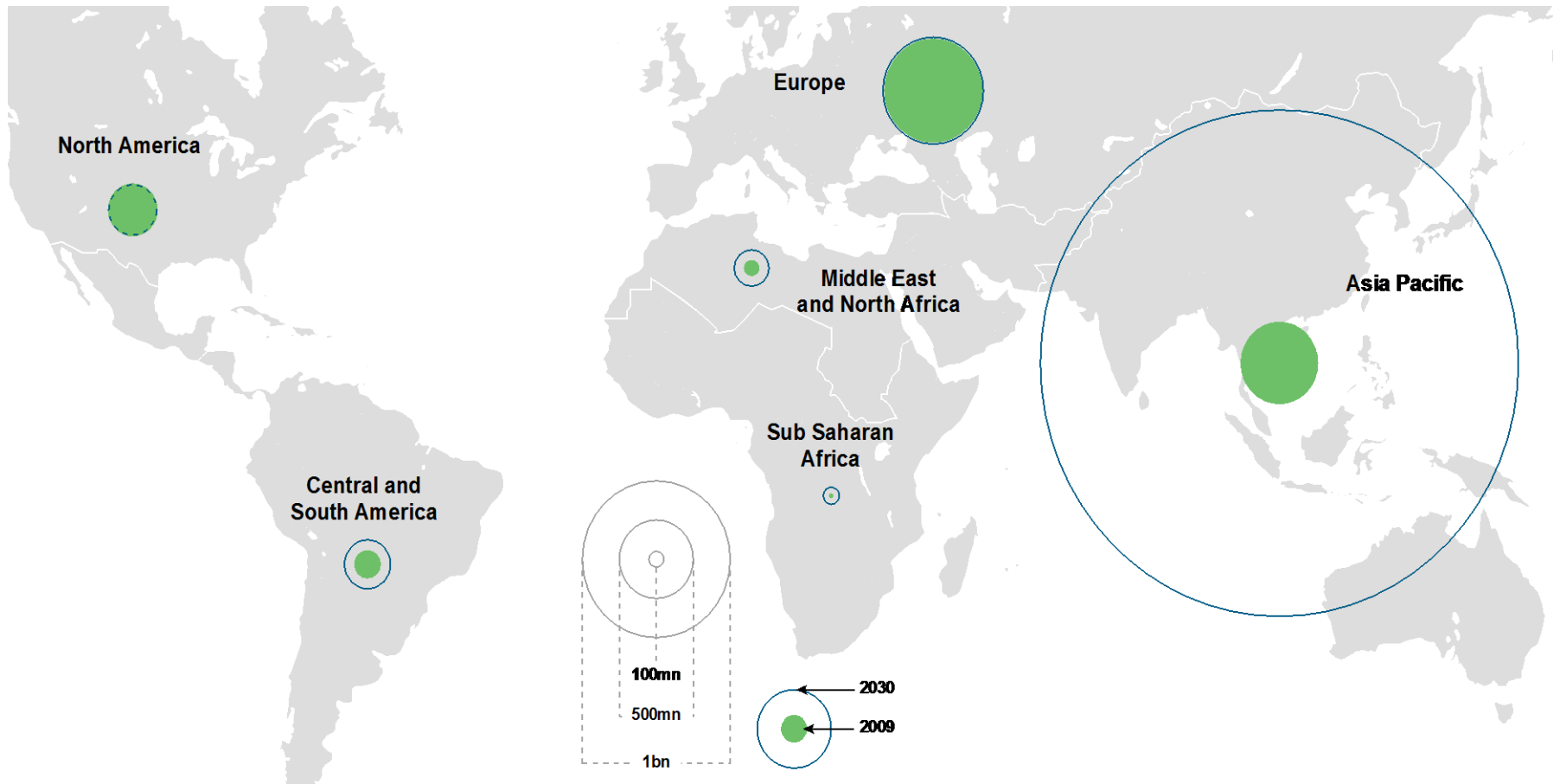
By 2030, the towns and cities of the developing world will make up 80% of urban humanity



Key

- Red circle: Predominantly urban 75% or over
- Yellow circle: Predominantly urban 50–74%
- Cyan circle: Predominantly rural 25–49% urban
- Green circle: Predominantly rural 0–24% urban
- Black circle: Cities over 10 million people (greater urban area)

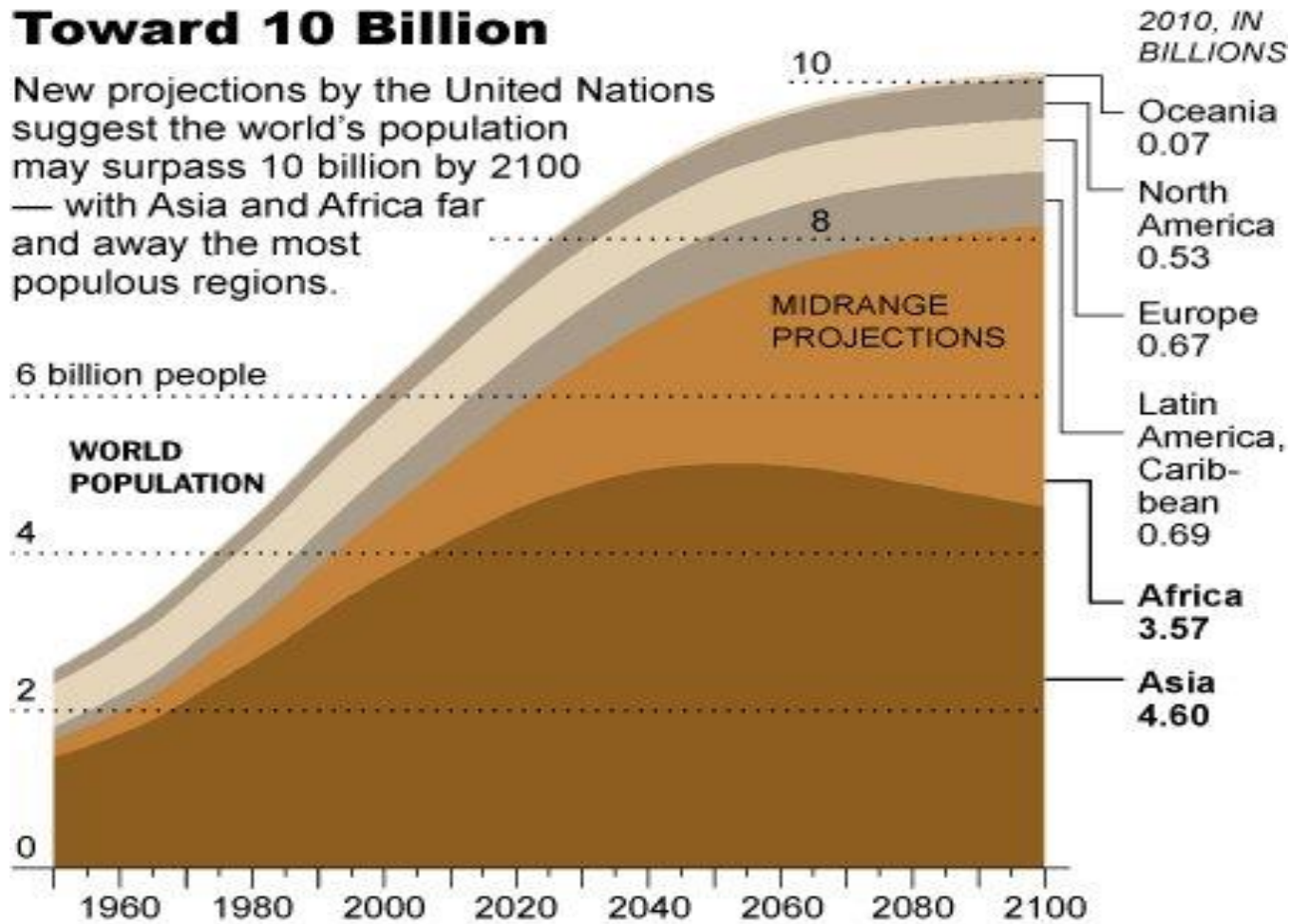
The middelclass



DEMOGRAFI

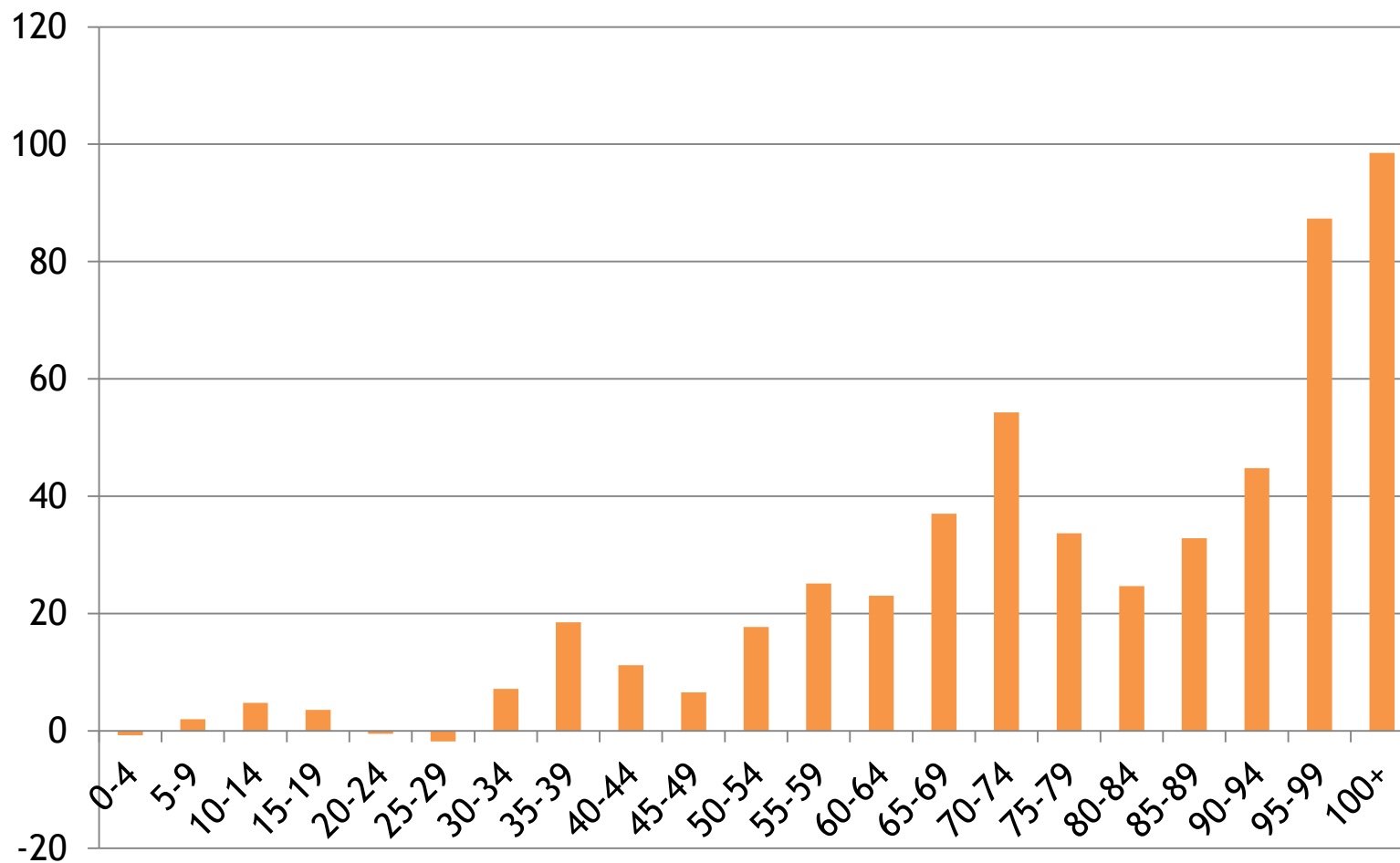
Toward 10 Billion

New projections by the United Nations suggest the world's population may surpass 10 billion by 2100 — with Asia and Africa far and away the most populous regions.



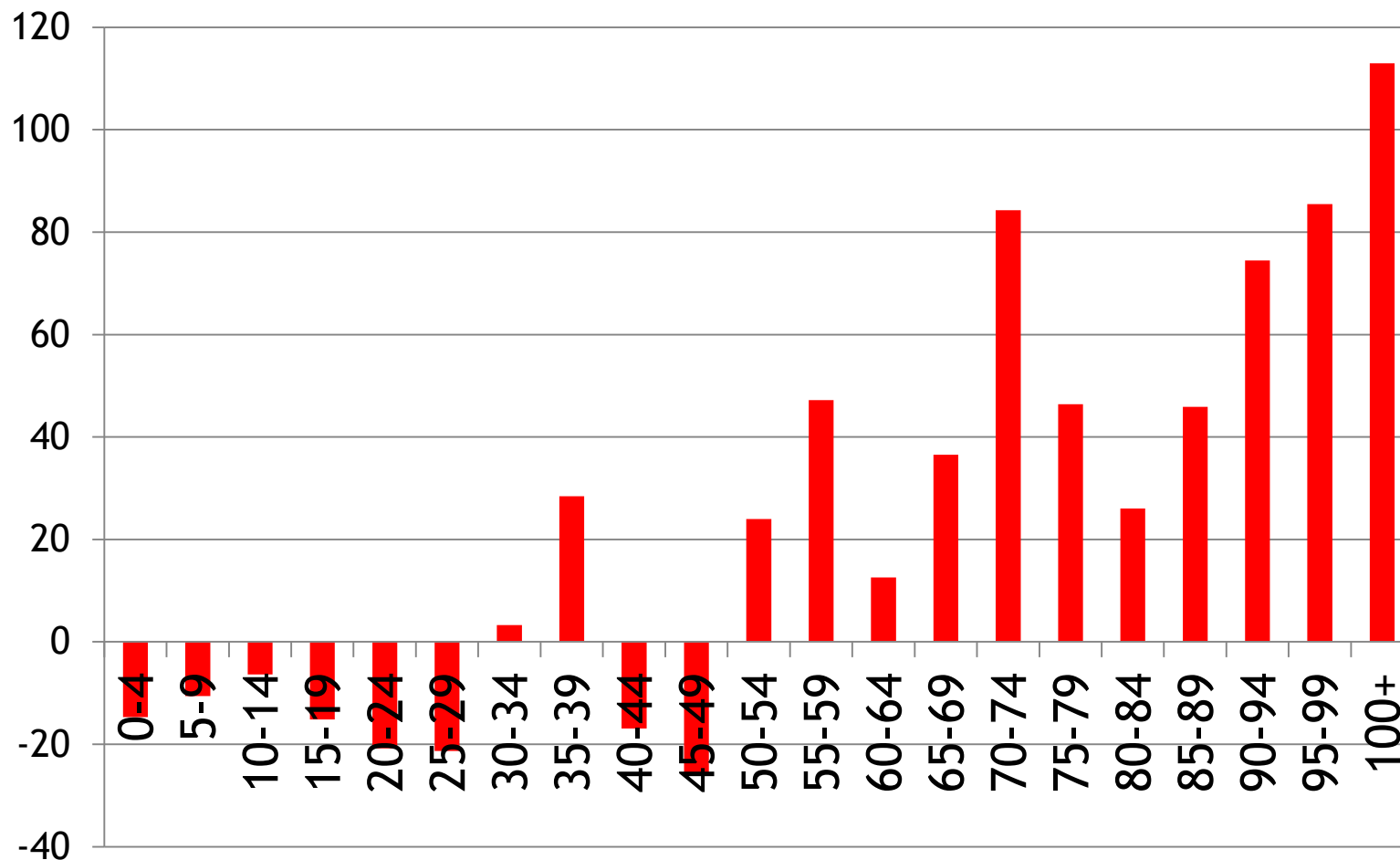
Source: United Nations 2011

Befolkningsudviklingen aldersfordelt, 2015-2025. Procent. Verden



Kilde: World Population Prospects, United Nations

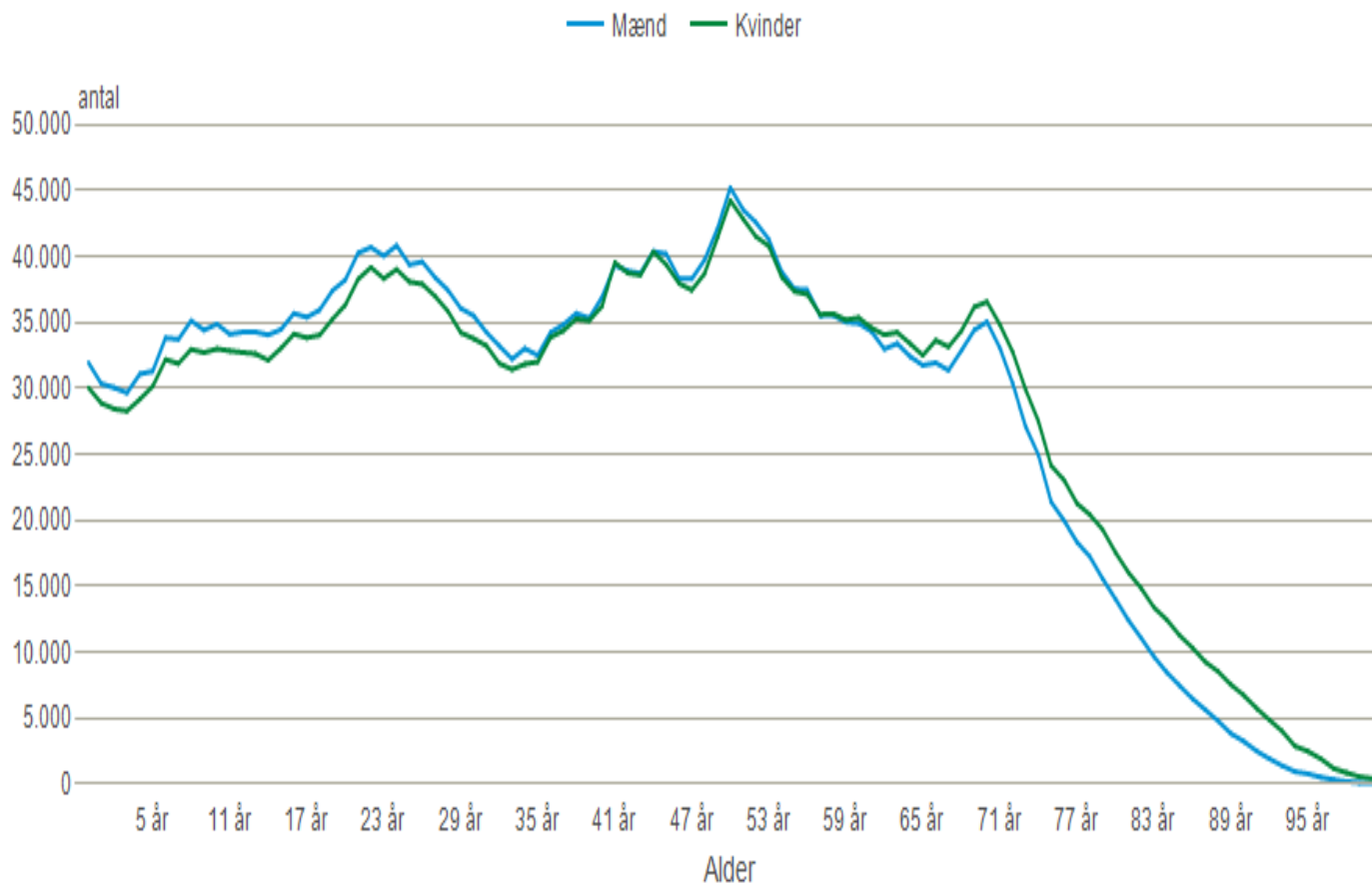
Befolkningsudviklingen aldersfordelt, 2015-2025. Procent. Kina.



Kilde: World Population Prospects, United Nations

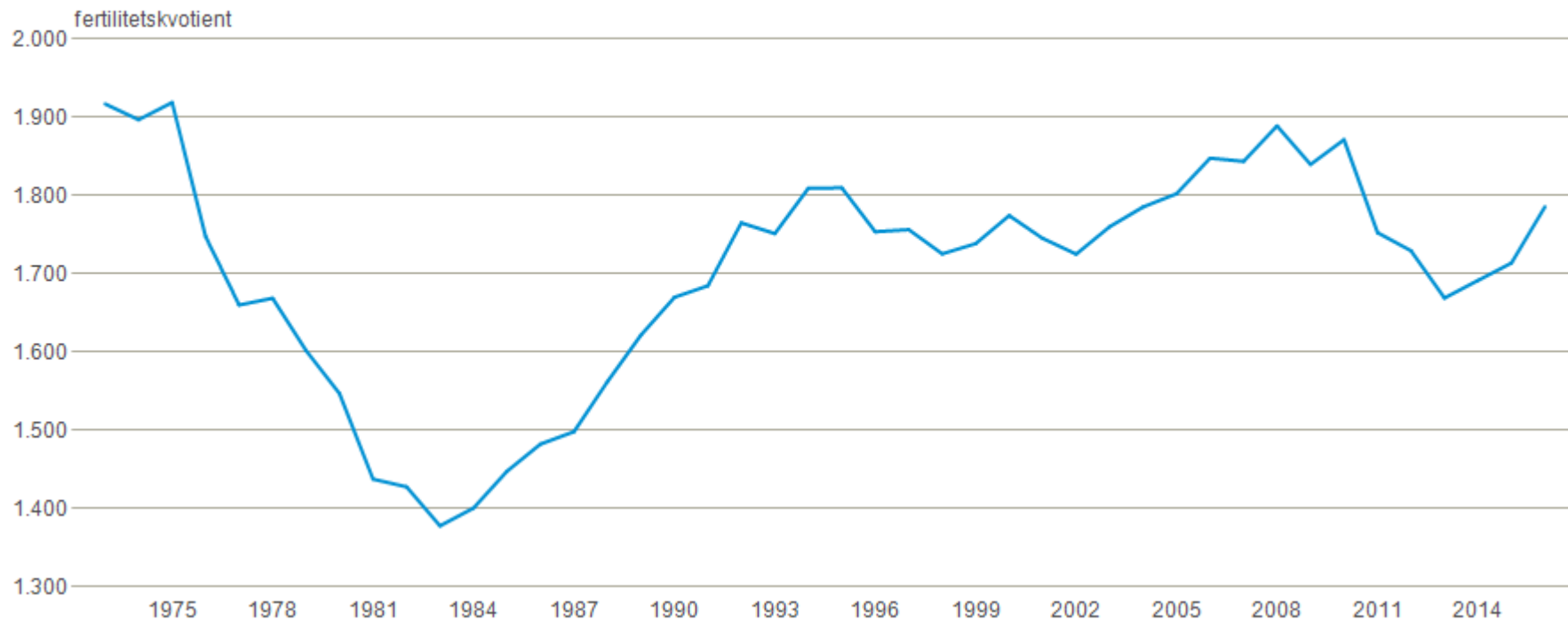
Folketal pr. 1. januar

Tid: 2017 | Køn:

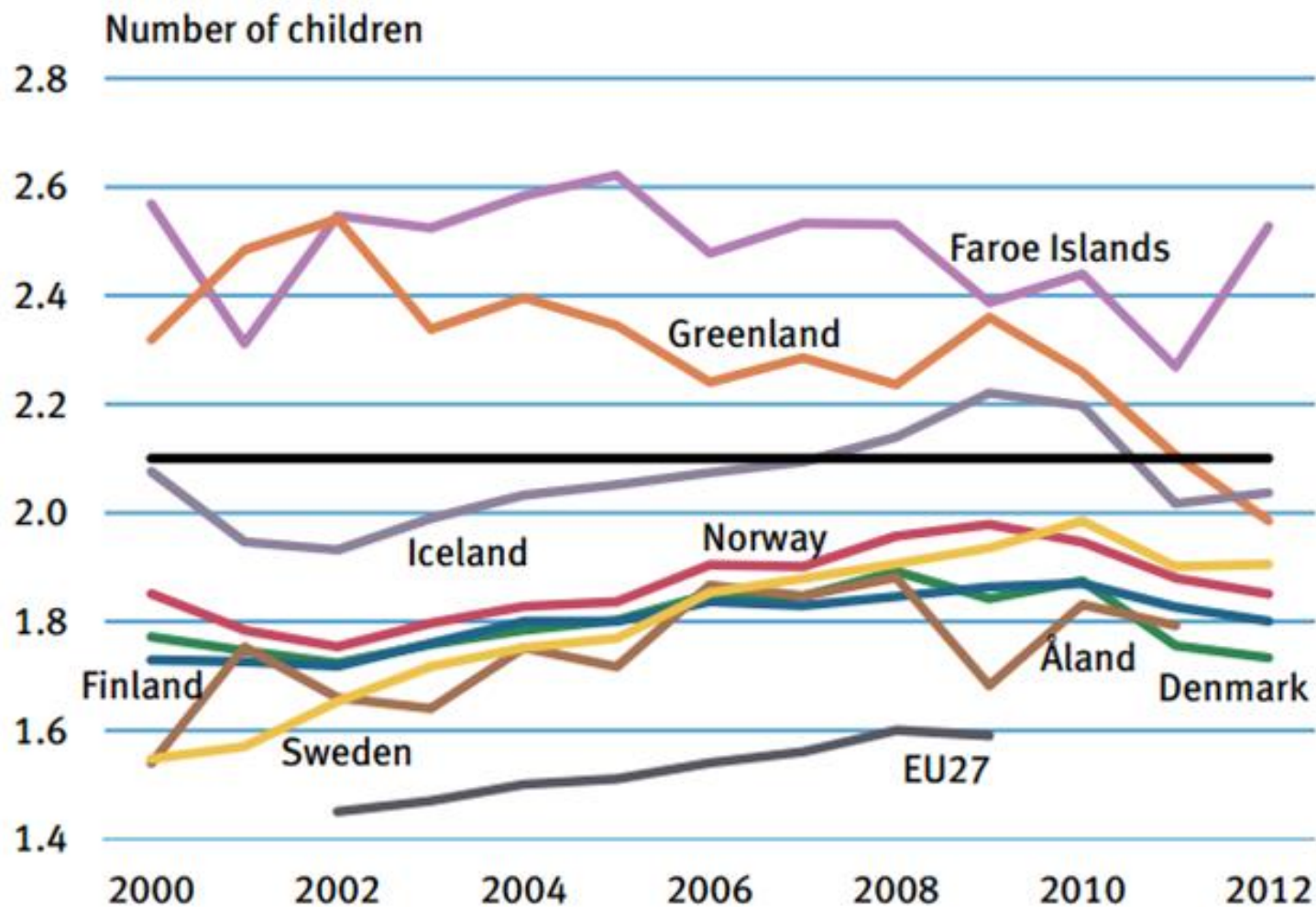


Fertilitetskvotienter

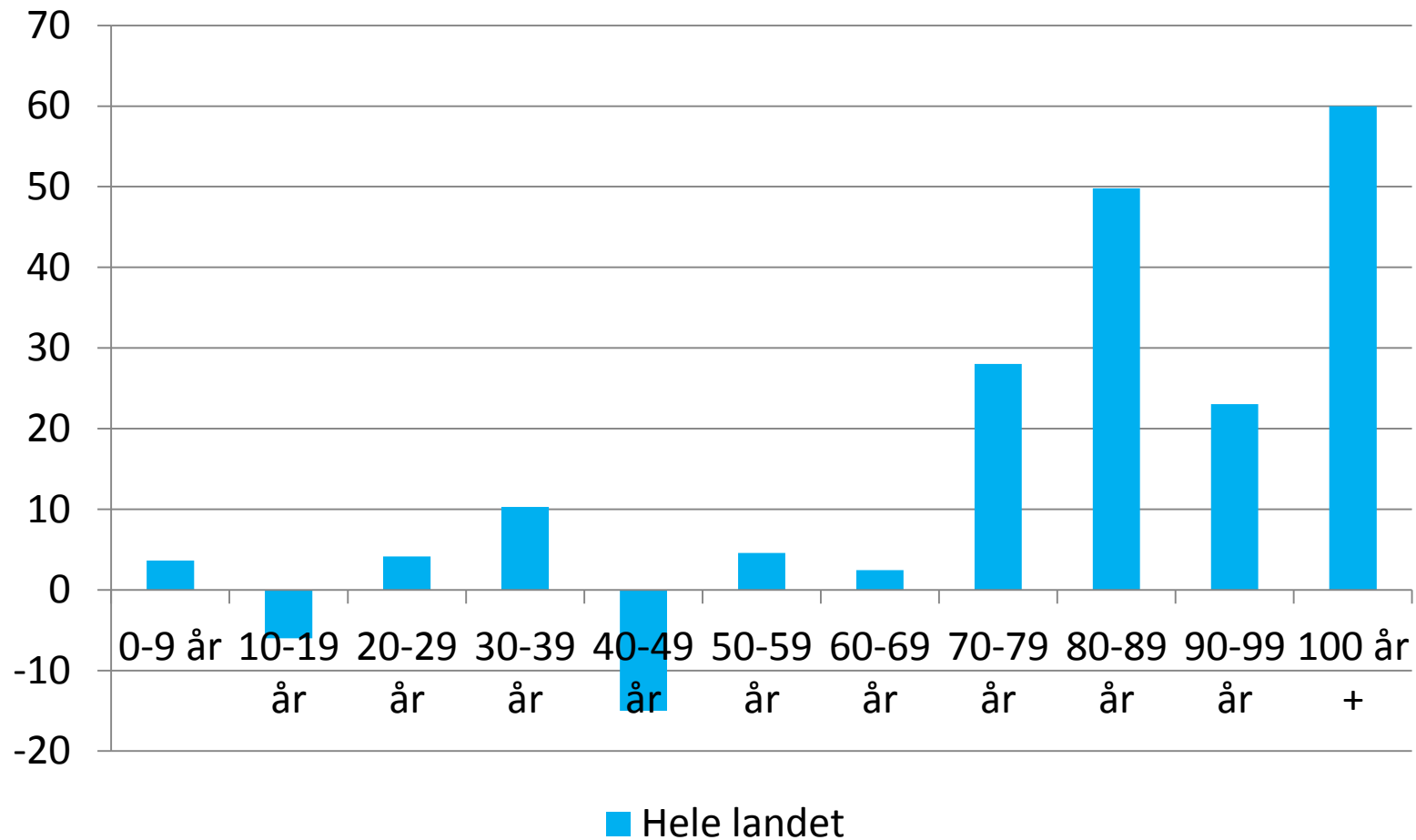
Alder: Samlet fertilitet



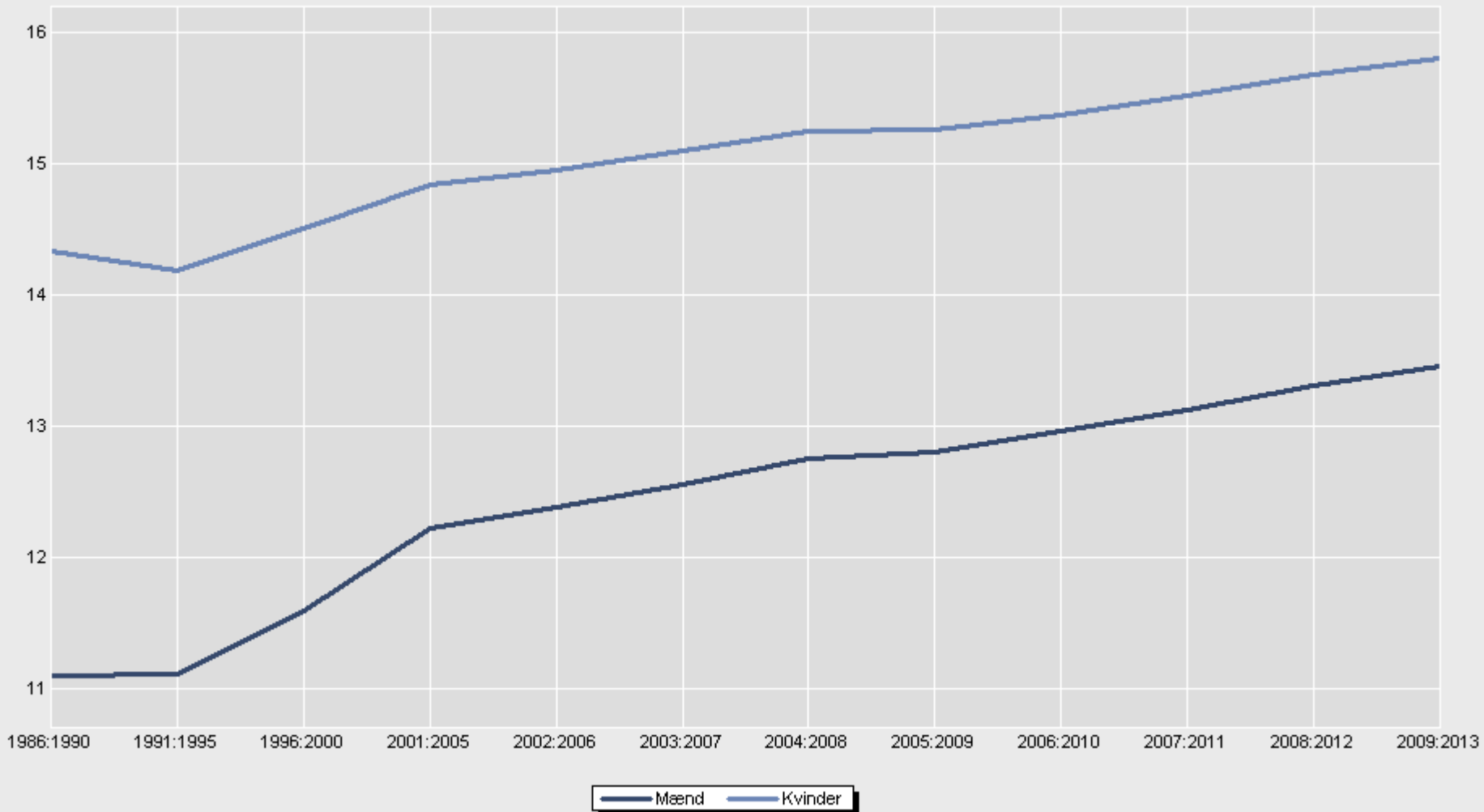
Samlet fertilitet



Befolkningsudviklingen aldersfordelt, 2015-2025. Procent.



Dødelighedstavle (5-års tavler)
efter køn og tid.
Middellevetid, 70 år. (Antal)





DE UNGE

**Selvoptagede, egoistiske ,
ingen respekt for ældre**

Aristoteles

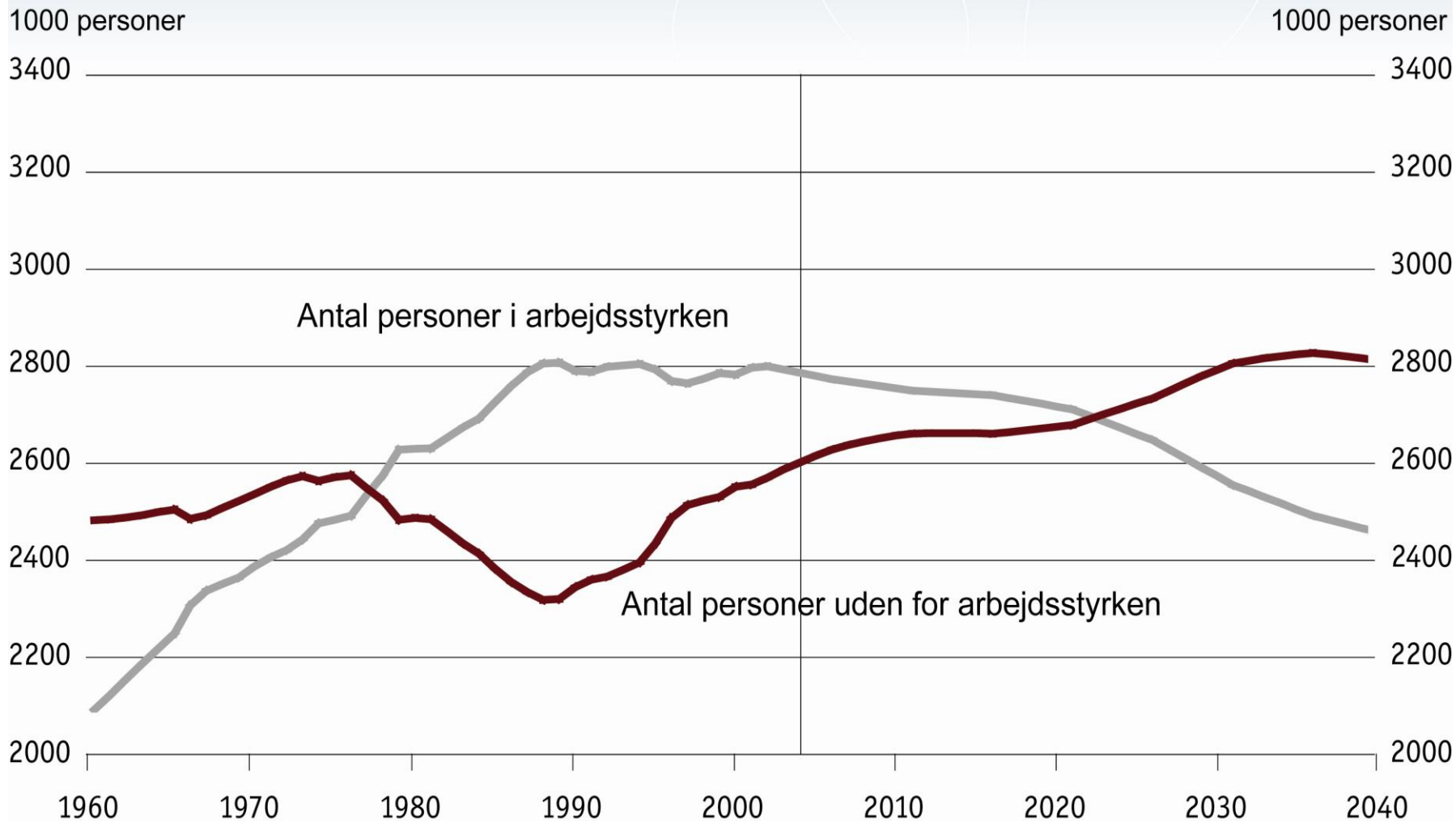
Ledelse af kreative medarbejdere



HR-medarbejderne og PM: de mange roller

- Nurse
 - frelse dem fra sig selv
- Agent el. coach
 - hjælpe til PM-vedligeholdelse
- Terapeut
 - a shoulder to cry on
- Klakør
 - ih, hvor er du dygtig
- Mor
 - den indirekte styring
- Caster
 - temabuilder
- Dirigent
 - sing in harmony

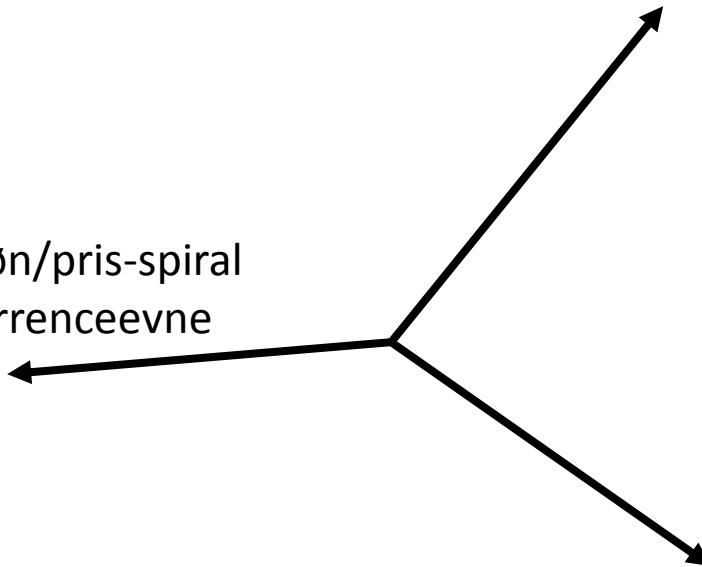
Færre til at forsørge flere



Tre fremtidsbilleder

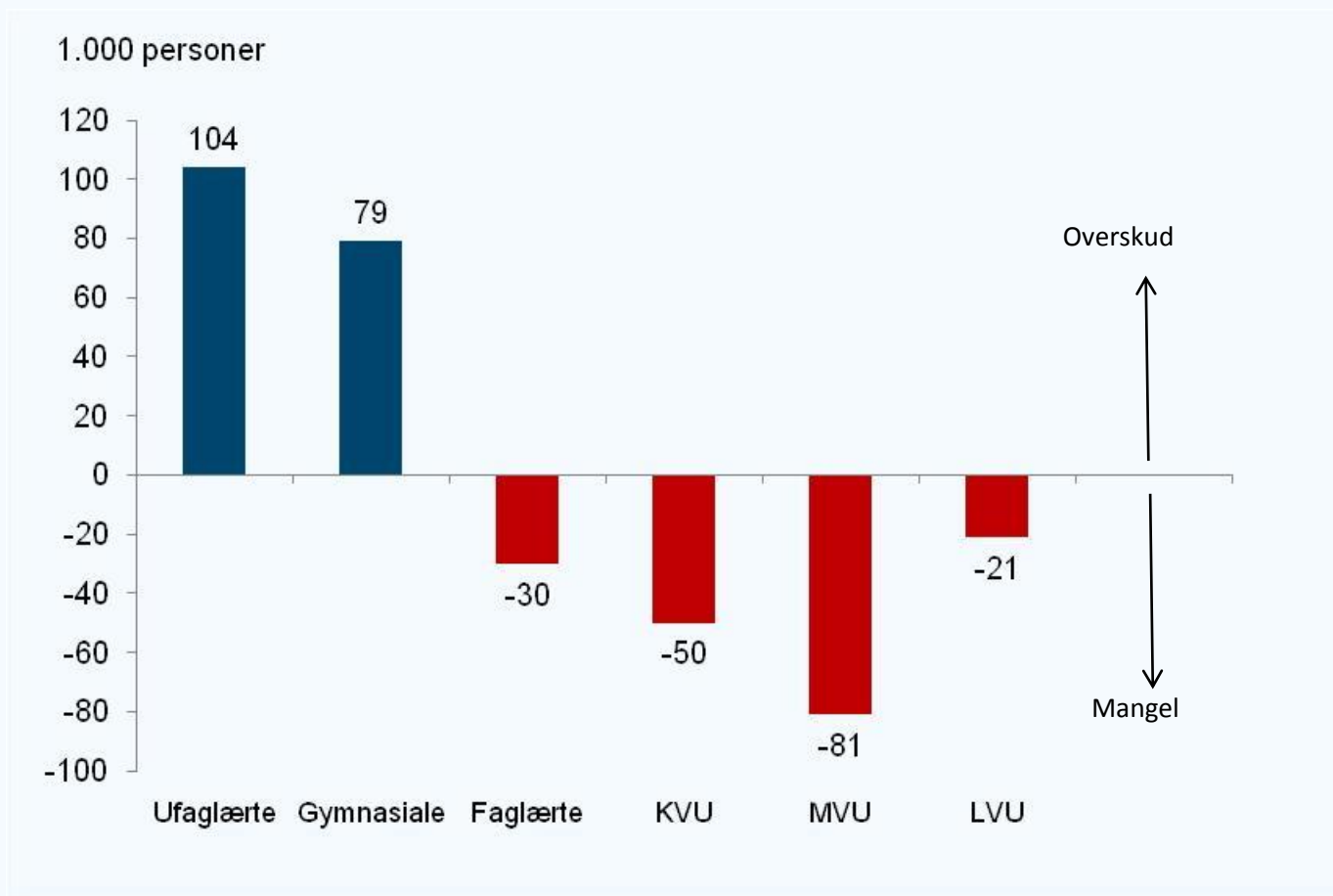
1. Den gode: Dynamo for integration, produktivitet og velfærd

2. Den onde: Løn/pris-spiral
– mistet konkurrenceevne



3. Den grusomme: Nedbrud i velfærds-
samfundets nøglefunktioner

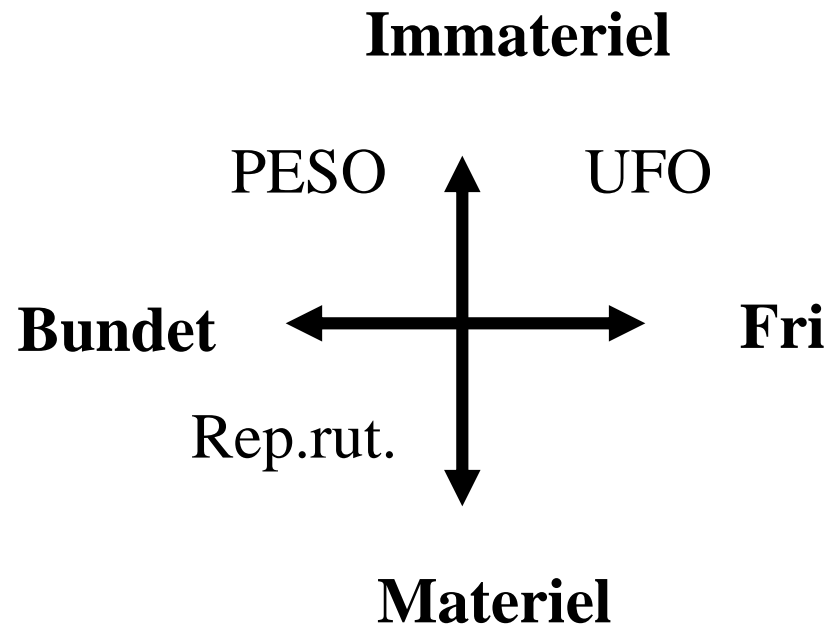
Mangel på uddannet arbejdskraft om 10 år



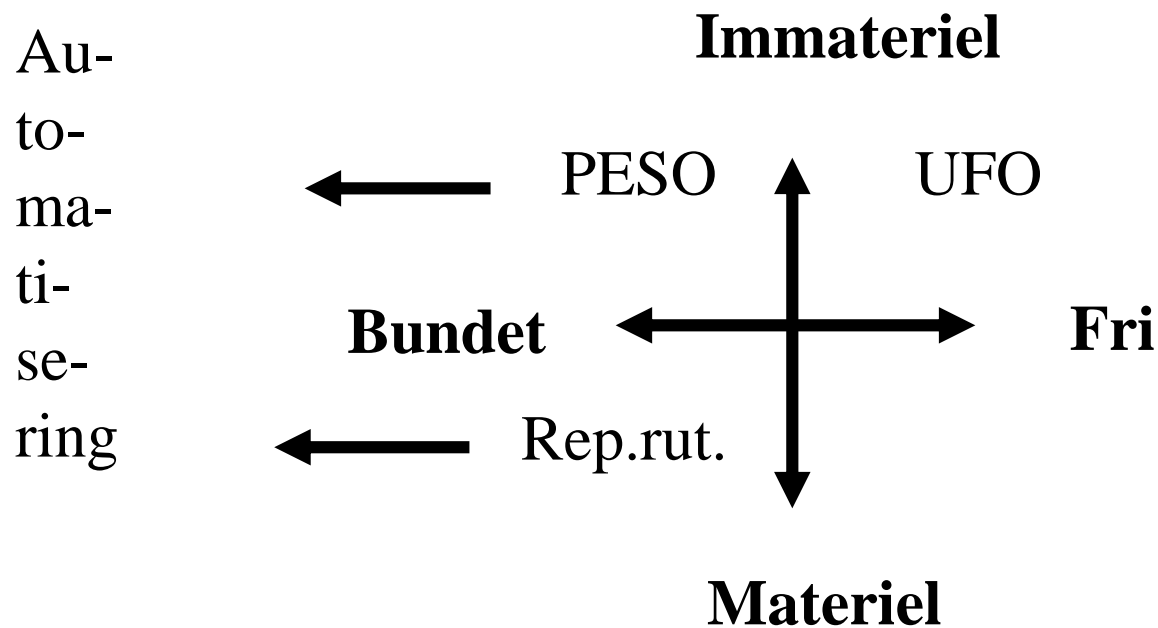
Anm.: Udbud minus efterspørgsel efter uddannet arbejdskraft 2010-20

Kilde: AE Økonomiske Tendenser 2011

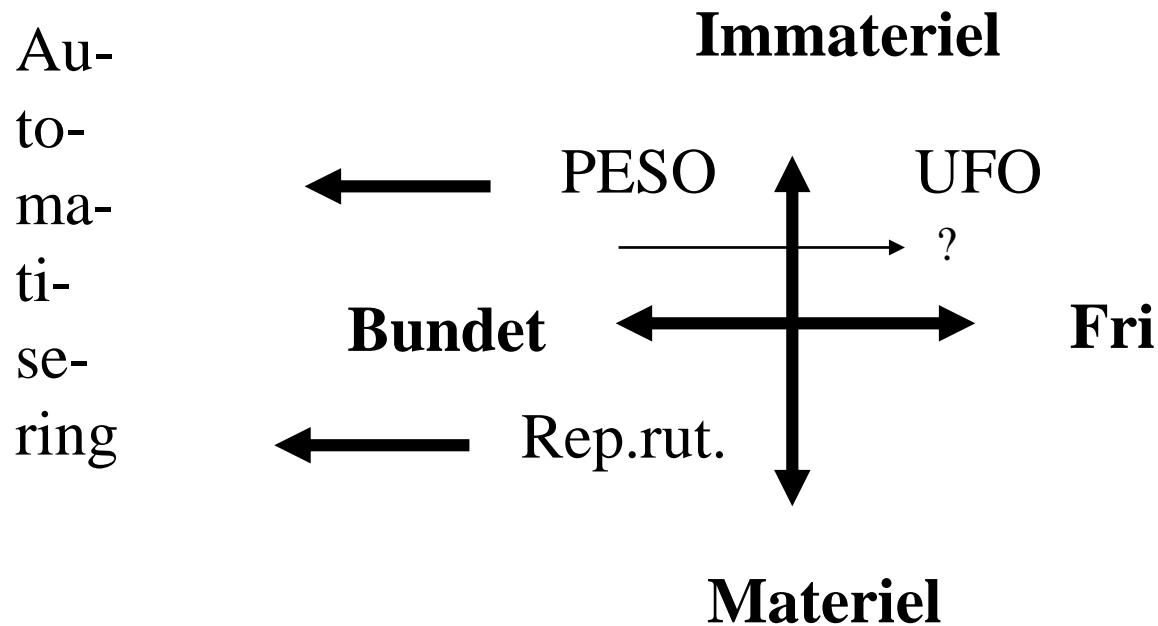
Arbejdsperspektiver



Arbejdsperspektiver



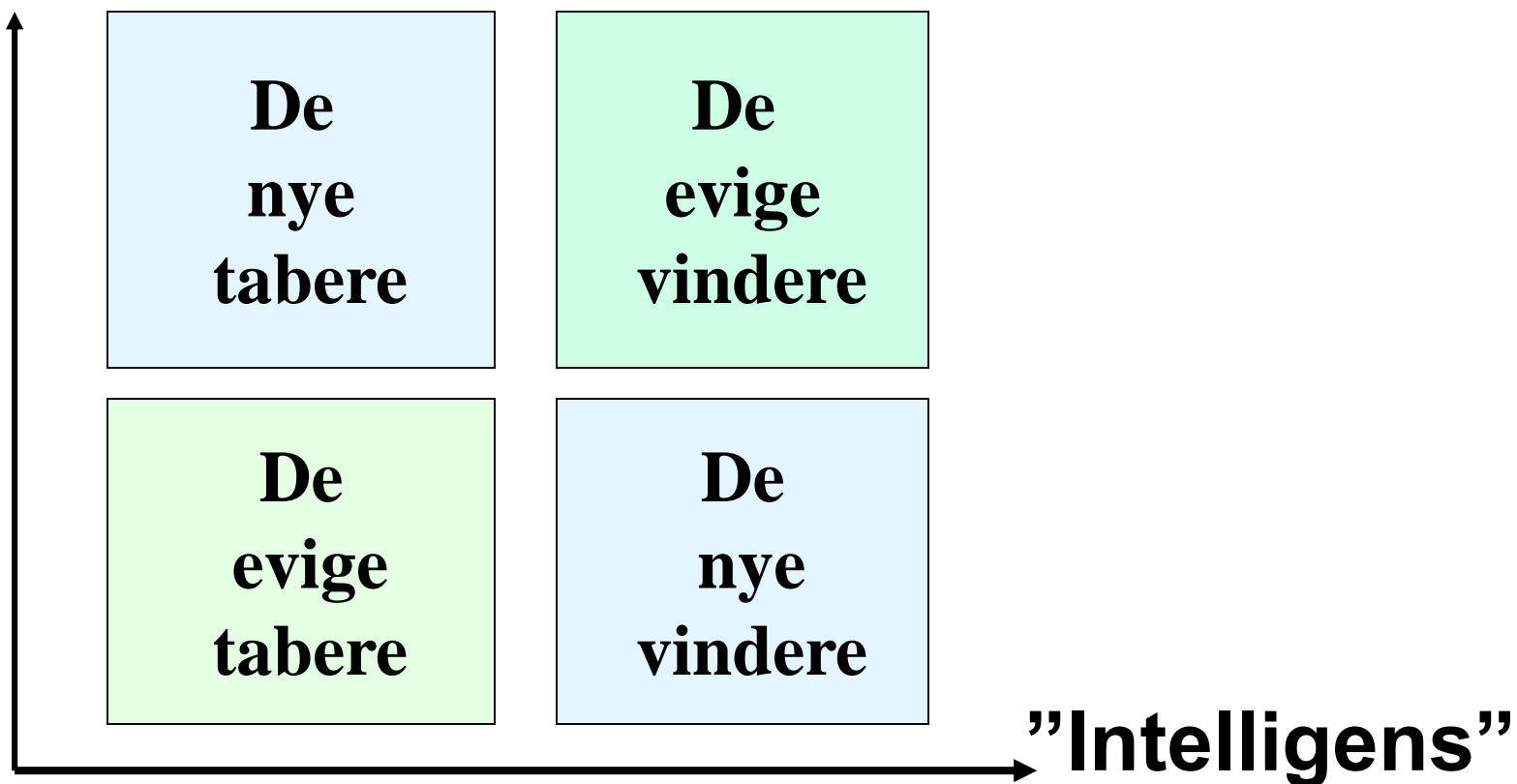
Arbejdsperspektiver



Au-
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Vindere & tabere på fremtidens arbejdsmarked

Flid



- men:

- Ting tager tid
- Arbejdsmarkedsbeskyttelse
- Mennesket: den begrænsende faktor
- Etik og regulering
- Kagen vokser

Arbejdsbegreb

- Noget for noget
- Menneskeret
- Terapi
- Integration
- Borgerløn
- ...

Tak

**Bevar
nysgerrigheden**

Læs mere på:

www.johanpeterpaludan.dk

