



TEKEN DE TOEKOMST

SURF ONDERWIJSDAGEN 2023

Rudy van Belkom, MA



Stichting
Toekomstbeeld
der Techniek

**Rudy van Belkom
directeur Stichting
Toekomstbeeld der Techniek:
‘Langetermijndenken is
belangrijker dan ooit’.**



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der Techniek

Werkwijze

STT maakt lange termijn toekomstverkenningen waarin wordt onderzocht hoe technologische ontwikkelingen en maatschappelijke behoeften interacteren. STT doet geen voorspellingen maar beschrijft alternatieve toekomstbeelden. De eindresultaten van de verkenningen zijn zeer divers: rapporten, artikelen, films, games en concepten.

Het Eeuwige Leren - de documentaire



the entries — Ontwerpwedstrijd: Gesloten! Bekijk NU de inzendingen! OPEN CALL: CLOSED! Take a look at the entries — Ontwerpwedstrijd: G

Watch on

Toekomst van het Lichaam

TOEKOMST
DE VAN HET
LICHAAM



Technologie Kieswijzer

Er wordt veel geschreven over fake news, online privacy en de macht van bedrijven als Facebook en Google. Maar hoe gaan politieke partijen hier eigenlijk mee om? Vul de Technologie Kieswijzer in en kom erachter.



Start →

Deze Kieswijzer maakt deel uit van Toekomstverkenning
96 Toekomst van de democratie door Rudy van Belkom

[Veelgestelde vragen](#) [Privacy](#)

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STT kijkt al meer dan 50 jaar vooruit

Stichting Toekomstbeeld der Techniek (STT) werd opgericht in 1968 door het Koninklijk Instituut van Ingenieurs (KIVI) en wordt als onafhankelijke stichting gefinancierd uit bijdragen van deelnemers uit het bedrijfsleven, maatschappelijke organisaties en de overheid.



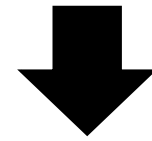
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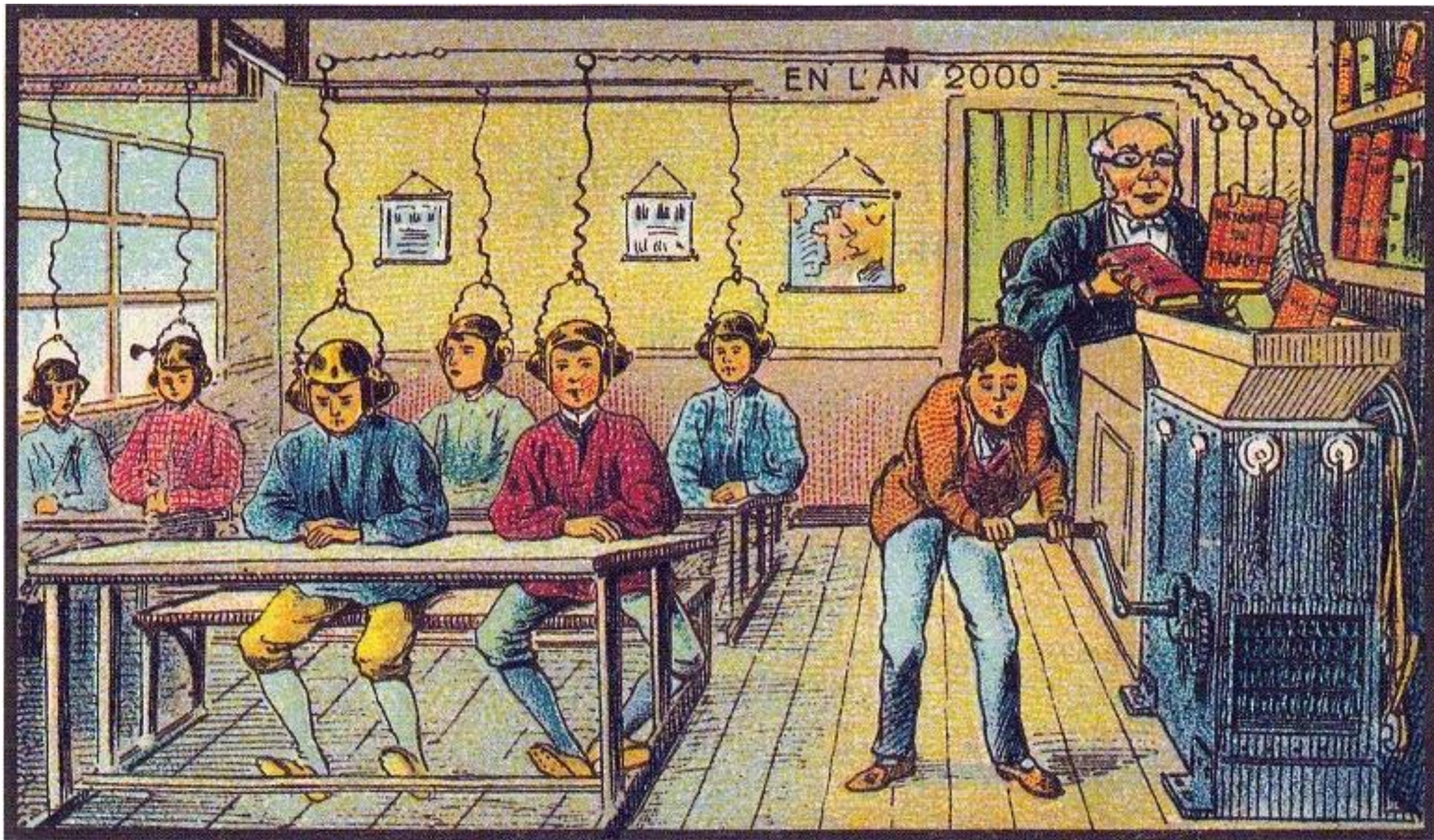


← S.T.T.- SYMP. BIOTECHNOLOGIE.

**KUNNEN WE
WAT WE
WILLEN?**



**WILLEN WE
WAT WE
KUNNEN?**



Villemard, 1910




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NOS Nieuws • Dinsdag 4 juli, 13:47 • Aangepast dinsdag 4 juli, 15:30



Kabinet geeft dringend advies aan scholen: telefoon uit de klas

Het ministerie van Onderwijs komt met een dringend advies voor scholen, waarin staat dat leerlingen geen mobieltje  mee de klas in mogen nemen, behalve als daar een speciale reden voor is. Er komt geen wettelijk verbod, maar een richtlijn. Het gaat ook

NOS Nieuws • Vrijdag 31 maart 2023, 18:32



Nederland tegen strengere regels ChatGPT, schoolopdracht beter met 'pen en papier'

Nederlandse docenten moeten zelf in de gaten houden of hun leerlingen misbruik maken van de geavanceerde tekstgeneratoren als ChatGPT. Het kabinet vindt het niet nodig om de regels aan te scherpen van het gebruik van dit soort softwareprogramma's door scholieren en studenten.



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iBestuur

Digitalisering en Democratie

Overheid in Transitie

Markt en Overheid

Data en AI

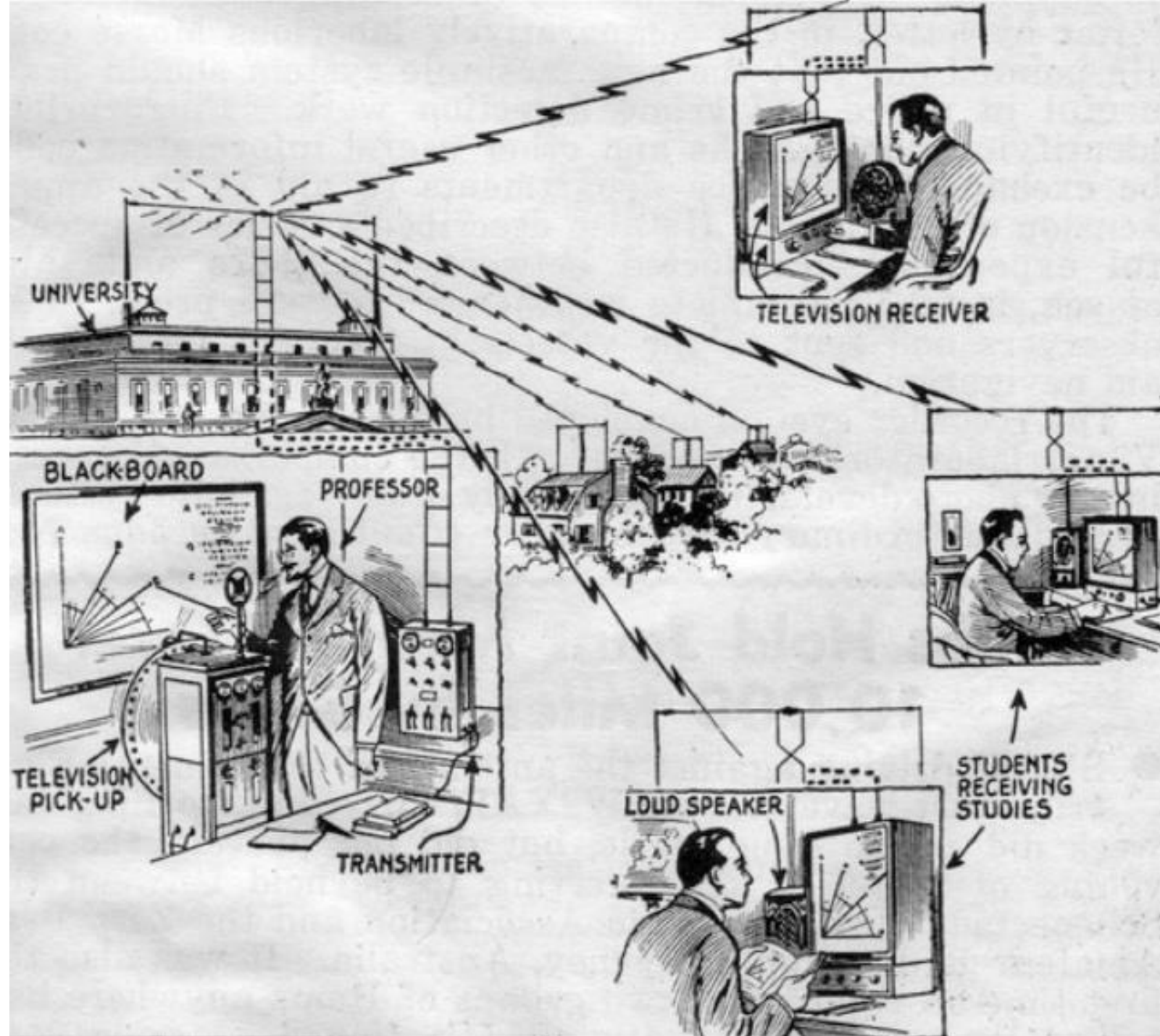
Digitale Toekomst

Overheid in transitie | Nieuws

Tweede Kamer wil met spoed 'rapid response team' van ICT-experts



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The Answer Machine

You're doing your homework.
You're stuck and you need some answers.
So you get help from your answer machine.
On a table next to you is part of the machine—a typewriter keyboard.
When you push the correct keys,
your questions will be answered
on a screen on the wall.



You might ask (using the keyboard):

WHO INVENTED THE PHONOGRAPH?

And the machine would answer:

THOMAS A.
EDISON

WHEN?

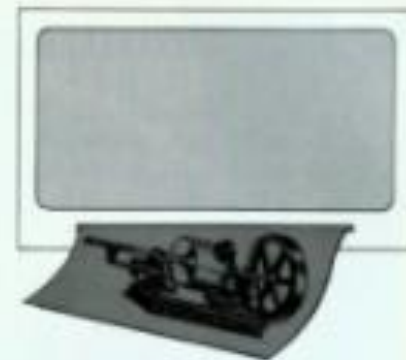
IN 1877

WHAT DID EDISON'S FIRST
PHONOGRAPH LOOK LIKE?



If you want a copy of that picture,
you can tell the machine:

PRINT OUT.



CAN YOU SOUND THE FIRST
WORDS EDISON RECORDED?
IF SO, DO SO.

Mary had
a
little
lamb



DO YOU HAVE A MOVIE ABOUT
EDISON? IF SO, RUN IT.

After you get the information
you need for your homework,
you can turn off your answer machine.
Or, since the screen is on the wall,
you might want to have a picture on it
and let it be a decoration for a while.
So, you could tell the machine:

SHOW AN EXAMPLE
OF DA VINCI'S
SKETCHES.

Someday, you might have
an answer machine
that could do all those things.

THE LIFE HISTORY
OF
THOMAS A. EDISON



Homework in the future

What is school going to be like in the future? Will there be robot teachers, and will schoolchildren be wired up to computers that cram information into their heads? In the near future it's likely that children will still go to school and there will be human teachers, much as happens now. But computers will be used to help them learn things easily, and at the pupil's own natural pace. Instead of sitting in classes and learning each subject from a particular teacher, schoolchildren will be able to learn individually from computers. They will be able to make their own choice of subjects, and the teachers will be there to help them as they learn.



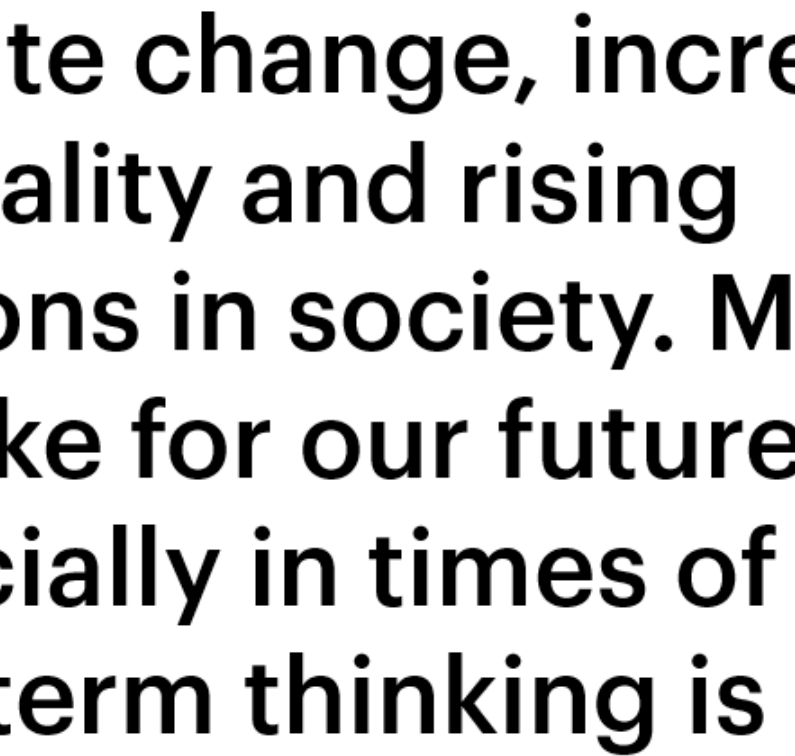
But if we look further into the future, there could be no schools and no teachers. Schoolwork may not exist. Instead you will have to do homework, for you will learn everything at home using your home video computer. You'll learn a wide range of subjects quickly and at a time of day to suit you. However, it's probable that someone like a teacher will visit your home to check that all is going well.

The computer won't seem like a machine. It will talk to you just like a human teacher, and also show you pictures to help you learn. You'll talk back, and you'll be able to draw your own pictures on the computer screen with a light pen. This kind of homework of the future will be more like playing an electronic game than studying with books. To find out information, you'll be able to ask the computer questions. It will help you to increase your knowledge by making sure you understand what it has told and showed you, and then urge you to find out more. Studying will be like picking up a book that says it wants you to read it, and then won't allow you to put it down until you've finished it!

Eventually, studying a particular subject will be like having the finest experts in the world teaching you. Far in the future, if computers develop beyond humans in intelligence, then the experts could in fact be computers, and not human beings at all!

<Learning by computer in the future will be fun. This computer is displaying a chemistry experiment for the older child and weather problems for the younger one. The computer controls include light pens to draw on the screens. The chemistry student has done something wrong and has caused an explosion!





Climate change, increasing inequality and rising tensions in society. Much is at stake for our future. But especially in times of crisis, long-term thinking is crucial.

The Good Ancestor

HOW TO THINK LONG TERM
IN A SHORT-TERM WORLD

Roman Krznaric



'This is the book our children's
children will thank us for reading'

THE EDGE, U2





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©rem van den bosch

The background of the image is a close-up, black and white photograph of elephant skin. The texture is highly detailed, showing deep wrinkles, ridges, and a cracked, scaly surface. The lighting creates strong shadows and highlights, emphasizing the tactile quality of the skin. A white rectangular box is centered on the right side of the image, containing the title and author information.

VISIE IS ALS EEN OLIFANT DIE HET ZICHT BELEMMERT

Mark Rutte, 2013

Why are we so bad at long-term thinking?

Risk | Article | February 07, 2023 | ⌚ 6 min read

“Risk” used to mean watching for predators or running out of food in the winter. Now our brains are dealing with complex modern threats from climate change to the cost-of-living crisis. Can we escape the ancient trap of short-term thinking?



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PSYCHOLOGY

Why Futurism Has a Cultural Blindspot

We predicted cell phones, but not women in the workplace.

BY TOM VANDERBILT

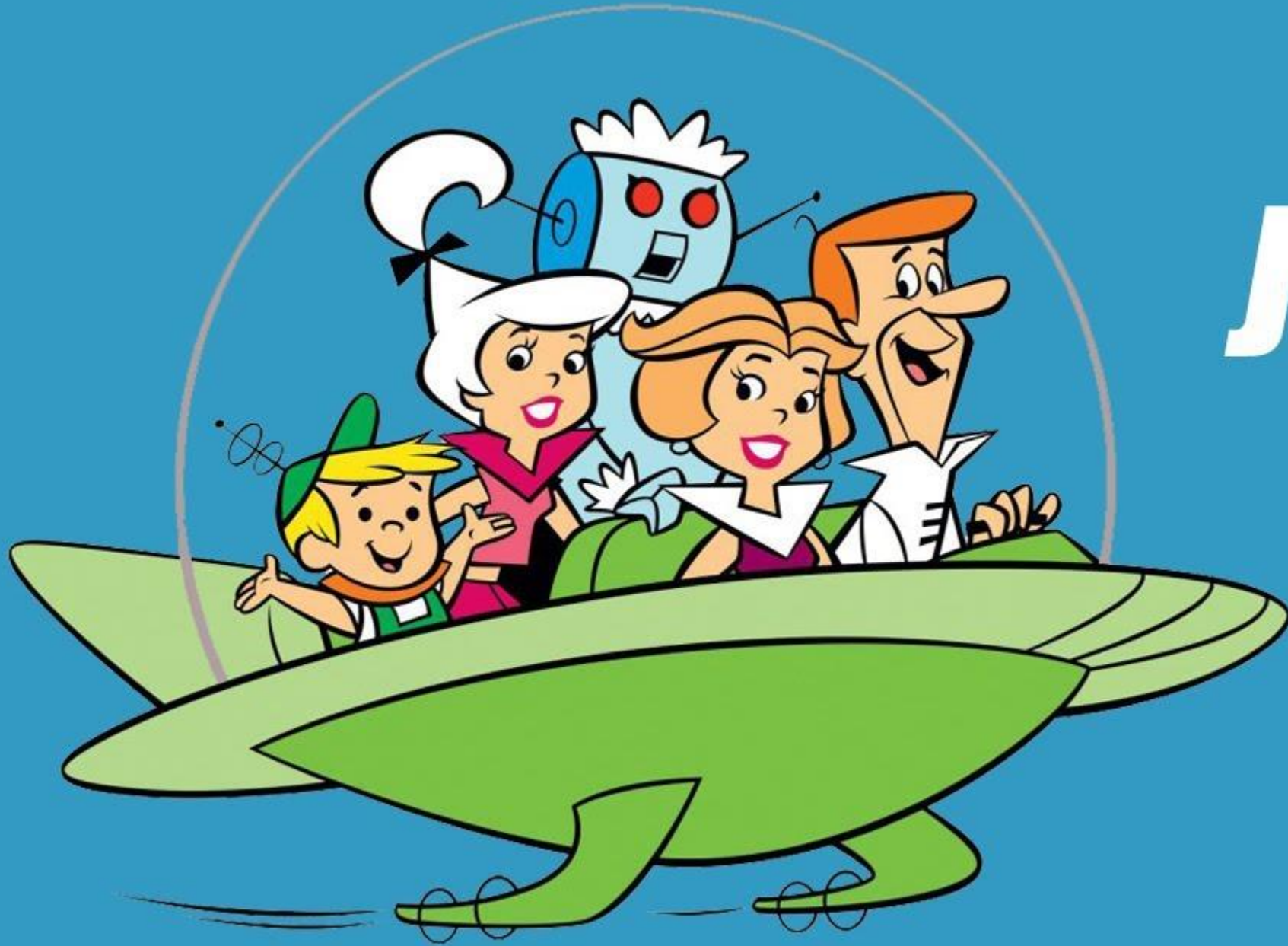
SEPTEMBER 8, 2015

Illustration By Robin Davey



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THE JETSONS



PALLIS O'CONNOR Presents

BACK TO THE FUTURE

TRILOGY

THE GREATEST TRILOGY...
EVER MADE...



A promotional poster for the TV series Black Mirror. The background is dark and filled with a complex, shattered glass effect. Numerous sharp, translucent shards of glass are scattered across the frame, some reflecting light. Behind the glass, several characters from the series are visible, their faces partially obscured and distorted by the cracks and reflections. The overall mood is dark, mysterious, and unsettling.

NETFLIX

BLACK MIRROR

@BLACKMIRROR

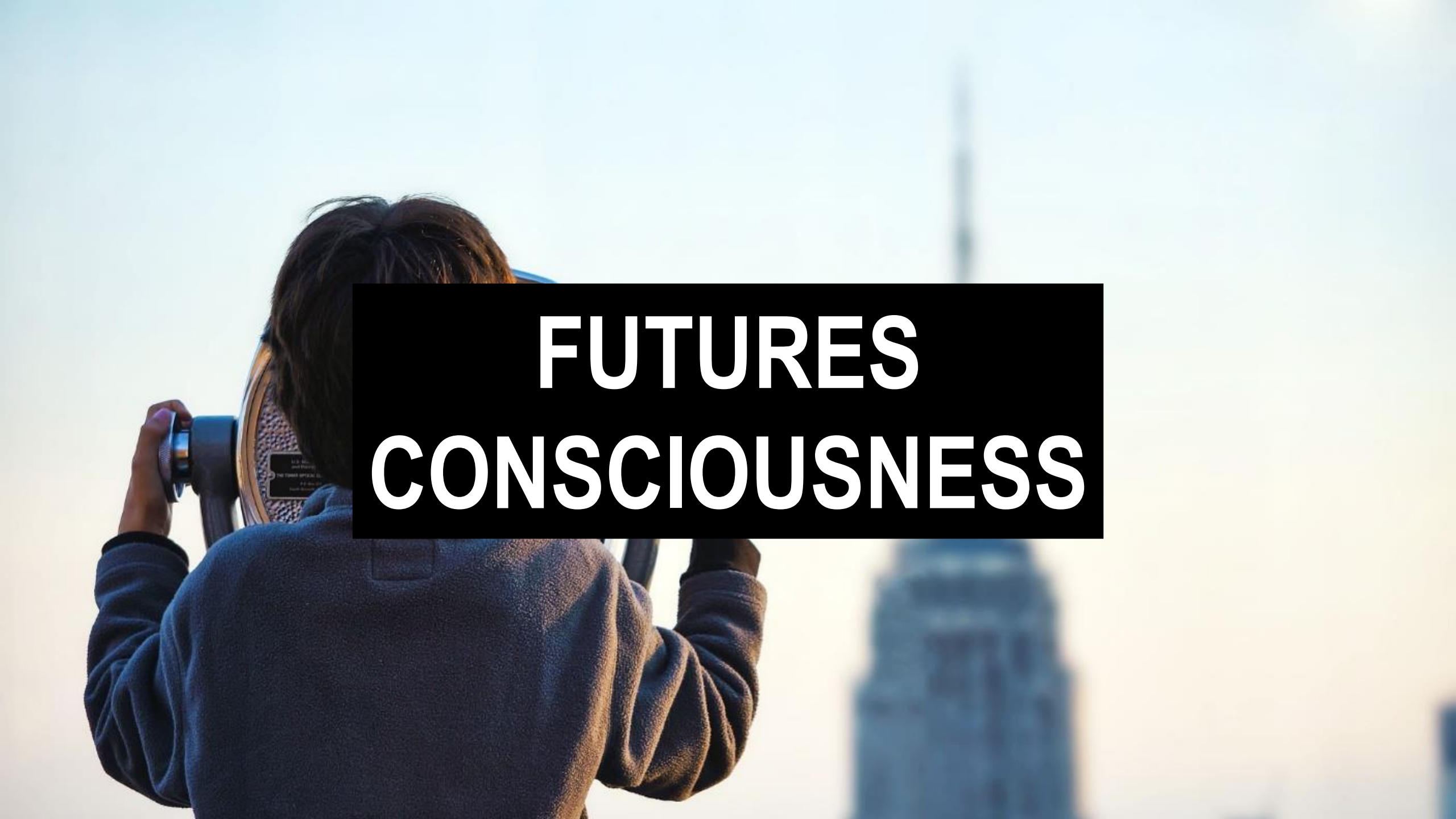
[NETFLIX.COM/BLACKMIRROR](https://www.netflix.com/blackmirror)





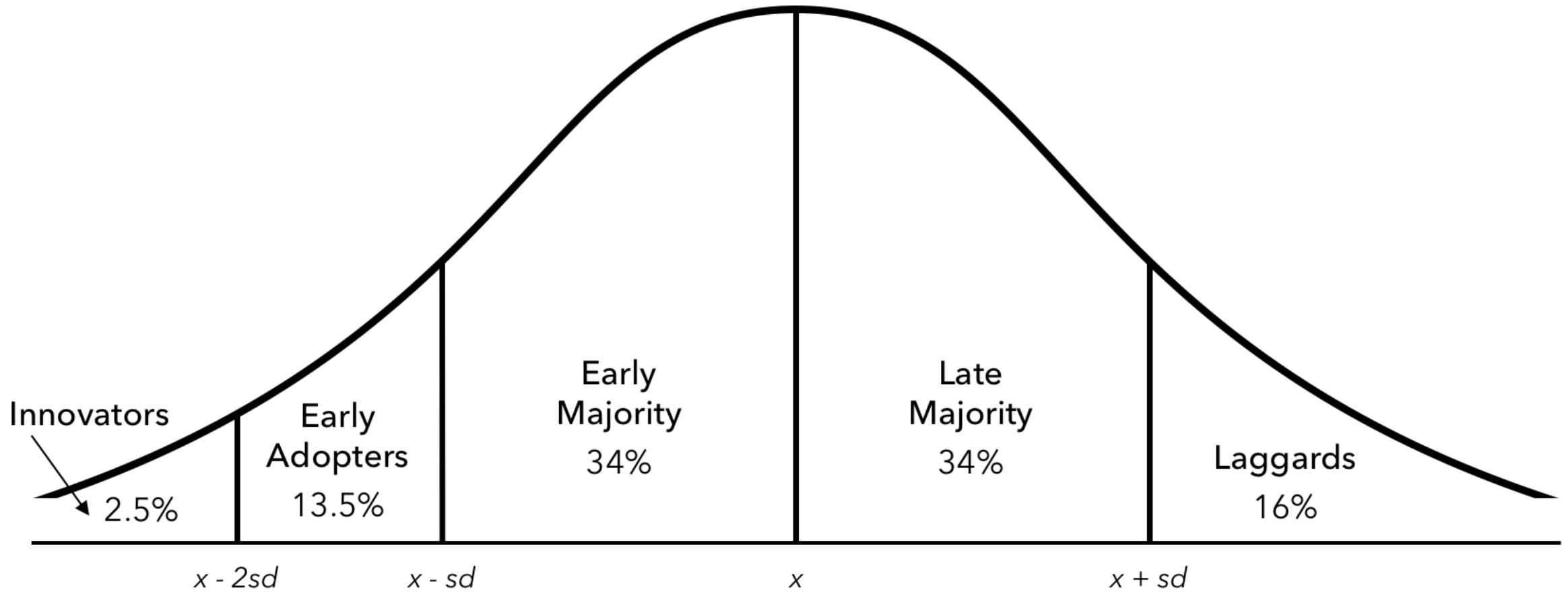
**VAN VOORSPELLEN,
NAAR VOORSTELLEN**



A person with dark hair, wearing a blue sweater, is seen from behind, looking through a telescope. The telescope is mounted on a stand. In the background, a city skyline is visible under a clear sky, with a prominent skyscraper on the right. A black rectangular box with white text is overlaid on the image.

FUTURES CONSCIOUSNESS

vpro




Relationship between types of adopters classified by innovativeness and their location on the adoption curve.

SOURCE: Everett M. Rogers, *Diffusions of Innovations*, 5th ed. (New York: Free Press, 2003), p. 281.

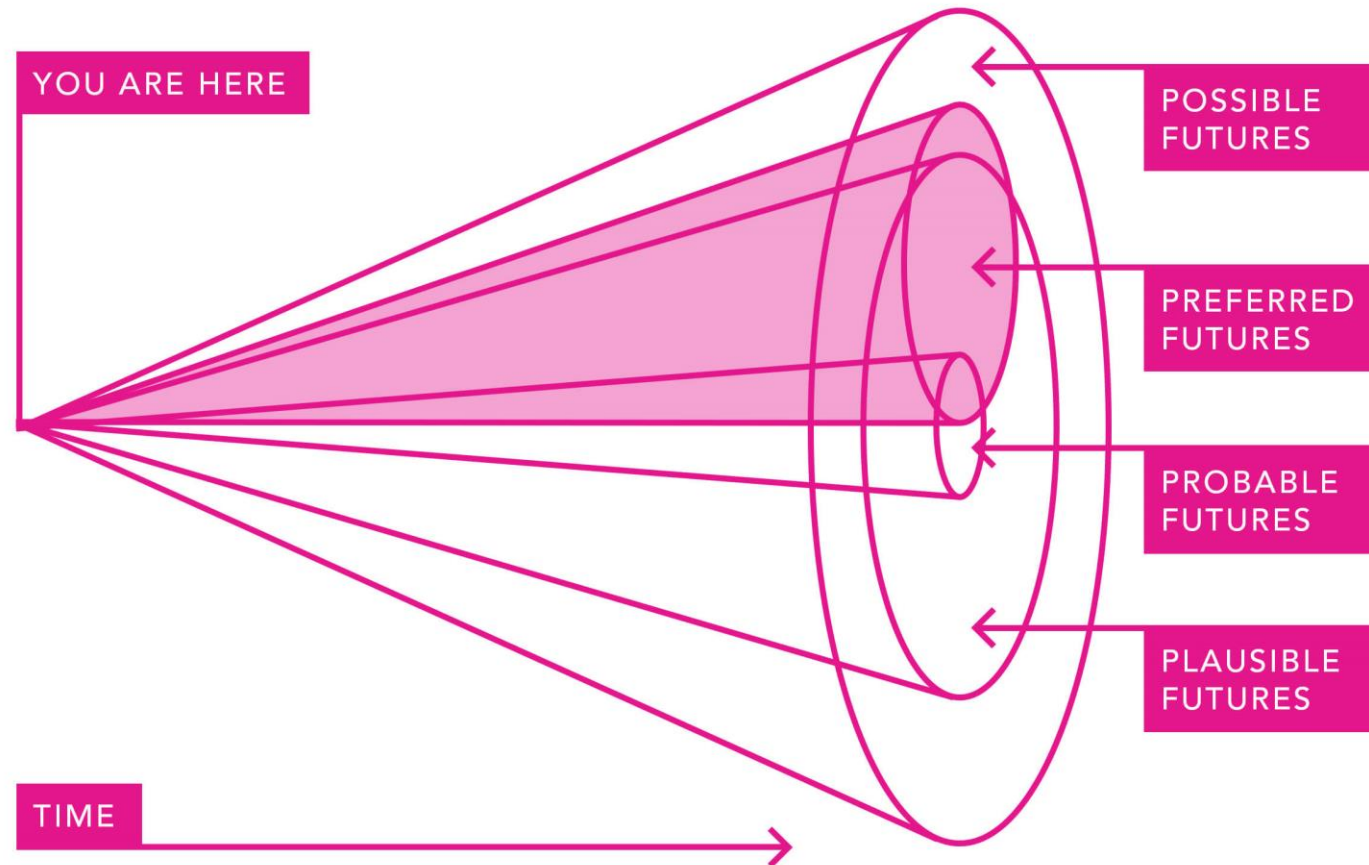
The background is a color calibration chart, likely a Munsell Color Services Lab chart, featuring a grid of color patches. The patches are arranged in rows and columns, with colors ranging from greens and yellows on the left to blues and purples on the right. Each patch is labeled with a small icon and text, including color names and numerical values. A central white text box is overlaid on the chart, containing a quote in Dutch. The text is in a bold, black, sans-serif font.

‘Om geïnformeerde keuzes te kunnen maken voor de toekomst moeten we weten wat onze opties zijn.’



**THE FUTURE
DOES NOT EXCIST**

THE CONE OF POSSIBILITIES



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Source: Joseph Voros, "A Generic Foresight Process Framework," 2003



Probable future:

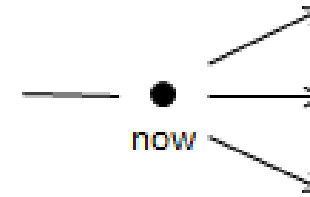
future related to the past and the current



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Plausible future:

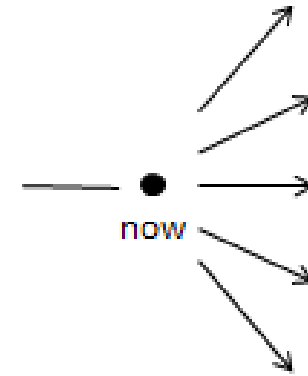
future related to the new developments



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Possible future:

future determent by new combinations & ideas



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Preferable future:

future we would like to live in

If there are different futures possible,
isn't it possible that we can
create our own!?



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Column

18 november 2014 • Leestijd 3 minuten • *Herinner mij later*

Oproep aan alle leraren: stop met luisteren naar trendwatchers

Rutger **BREGMAN**

Correspondent Vooruitgang

Centrale vraag: welke kennis en vaardigheden heeft een leerling die nu naar school gaat straks nodig, in 2032, als hij voor het eerst solliciteert?

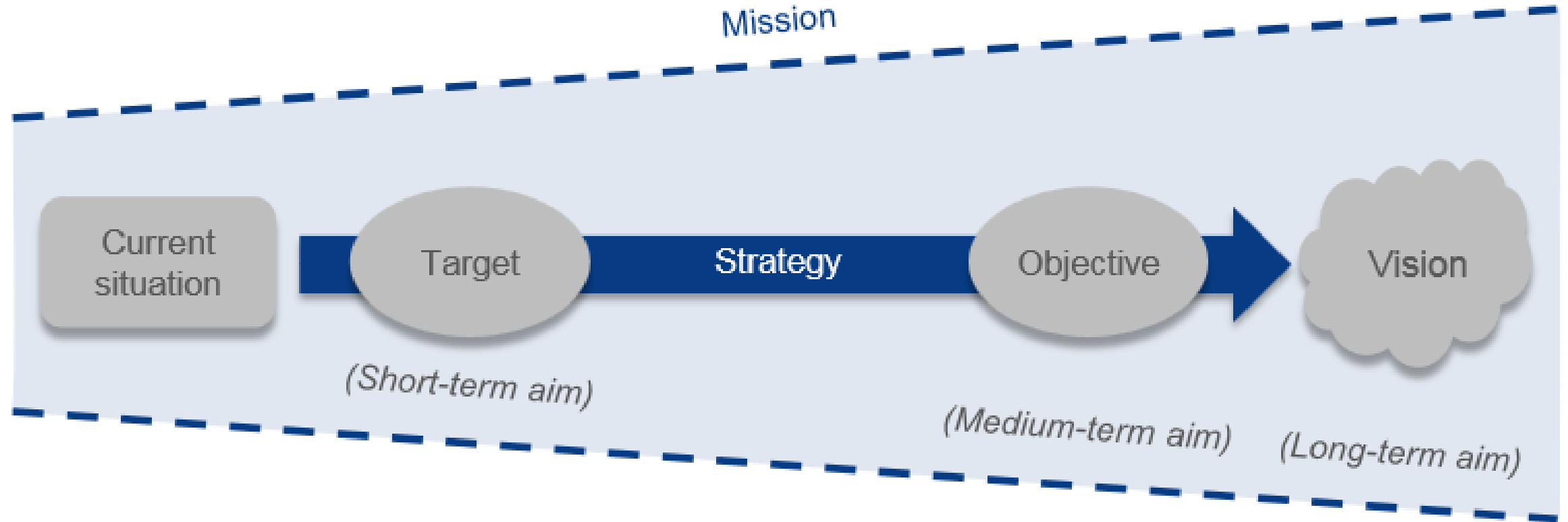
Het is precies de verkeerde vraag.

Eigenlijk zou de staatssecretaris een heel andere vraag moeten stellen: welke kennis en vaardigheden willen we dat onze kinderen hebben in 2032?



**HOE ZETTEN
WE DIE STIP
OP DE HORIZON?**

Mission



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The agility and flexibility to face the urgent short term challenges.



Current situation



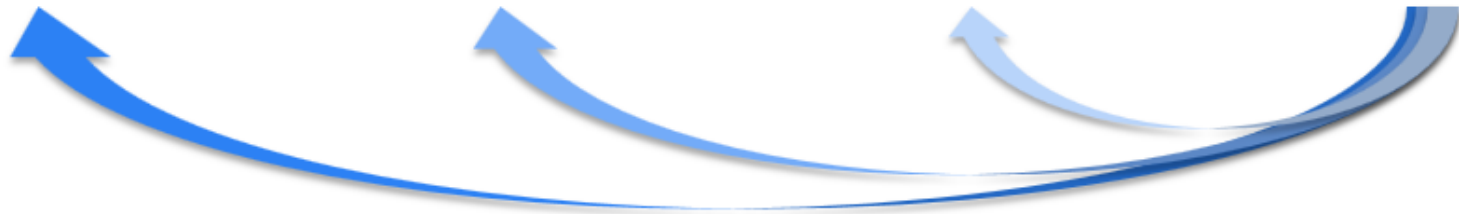
Target



Objective



Vision



The focus on the important long term challenges, even when there seems no urgent need.





BUILDERS VS SHAPERS?

Building the future

Shaping the future

Key advantages

- Managing the short term
- Urgent issues first
- Maintaining the heritage
- Feedback thinking

- Focus on the long term
- Important issues first
- Innovative
- Feedforward thinking

Key disadvantages

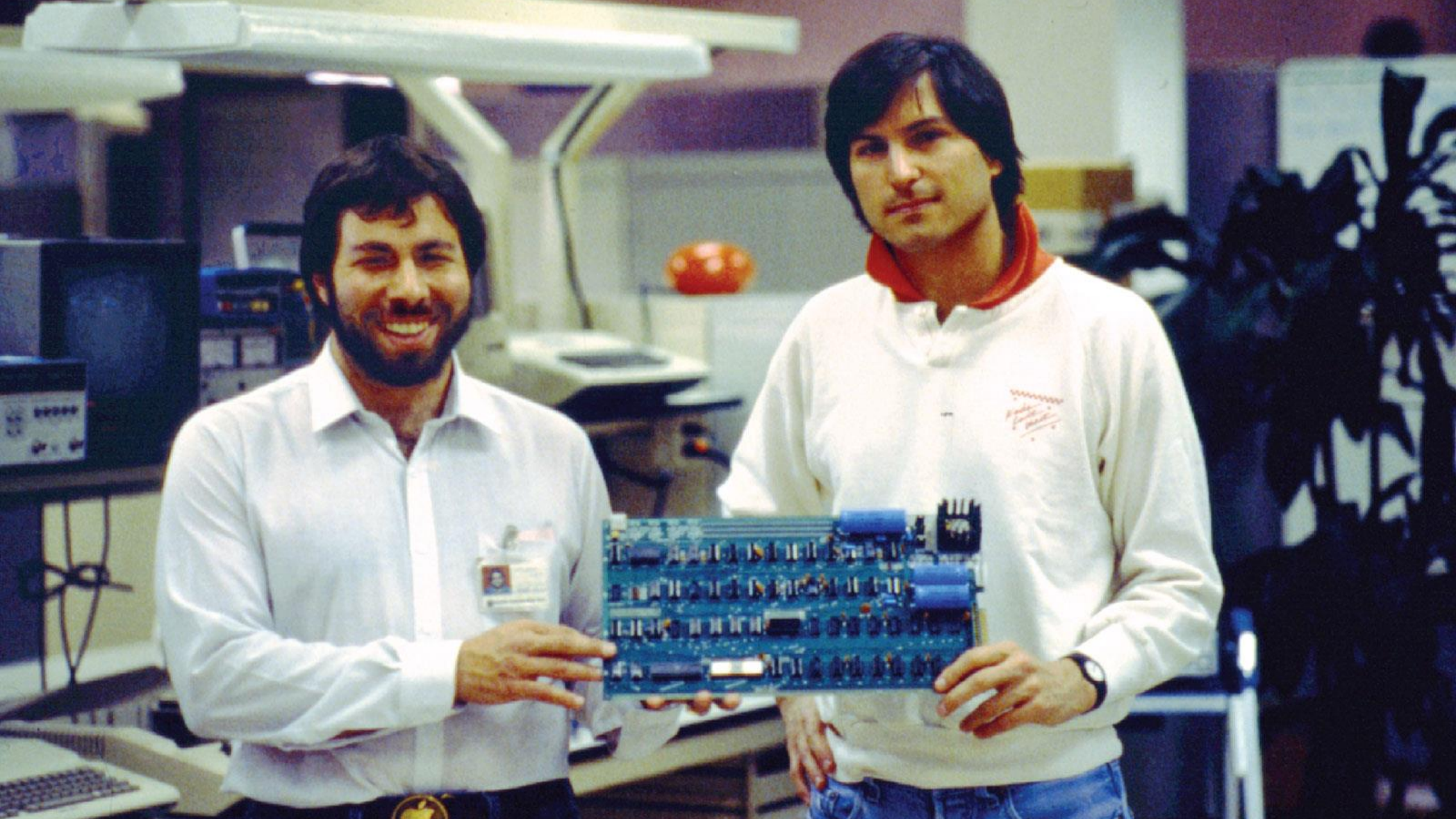
- Lack of long term focus
- Important issues neglected
- Standstill
- Thinking backward

- Not managing the short term
- Urgent issues neglected
- Loosing heritage
- Dreaming



An aerial, high-angle photograph of a city intersection. The street is marked with white diagonal stripes on a dark asphalt surface. Several people are walking across the intersection, their shadows cast long and dark on the pavement. In the center of the image, there is a large, solid black rectangular box containing white text. The text is in a bold, sans-serif font and is arranged in four lines. The overall scene is captured in a cinematic, slightly desaturated style with strong contrasts between light and shadow.

**HOE ZIT HET
MET DE SAMENSTELLING
VAN JULLIE TEAMS?**





1: Investeer in een toekomstbewuste organisatiecultuur

2: Stel een gebalanceerd team samen

3: Geef het team mandaat

4: Kies de juiste methodiek(en)

5: Betrek de gehele organisatie

6: Zorg voor opvolging

**“ We did not come to fear the future.
We came here to shape it.**

**우리는 미래를 두려워하기 위해 온 것이 아닙니다.
미래를 만들어 가기 위해 여기에 온 것입니다.**

Barack Obama
44th US President

**“ChatGPT breekt het
onderwijssysteem niet,
maar laat zien waar de
barsten zitten”**

Rudy van Belkom





DANK!

vanbelkom@stt.nl

www.stt.nl



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