

# Think:Act

Leading thoughts, shaping vision

Think:Act #44 02 | 2025 THE 20<sup>TH</sup> ANNIVERSARY ISSUE PRICE \$ 19.95

*Thinking*  
in decades

THE 20<sup>TH</sup> ANNIVERSARY  
ISSUE



## ChatGOD

We talk to Paolo Benanti,  
the Pope's AI guru

## ON target

How a new sportswear  
brand is winning the race

Roland  
Berger

Thinking is an immediate act. It can also have far-reaching consequences. When *Think:Act* was launched 20 years ago, its vision embraced both notions. It set its sights on the *here*, the *now*. And the *future*.

2004 - 2024

2025 - 2044



July	August	September	October	November	December	2024	2025	January	February	March	April	May	June
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THERE IS AN INHERENT TENSION in being focused on both the now and the future, as every business leader will acknowledge. But it's something that must be done to thrive in the long run. The question that remains is how.

Although only months separate each issue, *Think:Act* has always embraced "decades" in its contents and ambition. It poses questions that take the long view: What does a company need to thrive in the future? What strategy and planning is required to be truly robust and resilient? What's a good lens to view growth with? What changes should you make *now* to carry you *forward* – and how must you think and act to do good business every day?

*Think:Act* launched in 2004. This anniversary issue celebrates 20 years of bringing you the best of business thinking. And 20 years of thinking in decades. To mark this date, our team has carefully

combed through every back issue – 43 in all. What we found shouldn't have surprised us: Each volume held articles that outlined the fundamentals of good business practice and the voices of celebrated experts and great thinkers to help guide you – our discerning readers – into the years ahead.

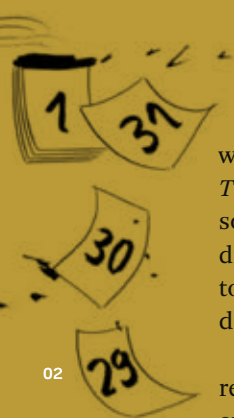
We also noticed common themes and emerging (and reemerging) concerns. How to tackle complexity. What use is purpose? Why sustainability matters. Keeping ahead of the technology curve – from leveraging SMS marketing (state of the art in 2004!) to GenAI today – and making sure you have the strategic vision and the right ideas to survive and thrive.

**FIVE KEY THEMES SERVE AS A FRAME** of our anniversary edition through which we view the important issues of today and tomorrow: complexity, purpose, sustainability, strategy and technology. Together, they give us the broad landscape of our whole society and how business can help it flourish, because business does not exist in isolation. As global realities change and the landscape shifts, it's becoming abundantly clear that "winner takes it all" attitudes benefit no one. Everyone – individuals, communities, organizations and society – benefits if we learn to cooperate and respect each other. In this issue, we try to cover all those bases.

And we have taken a few key pieces of writing from our archives too, to inspire the articles in this issue and to help you think in decades as well.

As we have moved through the past two decades, *Think:Act* might have changed in style and form, but it has never ever wavered in its quality and substance or guiding principles. And it hasn't been a slave to any fashionable news cycles. We have simply been here contextualizing events, identifying change and keeping our eye on the horizon of time for you.

So, as we hit 20 years, we want to take both a backward glance to 2004 and a forward look to 2044. We've created a special calendar of events – including our own awards and milestones as



**Timeline of events**  
 To get you thinking in decades, we created a calendar to run throughout this issue. On the left-hand side of each spread, the dateline looks back over 20 years of key events (including the awards we've won) since we launched in 2004. On the right, the dates range two decades ahead, to 2044, suggesting some moments that could shape our lives in the years to come.

well as historical world events – that take you from *Think:Act's* first vision and then look beyond, with some considered reference to the ideas that have driven us to where we are now ... and where we want to be. It is our invitation to you to interact with the decades past and the decades ahead.

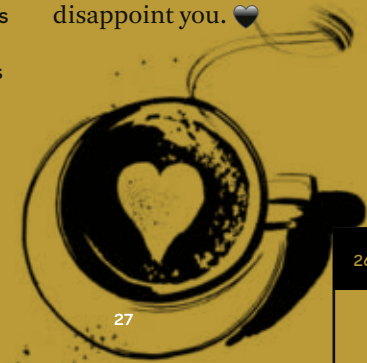
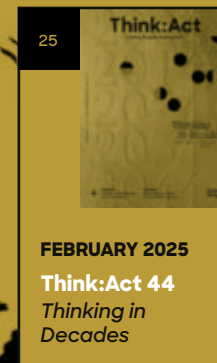
As pandemics, geopolitics and climate change reshape the contours of our world as we know it, increasing complexity for us all, thinking in decades matters – and acting with knowledge is your secret weapon. Stick with us and we can look forward to thinking back to now, when we hit 40 in 2044.

And to those of our readers who have read *Think:Act* through the years and inspired us and encouraged us to do better, here's a big heartfelt "thank you." Thanks for being with us as we chased everyone from CEOs, thought leaders and Nobel Prize winners to artists, Michelin star chefs, orchestra conductors and circus troupes to bring *Think:Act* the unique flavor it is now known for. Thank you for indulging our creative instincts, and we hope you will indulge us even more in the coming years.

And to those readers who haven't discovered us yet, we hope you find us, as some readers serendipitously did – like the CEO who discovered *Think:Act* in his airline seat pocket and immediately reached out to us. Or the woman who discovered us in a café in Japan and said she felt like she "found her home" in a magazine.

Find us. Read us. And stay with us. We won't disappoint you. ❤️

Sincerely,  
 Team *Think:Act*



January	February	March	April	May	June	2024	2025	July	August	September	October	November	December
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# Think:Act 44

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05	<b>Complexity</b>		<b>EUROPEAN PUBLISHING AWARDS</b>	04		W	W						
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						S	S	<b>PAGE 08</b>		<b>PAGE 12</b>		<b>PAGE 18</b>	
						S	S	<b>The future calls for constant experimentation</b>		<b>The new oil</b>		<b>A global map of protectionism</b>	
						M	M	Margaret Heffernan on how looking ahead depends on seeing exactly where you are.		The race is on to secure market access to the raw materials required for the new energy transition.		A country-by-country look at openness to foreign investment.	
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						S	S	<b>PAGE 22</b>		<b>PAGE 26</b>			
						S	S	<b>All hail the next-economy purpose warriors</b>		<b>To be or not to B Corp</b>			
						M	M	Will Hutton on the power of purpose and the commitment required to make it work.		In a shifting landscape of corporate responsibility, where is the line between a mission and a marketing strategy?			
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						S	S	<b>PAGE 34</b>		<b>PAGE 38</b>		<b>PAGE 46</b>	
						S	S	<b>Managing the storm ahead</b>		<b>Liquid assets</b>		<b>Materials that matter</b>	
						M	M	Jeremy Rifkin argues for the need to realign our relationship with water and explore new, sustainable business opportunities.		The Colorado River offers a case study for how climate change is making water security all the more challenging for us all.		A look at how our material use is changing as the world shifts from a biomass-based metabolism to a mineral-based one.	
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						S	S	<b>PAGE 50</b>		<b>PAGE 56</b>		<b>PAGE 62</b>	
						S	S	<b>Filling the giant's shoes</b>		<b>Leading with love</b>		<b>The bot's best friend</b>	
						M	M	Caspar Coppetti explains how On, the new sports brand he co- founded, took on the sneaker kings.		In our era of polycrisis, the path through the challenges ahead will be paved with collaborative effort.		As more and more work becomes automated, it may be time to change your human talent strategy.	
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						S	S	<b>PAGE 68</b>		<b>PAGE 74</b>		<b>PAGE 80</b>	
						S	S	<b>The Pope's AI guru</b>		<b>Rewiring the neural networks</b>		<b>A day in data</b>	
						M	M	Vatican technology advisor Paolo Benanti weighs in on what it means to be human in the 21 <sup>st</sup> century.		The way we use smartphones may be changing how our minds work.		Take a look to see what your daily digital footprint is telling companies about you.	
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						S	S	<b>Think:Act 39 European Design Awards Bronze winner</b>					
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July August September October November December 2023 2024 January February March April May June



01  
**Think:Act 37**  
Best of Content Marketing  
Silver Medal winner



02  
**Think:Act 37**  
Fox Awards  
2x Gold Medal winner

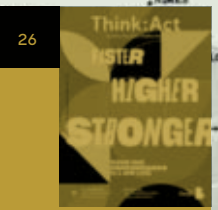
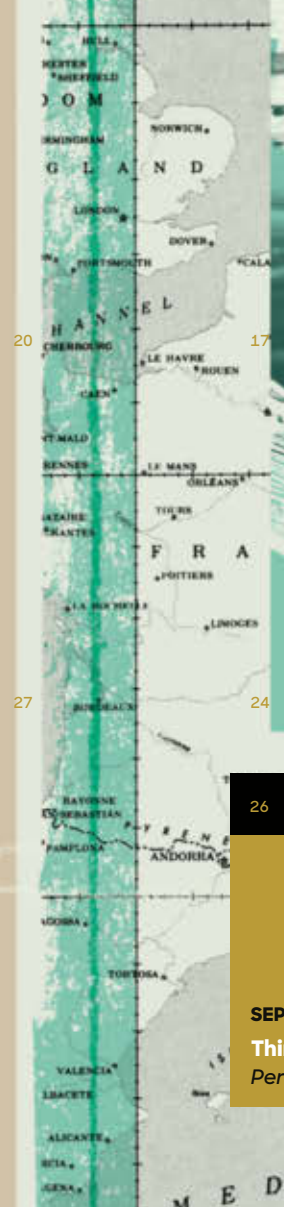


01  
**Think:Act 38/39**  
International Creative Media Awards  
Gold, Silver and Bronze winner

# Complexity

2004-2024

2004-2024



SEPTEMBER 2023  
**Think:Act 40**  
Performance

25

10

3

4

Smart Can  
a City Can

W

Collages by **MIKE McQUADE**

PHOTOS: PHOTODISC, SYLVESTER ADAMS, STEFAN WARWAS & ARTISTGNDPHOTOGRAPHY (GETTY IMAGES)

January

February

March

April

May

June

2023

2026

July

August

September

October

November

December

**MARGARET HEFFERNAN HAS SPENT DECADES TEACHING ORGANIZATIONS HOW TO LOOK AHEAD. THE KEY TODAY, SHE SAYS, IS ACKNOWLEDGING THE REALITY OF WHERE WE ARE.**

# The future calls for constant experimentation

**B**RITISH PHILOSOPHER Bertrand Russell was fond of a story about chickens. Every day the sun rose; as it did the chicken would awake, go outside, crow and be fed. Because the same pattern repeated daily, there was no reason for the chicken ever to expect anything different. And yet one day, the sun rose, the chicken went outside to crow and the farmer wrang its neck. We, Russell implied, are like the chicken, always assuming that what has been, will be. But, he asked, have we any real reason for believing in what he called the uniformity of nature? The best we can ever hope, he argued, are probabilities, not certainty.

It's a tough lesson. Yet if we thought about it, we'd recognize just how much of our lives, from the banal to the profound, is uncertain: catching a bus, a plane, paying off the mortgage, whether a business can keep growing, how long life on Earth will continue.

The pandemic and wars in Ukraine and Gaza, each rippling with unforeseen consequences, sensitized us to the unpredictability of life but what they haven't done is shown us how to live with them.

Instead, ever since the Industrial Revolution, the three-legged stool of management has purported to provide certainty. Forecast, plan, execute is the process all business leaders use, hoping

for ever greater accuracy at all three stages. The advent of just-in-time planning cut margins wafer thin and efficiency optimized execution. But forecasting hasn't delivered improvements at the same scale. Instead, the window for accurate prediction has shrunk; if you are very meticulous, always framing forecasts with end dates and probabilities and adjusting forecasts in the light of new information gleaned from a broad variety of information sources, the furthest out you are likely to see is, at most, around 400 days. If you are less rigorous, it's closer to 150 days. Even then, the most scrupulous of forecasters acknowledge that surprises remain inevitable and ambiguous: Wars, epidemics, financial crises are certain, but we still don't know where or when they will start or what will set them off. The uncertainty of today's world leaves executives more perplexed than Russell's chicken but with dangerously similar expectations.

Many simply hanker for a return to normal, pinning their hopes on miraculous change: an election, a new CEO, a new technology. Others double down on what they hope are eternal verities:

efficiency, restructuring, cost-cutting, short-termism. Most continue to conceive of organizations as machines, rather than what the word suggests: living organisms. In their search for control, few are grasping the need or demonstrating the capacity for a new mindset.

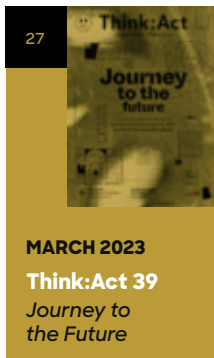
How should we respond to these changing circumstances? The first step is to acknowledge the reality of where we are. If you know you can't know in advance exactly what will happen, build in generous margins. On the day that the Olympics opened in Paris, I couldn't travel from London to Milan by train and arrive punctually without scheduling big gaps; this was inefficient but gave me flexibility to change my route. Adaptability, not control, is the critical dynamic for surviving uncertainty.

**WHERE THE OLD WORLD OPTIMIZED** for efficiency, a complex one demands optionality. That's why many organizations now talk about just-in-case as a counterbalance to the exigencies of just-in-time. When you're certain, planning can be tight – but when you're not, hang loose.

Not knowing what the future holds requires constant experimentation. Move toward pain points, asking: How might this work better? Then try it. All experiments will reveal parts of your system you didn't understand. The Dutch health care system Buurtzorg radically improved home care nursing by automating much of its back office but also liberating its nursing staff from schedules. With no greater instruction than to "do what was best for its patients," the experiment cut the cost of home care nursing by 33% – because



**JANUARY 2023**  
Think:Act 38  
Arts & Business



**MARCH 2023**  
Think:Act 39  
Journey to the Future



**Think:Act 37**  
The Society of Publication Designers  
2x Merit winner

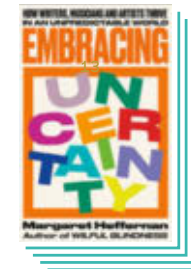
Words by **MARGARET HEFFERNAN**  
Portrait by **JAN ROBERT DÜNNWELLER**



**JULY, 2026**  
**Africa becomes a global manufacturing hub**  
Increased investment from global corporations and governments turns several African nations into key manufacturing players, competing with traditional Asian markets.



**DECEMBER, 2026**  
**The space tourism industry booms**  
Companies like SpaceX and Blue Origin begin to offer more regular commercial spaceflights.



**Embracing Uncertainty**  
by Margaret Heffernan  
192 pages.  
Bristol University Press, 2025.



Watch the interview video with Margaret Heffernan at [rolandberger.com/en/heffernan](https://rolandberger.com/en/heffernan)



2004-2024

2025-2044

July August September October November December 2022 2027 January February March April May June

# “Independent thinking is not the hallmark of the rising generation. This must change fast.”

patients got better in half the time. When I asked the experiment's author, Jos de Blok, what most surprised him, he said he had never imagined so vast an improvement could be so easy. You would never achieve this result tweaking numbers on a spreadsheet.

**SCENARIO PLANNING HAS MADE A WELCOME RETURN** to management thinking. It integrates large amounts of hard and soft data to create three or four plausible scenarios of what the future might look like. The question for each is: If this became real, what would we wish we had been doing now? This generates lots of options, and not everyone is up for the pervasive debate that characterizes scenario planning at its best. Senior executives, in particular, are often poor at it. I've seen them paralyzed, too daunted by the fragility of their realities to imagine anything different. Better contributors are often enthusiastic players of computer games. Why? Because that's what a game is – an opportunity to play with options – and the creative awareness of what could happen is its pleasure.

Andy Haldane, the former chief economist at the Bank of England, has argued that times of uncertainty demand a greater appetite for risk. And in seeking to avoid it, he argues, governments and business leaders amplify it. This too speaks to getting ahead of problems, not getting distracted by their minutiae. Accelerate out of it.

All of this requires imaginative minds that constantly question the status quo and are skeptical of simple binaries. Our greatest problem currently is that those minds are so hard to find. Many executive teams I work with complain that their people lack creative and critical thinking. They aren't wrong to do so. Brought up in education systems that prioritized

giving the right answers over an original thought, and management systems designed for the obedient satisfaction of KPIs and targets, independent thinking is not the hallmark of the rising generation. This must change fast.

**Margaret Heffernan**, Professor at the University of Bath School of Management

Nearly 10 years ago, Singapore's government argued that the rote teaching which had brought 50 years of prosperity to its country would not be adequate to the next 50 years, so they began to introduce more collaborative and creative work into their schools. It's hard to see that kind of foresight in European, British or American education which marginalizes and disparages the arts and humanities, manufacturing instead obedient and fearful graduates, trained not to think for themselves. That they are then subjected to perverse automated recruitment processes designed to screen out anomalies only ensures that the lucky few who get through won't argue – at a time when their employers need their originality most.

It's tempting to embrace AI with the hope that this new technology will solve problems we scarcely understand. But beware miracle cures, and their evangelists. While AI shows promise, the central job of leadership, making decisions, hasn't changed. The requirement of a good decision is that it can be explained and understood well enough that even those who don't fully agree can accept it. Its legitimacy derives from who has been involved in making it and their demonstrable expertise in doing so. All of these qualities are elusive – if not

opaque – in the usage of AI. That does not mean it is necessarily out of bounds; it does mean that its proposals require scrutiny, debate and the creative capacity to imagine their potential impact. Who benefits? Who gets harmed? What are the trade-offs, short term, long term and where? The power to convene is not a new requirement of leadership, but it is more complex and requires a higher tolerance for debate and ambiguity than ever before. Above all else, the future demands leaders who are nonideological and multimodal, who know that in times of uncertainty, to depend on any single process, mindset or personality exacerbates fragility. Because

business is, despite its masquerading jargon, all about life, a biological lens can be helpful. Successful organizations will have to develop the adaptive capacity of the human body, which can thrive in a homeostatic mode (balancing the generation and consumption of energy, just-in-time), an anabolic mode (building up more resources than necessary, just-in-case) and a catabolic mode: having the capacity to respond instantly, spending resources faster than they can be immediately replaced. What this might lack in the comforting control of an engineering mindset, it gains from the adaptive reflex that diversity provides. What's critical is to know what to use when. The pandemic showed that most organizations were okay in a single mode, and occasionally managed a second, but all struggle now to develop and match the mode to the moment. But today we need more options, not fewer, greater imagination, not less. Otherwise, we're left as startled as Russell's chicken, trapped in uniformity, unable to adapt to circumstances we didn't see coming.

What's critical is to know what to use when. The pandemic showed that most organizations were okay in a single mode, and occasionally managed a second, but all struggle now to develop and match the mode to the moment. But today we need more options, not fewer, greater imagination, not less. Otherwise, we're left as startled as Russell's chicken, trapped in uniformity, unable to adapt to circumstances we didn't see coming.

## Takeaways

- THE PREDICTION WINDOW HAS SHRUNK: Even if you plan, forecast and execute meticulously, the furthest out you are likely to see is around 400 days.
- COMPLEXITY DEMANDS OPTIONALITY: When you don't know exactly what's coming, flexibility can help you accelerate away from any problems ahead.
- KNOW WHAT TO USE WHEN: An organization can adapt to operate in several modes, but it needs to pick the right one at the right time.

01  
I C M A  
Think:Act 37  
International Creative Media Awards  
2x Silver winner

19  
Think:Act 36  
Fox Awards  
2x Gold winner  
FOX

26  
SEPTEMBER 2022  
Think:Act 37  
Circular Economy

31  
JANUARY 2027  
Breakthrough in AI-driven health care diagnostics  
The use of AI technologies in health care diagnostics starts to become a standard practice.

03  
JUNE 2027  
Text translation tools fully replace human translators  
The ability to generate perfect translations between languages heralds the end of human translators and jobs for them.



PHOTO: JASMIN MERDAN/GETTY IMAGES

2004-2024

2025-2044

January February March April May June 2022 2027 July August September October November December

# Copper, cobalt, lithium, nickel & graphite the new OIL

2004-2024

2025-2044

01 **Think:Act 33**  
Art Directors Club Germany Merit winner

01 **JUNE 2022**  
**Think:Act 36**  
Geopolitics

25 **Think:Act 36**  
Best of Content Marketing Silver Medal winner

**Think:Act 33**  
iF Design Award Shortlisted

**SEPTEMBER 2027**  
Digital currencies become widespread  
Central Bank Digital Currencies (CBDCs) become mainstream in economies such as the EU, China and India, impacting global banking.

**AN ENERGY TRANSITION IS UNDERWAY THAT COULD AID GLOBAL EMISSIONS GOALS, BUT THE BATTERIES REQUIRED NEED RAW MATERIALS. NOW THE RACE IS ON TO SECURE MARKET ACCESS.**

Words by **TOM WILSON**  
Photography by **ZINYANGE AUNTONY**

EARLY IN 2024, US officials scrambled to speak with the head of the Democratic Republic of Congo's state-owned mining company Gécamines. The owner of two copper and cobalt projects in the south of the country had just announced a deal to sell the Mutoshi and Etoile mines to Chinese arms manufacturer Norinco and US officials wanted the deal to be stopped. Washington does not normally deal directly with Gécamines, preferring instead to work through Congo's foreign ministry, but the matter was urgent and the officials had been cultivating a relationship with the state company.

Shortly afterward Gécamines announced that its board had vetoed the deal, adding that it would need to approve any change of control. Gécamines has a history of blocking the sale of mining assets in Congo and the state miner may have acted anyway. There is also no certainty that the US will be successful. The seller, privately-held Chemaf, has said it already has the approval of Congo's minister of mines. However, the US intervention was the latest salvo in an increasingly fierce competition between the West and China for control of the minerals needed for clean energy infrastructure.

WESTERN FOREIGN POLICY for the past hundred years has been influenced by the ability to access oil to fuel cars, planes and power stations. The transition to an energy system run on renewable electricity means access to metals such as copper, cobalt, lithium, nickel and graphite is more likely to drive policy for the next hundred. Now the key challenge for Western governments is that deindustrialization at home and a lack of policy support for the mining industry abroad means that other countries, like

China, have come to dominate many parts of the metals mining and processing supply chain.

It is estimated that China processes 40% of copper, 58% of lithium, 65% of cobalt and 87% of rare earth elements. Chinese companies have also gradually increased their control over foreign mining assets and minerals, particularly in Africa, Asia →



and Latin America. "Minerals have been at the heart of China's foreign policy and their domestic industrial strategy for 50 years," says Gracelin Baskaran, director of the Critical Minerals Security Program at the Center for Strategy and International Studies in Washington. "It is unlikely that we are going to be able to ever decouple from China in its entirety but what we do want is to reduce their involvement in the supply chain to protect ourselves from disruptions."

02

Think:Act

JULY 2021  
Think:Act 34  
The Unknown

Western policymakers have been attuned to the implications of China's control of key mineral supply chains since as early as 2010, when Beijing halted exports of rare earths to Japan over a fishing dispute. Little action was taken, however, until 2017 when then US President Donald Trump issued an executive order to reduce the country's susceptibility to critical mineral supply disruptions. Australia, Brazil, the EU, India, Japan, South Africa and the United Kingdom have all since introduced or updated similar strategies.

THE EU HAS IDENTIFIED 34 MATERIALS through its 2023 Critical Raw Materials Act which are deemed important to the European economy and face a high risk of supply disruption. They include 17 materials designated as particularly "strategic" due to anticipated supply problems as demand rises, including copper, nickel, graphite, lithium and titanium. "Securing supplies is only a first step. The processing of these metals is just as critical," European Commission President Ursula von der Leyen said in 2022 when she announced the measures. The act calls for 10% of the EU's strategic raw materials demand to be mined within the bloc by 2030, for 15% to be met through European recycling and for at least 40% to be locally processed.

The result has been that after years of being largely ignored by governments, mining executives are suddenly being courted by diplomats and national security officials. "Governments are very active, as are the large players in this industry," says Shaun Verner, chief executive of Syrah Resources, which is developing, with US government support, a graphite mine in Mozambique and a processing facility in Louisiana. "It's a very high-profile time for the dominant materials in this space." The US

senior US official involved in those discussions at the time.

In contrast, in the past two years there has been an active effort by Washington to encourage Western companies to return to Congo in the hope that investment will ultimately allow more critical minerals to flow to US-friendly jurisdictions. Central to that effort is a US- and EU-backed initiative to develop a 1,300-km rail corridor from Congo's border with Angola and Zambia to the Angolan port of Lobito on the Atlantic coast to facilitate the export of critical minerals westward. In 2024, the US Development Finance Corporation approved a \$250 million loan to help support the project, the largest ever US government rail investment in Africa. Spearheaded by President Joe Biden's senior advisor for energy and investment, Amos Hochstein, the Lobito corridor has been pitched as the first example of a US alternative to China's Belt and Road Initiative, through which Beijing has funded billions of dollars of infrastructure across Africa, Asia and Latin America.

OTHER US-LED EFFORTS TO IMPROVE Western access to Congolese minerals have been more controversial and include a proposal to lift sanctions against a billionaire Israeli investor accused of corrupt dealing in the Congo. Dan Gertler was hit with sanctions by the US Treasury in 2017 but continues to hold significant assets in Congo and collect lucrative royalty streams from at least three mines in the country. US officials, led by Hochstein, argue that his continued presence deters investment by more credible operators and have proposed that he sell his remaining assets back to the Congolese government and end all remaining ties with the country. The proposal has been widely criticized by civil society groups in Congo, Europe and the US and by members of US Congress, who warned in May 2024 that any deal that further enriched the billionaire would undermine the credibility of the US sanctions regime. Gertler has always denied any wrongdoing.

That the US is willing to potentially damage confidence in its own sanctions policy to facilitate new investment into Congo is a sign of how important improving Western access to critical minerals has become. Last year Hochstein tried to facilitate a deal for Swiss trading house Mercuria to acquire one of the mines linked to Gertler once the sanctions are lifted. Mercuria was identified as a potential buyer for the Metalkol mine controlled

2004-2024

2025-2044



07

OCTOBER 2021  
Think:Act 35  
Health

21

Think:Act 33  
Fox Awards  
2x Gold Medal  
winner

16

ICMA

Think:Act 33  
International Creative Media Awards  
Gold & Silver winner

# “Minerals diplomacy is not bilateral. It requires cooperation.”

Gracelin Baskaran,  
Director of the Critical Minerals Security Program

2028

JANUARY 2028  
First regional electric flights  
Electric aircraft start commercial operations on short regional routes in South America and Southeast Asia.

attempt in Congo to block the sale of Chemaf's Mutushi and Etoile mines to Chinese arms manufacturer Norinco is one of the clearest recent examples of this policy shift.

FOREIGN POWERS HAVE LONG SOUGHT access to Congo's vast natural resources. Belgium's King Leopold II ran Congo as a private fiefdom between 1885 and 1908, extracting ivory, rubber and minerals under a barbaric regime. Later, the US and Russia competed for control of the newly independent state and its vast copper mines. Congo is now the world's second-biggest copper producer, after Chile, and the largest source of cobalt, key to electric vehicle batteries. Since the year 2000, however, and as Congo emerged from a second civil war within five years, Western governments and many Western companies pulled back from the country's mining sector, having struggled to manage corruption, policy and security risks.

18

FEBRUARY 2028  
India overtakes Germany and Japan as third-largest economy  
India continues its rapid economic growth and moves into the top three economies globally.

At the same time, some Chinese state-backed companies, hungry for natural resources, started to step in. In 2016, the largest US investor in Congo, Freeport-McMoRan, made an announcement that it would exit the country and eventually sold its majority stake in Congo's biggest copper-cobalt mine, Tenke Fungurume, to China's CMO Group Ltd. Although US officials were tracking the process, they made no efforts to prevent the sale. "We were just not doing that kind of high-level commercial advocacy and diplomacy," says a former

HITTING PAY DIRT  
The minerals market depends not only on locating a source, but also on the often dangerous labor of workers like these at the Mufulira mine in Zambia.

PHOTO: ABHISHEK CHINNAPPA/GETTY IMAGES



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by Eurasian Resources Group but the parties failed to reach an agreement, according to people with knowledge of the discussions.

Baskaran describes recent Western initiatives in Congo as examples of what she calls "minerals diplomacy." Unlike China, the US and other Western countries do not have state-owned mining or infrastructure companies to send out to secure resources. The minerals needed for clean energy are also more varied and widely dispersed than, for example, oil. Improving Western access to such mineral flows therefore requires cooperation with a range of countries, actors and companies, she says. "Minerals diplomacy is not bilateral. It requires cooperation between allies to advance all our needs." Other examples include a 2023 trilateral agreement between the US, Mongolia and the Republic of Korea to collaborate on mining and energy security projects. India and Australia signed a similar partnership in 2022 to enhance access to Australian critical minerals for Indian manufacturers.

At the same time, producers of critical minerals want to ensure they profit sufficiently from rising demand. Since April 2022, Indonesia, which mines about 40% of the world's nickel, has required the ore to be refined locally before it can be exported. In Chile, the country's left-wing president Gabriel Boric has declared that all lithium projects will become public-private partnerships. Chile is the world's second-largest lithium miner, accounting for about 30% of global output.

**ONE PARTICULAR WEAK SPOT** for Western supply chains is graphite. While petrol and diesel cars contain an average of 34 kilograms of critical minerals, electric vehicles require about 206 kilograms, of which about nine is lithium, 40 is nickel and 66 is graphite, according to the IEA. "That's a lot of graphite we've never thought about," says Baskaran. Powdered graphite anodes, which are used to store the charge

in lithium-ion batteries, are most commonly made from a blend of natural and synthetic graphite, which is produced from oil. China produces 65% of mined graphite and 97% of global anode output.

In October 2023, China imposed export controls on natural graphite in what was widely viewed as a response to Western trade barriers on Chinese products. The US responded in June 2024, announcing it would reinstate 25% tariffs on natural and synthetic graphite anodes from China. Part of the solution may be Verner's Syrah Resources, which is processing natural graphite into anode materials at its Vidalia facility in Louisiana with the help of a \$150 million loan from the US DFC, approved in September 2023. "There is no doubt that the energy transition is driving high-level strategic thinking and high-level policy thinking around what the next 10, 20, 30, 40 years look like in the supply of these materials," says

**A REGION RESHAPED**  
Lines of trucks and pedestrian travelers are patrolled daily at the border crossing between the Democratic Republic of the Congo and Zambia.



01  
**Think:Act 33 European Publishing Awards**  
3x Gold Medal winner

23  
**ICMA**  
**Think:Act 33 International Creative Media Awards**  
Best of Decade (2010-2020) award

29  
**bcm**  
**Think:Act 33 Best of Content Marketing Grand Prix & Gold Medal winner**

JANUARY 2021  
**Think:Act 33 Sustainability**

\$800 billion

The investment in mining required between now and 2040 to contain global warming to 1.5°C.

75% drop

How much the price of lithium fell over 2023, mostly driven by a strong increase in global supply despite robust demand growth.

\$770 billion

The forecasted combined market size of key energy transition minerals by 2040 on the pathway to net-zero emissions.

SOURCE: IEA GLOBAL CRITICAL MINERALS OUTLOOK REPORT 2024

Verner. Syrah's Balama natural graphite mine in Mozambique is just one of about a dozen "significant graphite prospects" in southeastern Africa, spread across Mozambique, Tanzania and Madagascar, that offer a potential alternative to Chinese supply, he says. "Most of the significant high-grade development projects are out there in those three countries."

**GIVEN CHINA'S DECISION TO RESTRICT** natural graphite exports, there is a "real and legitimate concern that at some point in the future the availability or price of those materials may be influenced by policy," Verner warns. "I see the current actions from the US as trying to level the playing field in terms of increasing non-Chinese supply and ensuring that there's a diversification of risk available to OEMs and battery manufacturers."

Such concerns extend beyond graphite. In the past year, China has also chosen to restrict the export of gallium and germanium, both of which are key

materials for the production of fiber-optic products and semiconductors, and introduced new rules for rare earth elements. "The fact that China is willing to withhold resources that we need for very important technologies has been a big red alarm in Washington," says Baskaran.

Beijing's headstart and the nature of global manufacturing mean Western countries will likely never be able to eliminate metals mined or refined in China from their clean energy infrastructure. But Western countries have woken up to the importance of the minerals industry and are finally trying to reduce that dependence through broader strategic engagement with other parts of the world, Baskaran adds. "Minerals diplomacy policy is the bedrock of making a supply chain work," she says. "If the West is to make headway with many of the commodities that we simply do not have domestic quantities of, we need feedstock from somewhere to feed the machine."

**Takeaways**

- WESTERN POLICY IS LAGGING:** While the West focused on access to oil, countries like China now dominate the minerals needed for sustainable energy.
- PRODUCERS WANT TO ENSURE PROFITS:** Indonesia and Chile are among the countries passing legislation to retain more financial benefit from their resources.
- FURTHER READING:** Turn to p.46 for our related infographic on the materials that matter and more on this subject with startling facts and figures.

2004-2024

2025-2044

24 28 29 26 24 31

# The world map of

# protectionism



## EASE OF ENTRY

The degree of openness to acquisitions and capital investments by economy  
Range 0-6: 0 = OPEN 6 = NOT OPEN

1 Finland	0.73	31 Cyprus	1.93
2 New Zealand	0.74	32 Uruguay	1.98
3 United States	0.77	33 Slovakia	2.02
4 Luxembourg	0.79	34 Montenegro	2.07
5 Denmark	0.82	35 Thailand	2.11
6 Switzerland	0.94	36 Slovenia	2.12
7 Netherlands	0.95	37 Italy	2.16
8 Germany	0.97	38 Poland	2.19
9 United Kingdom	1.00	39 Romania	2.19
10 Norway	1.02	40 Malaysia	2.21
11 Australia	1.02	41 Greece	2.23
12 Japan	1.03	42 India	2.34
13 Sweden	1.06	43 South Africa	2.36
14 Belgium	1.10	44 Hungary	2.39
15 Estonia	1.17	45 Brazil	2.44
16 Ireland	1.17	46 Croatia	2.47
17 Canada	1.20	47 Bulgaria	2.50
18 Iceland	1.23	48 North Macedonia	2.52
19 Austria	1.24	49 Philippines	2.52
20 South Korea	1.24	50 Turkey	2.58
21 Chile	1.25	51 Saudi Arabia	2.59
22 Singapore	1.28	52 Tanzania	2.60
23 Taiwan	1.36	53 Serbia	2.63
24 France	1.41	54 Mexico	2.63
25 Portugal	1.46	55 Bosnia and Herzegovina	2.79
26 Spain	1.52	56 China	2.97
27 Latvia	1.53	57 Indonesia	2.97
28 Czechia	1.56	58 Argentina	3.08
29 Israel	1.57	59 Vietnam	3.11
30 Lithuania	1.64	60 Ukraine	3.13
		61 Russian Federation	3.49

IN A GLOBALIZED WORLD, cross-border merger and acquisition activities are an important driver for market expansion as well as the expansion of business ideas, increased productivity and knowledge transfer. However, there are still numerous administrative and competitive hurdles to protect domestic companies from being taken over by foreign investors. The protectionism map aims to identify those nations – and groups of nations – where the takeover of domestic companies is not overly protected by protectionist rules and those that are less open to cross-border mergers.

Words by  
**ANDRÉ SCHMIDT**

The world map of protectionism measures the openness of economies to cross-border mergers and acquisitions. It is based on various indicators of market access regulations and freedom of capital movements based on data from the OECD, the World Bank and the Fraser Institute. The following indicators were used to calculate the overall indicator: (1) the proportion of state-owned companies. The higher the proportion of state-owned companies, the more difficult it is for foreign investors to carry out a successful takeover. (2) Freedom of contract and (3) the quality of the rule of law are further

important determinants for cross-border mergers. If a conflict arises, the parties must be able to rely on the ability to enforce their rights in court under fair conditions if necessary. (4) Cross-border mergers are only possible if the free movement of capital is guaranteed. This applies both to the freedom of investment and divestment decisions. (5) Goods market regulation and (6) freedom to compete, on the other hand, are the decisive determinants of how high the market entry barriers are and to what extent the companies encounter fair competitive conditions. These six individual indicators were

**ANDRÉ SCHMIDT** is an adjunct professor for economics at EBS Universität. His research has been focused on European integration, institutional economics and competition policy.

each converted into a numerical scale between 0 (perfectly open) and 1 (perfectly closed) and aggregated unweighted to an index ranging from 0 to 6. The results show that the overall competitive conditions for M&A activities are very good in many economies (values are <1). This applies in particular to the Scandinavian countries, but also to traditionally market-liberal countries such as Germany and the UK and the USA. In comparison, market access conditions are still significantly worse in Italy, Greece and Turkey as well as some Eastern European countries and Latin America.

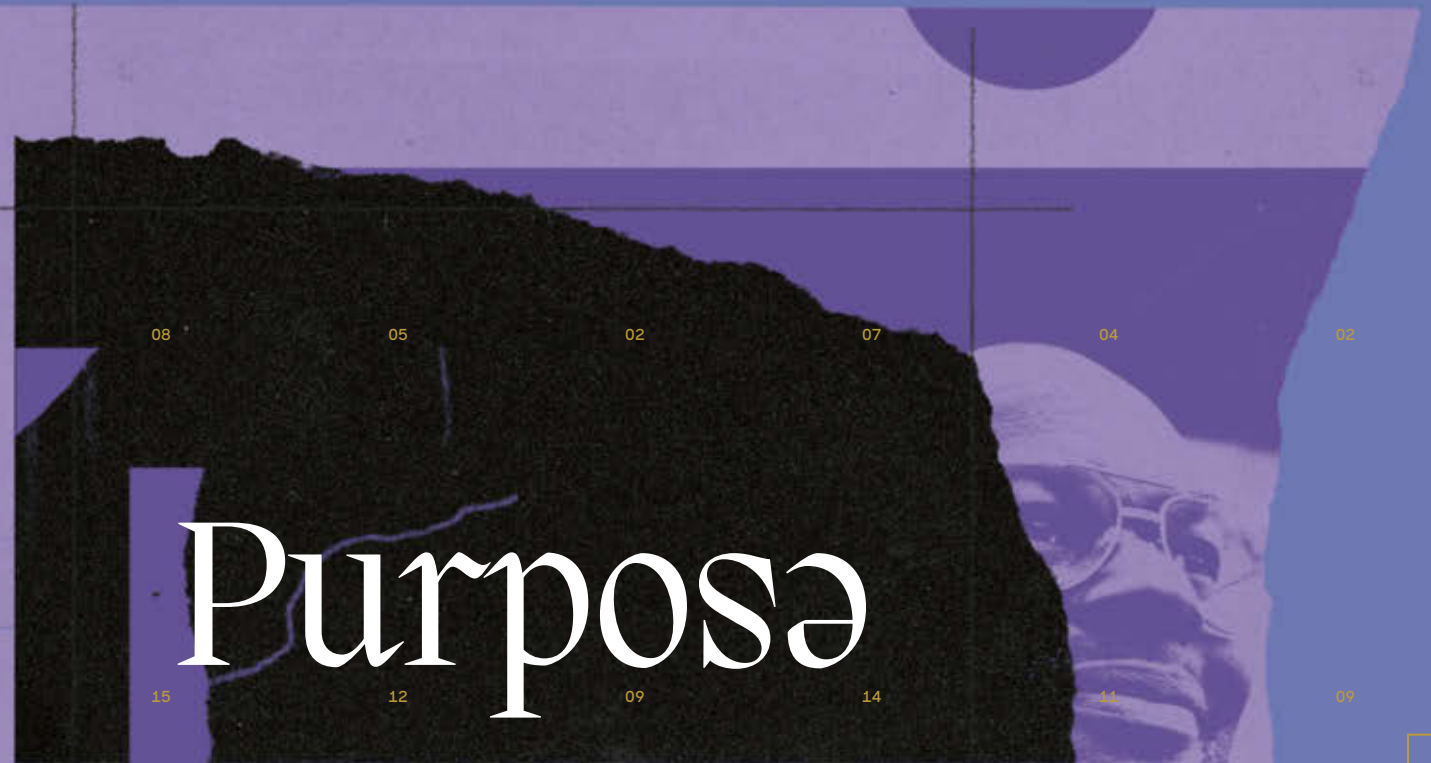
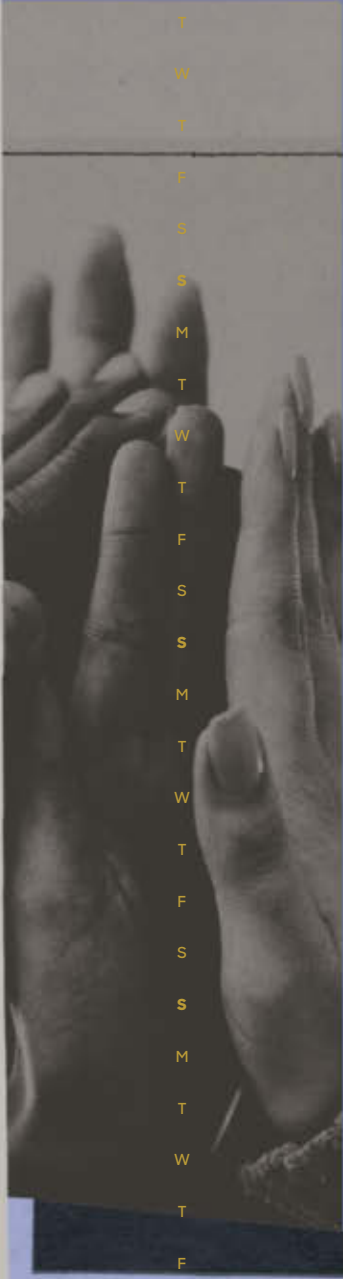
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2004-2024

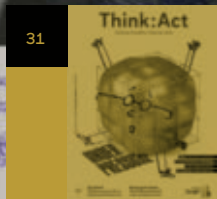
2025-2044



**MARCH 11, 2020**  
**COVID-19 pandemic declared by the WHO**  
The pandemic sweeps the globe, leading to widespread lockdowns, economic disruption and loss of life.



# Purposə



**MARCH 2020**  
**Think:Act 30**  
Growth



**Think:Act 29**  
**Best of Content Marketing**  
Gold Medal winner



Collages by **MIKE McQUADE**

PHOTO: OMAR MARQUES/GETTY IMAGES

PHOTOS: DELMAINE DONSON, MOYO STUDIO, TUUL & BRUNO MORANDI, MASKOT (GETTY IMAGES)

# All hail the next-economy warriors

purpose warriors

July August September October November December 2019  
 01 02 03 04 05 06 07 08 09 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31

2004-2024

**ONE STEP BACK, TWO STEPS FORWARD - PURPOSE REMAINS ON THE MARCH. UNWAVERING CORPORATE COMMITMENT IS NEEDED TO MAKE IT WORK.**

October 2019  
 Think:Act 29  
 Digital Darwinism

Words by **WILL HUTTON**  
 Portrait by **JAN ROBERT DÜNNWELLER**

**IT** SHOULD NOT NEED TO BE SAID, but companies are social organisms populated by human beings. Of course, they are supported by contractual relationships and, to stay alive, must make profits over time. But to conceive of them as solely networks of contracts consecrated to making the highest profit possible as soon as possible – as classical economics, some management texts and business schools do – is to make a first order capital error. The conception does not capture the essence of what constitutes a great company – what drives it forward, keeps it innovative and commands loyal customers, engaged employees and committed shareholders alike.

For better insight, we have to leapfrog that arid worldview and instead borrow from Aristotle. To paraphrase, he argued that what makes a human being happy is not material assets or even relationships, but deploying whatever gifts the gods have given him or her to make the world incrementally better. We need purpose in our lives to confer meaning and, thus driven, we act on the world.

The same is true of the company. If it is to sustain itself, it must offer those who work in it a sense of purpose, while also acknowledging another Aristotelian truth: The man or woman who does not want to share the common life and partake of society, wrote the philosopher, is either a beast or a god. The great company must create a common life and language for its stakeholders for which the precondition is to unite all those who have a stake in it around a great intrinsic purpose.

Think:Act 29  
 "By participating in the common language ... a company has the capacity to transport their culture across the world."  
 Tsedal Neeley  
 Author of *The Language of Global Success*

2025-2044

2030 January February March April May June

Thus, they make sense of their working lives, and give their best to the company. Indeed, society – and the economy – would be stronger if it was insisted that companies can only trade in their midst if they commit to a purpose. This is not rocket science – nor as radical as it first seems.

There have been some recent missteps in the argument for and the delivery of purpose. Witness the retreat of Unilever in Britain, a once-committed advocate of purpose. The incoming CEO Hein Schumacher declared that corporate purpose can be a distraction and vowed to focus on performance. Then there was the row in 2023 at purpose-driven bank NatWest over the withdrawal of politician Nigel Farage's private account. That action led to the resignation of the CEO. But regardless of these incidents, the case for purpose is too strong and too deep-seated not to have ongoing force. Hardheadedly integrated into strategy, a commitment to purpose remains a potent animator of business – as it always has been.

**THE CONCEPT OF THE MODERN COMPANY** was invented in Holland and England in the late 16<sup>th</sup> century. The government would grant a group of shareholders acting companiably together the right to hold a license to trade or undertake a specified activity. The shareholders would specify their purpose and mission – to build a brewery, to trade with India, to build ships – and the state would, if it agreed with the purpose, issue a license for the companiable shareholders, merchants or investors to share risk and build an enterprise. The word company has its roots in the Latin word *com* – meaning together – and *panis* – bread. The act of coming together to bake, eat and share bread was an act of companionship. A company was where investors or merchants expressed their companionship as they shared risk and reward to deliver purposed activity.

For three centuries companies incorporated in Britain, Holland, the United States and the rest of capitalist Europe around a declaration of their purpose for whose pursuit they aimed to earn a profit. Founders could raise additional capital on early stock exchanges or sell their own shares if they wanted cash to spend – but crucially the founders, and as the company grew, their children, owned the majority of voting rights and actively managed the company around the agreed purpose. New shareholders understood the arrangement. They wanted dividends and a higher share price of course, but it would be delivered through executing

**JUNE 2030**  
 The Gibraltar Tunnel opens  
 The World Cup held between Morocco, Portugal and Spain opens with the unveiling of a new underwater tunnel connecting the countries.

**MARCH 2030**  
 A win for biodiversity  
 Europe's abandoned farmland finds new life through rewilding and the continent meets its biodiversity strategy goals to protect 30% of the land.

**THIS TIME NO MISTAKES**  
 HOW TO REMAKE BRITAIN  
 WILL HUTTON  
 Author of *This Time No Mistakes*  
 448 pages.  
 Apollo, 2024.

the purpose. Companies largely functioned as communities with relationships, with workforces mediated through guilds of trained workers and long-term apprenticeship.

The arrival of the factory and urbanization would shatter that conception. Companies were allowed to incorporate without declaring their purpose – a process pioneered in the US and soon followed in Europe – so that even larger amounts of capital could then be raised from external shareholders to build factories and machines. Founders were no longer owners and ownership passed to multiple shareholders: Management and control passed to a new class of professional managers who defined purpose either as profit maximization or their own personal objectives. Urbanization and industrialization created cruel living and working conditions; the working class was compelled to organize trade unions to improve their lot. Conceptions of the company as a social organism committed to a shared purpose were lost.

Capital and labor had become oppositional, although the degree varied from country to country. Germany, Holland and the Nordic countries (and later Japan) did better at preserving the traditions of employees as upholders of crucial skills and crafts. These countries seemed readier to make common cause with companies organized to enable founders or shareholders to own controlling blocks of shares protecting a mission or purpose. Britain and the US were at the other end of the capitalism spectrum – disparate

PHOTOS: MARLA AUFMUTH, JAKUB PORZYCKI, NASA GALLO IMAGES (GETTY IMAGES)

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“A clear purpose is an indispensable component of success in the new economy.”



Will Hutton, Journalist and co-chair of The Purposeful Company

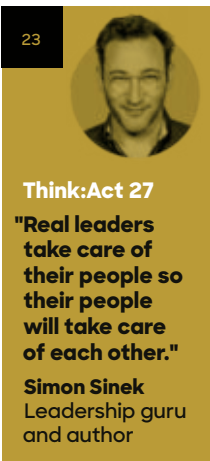
answer, then they look for it in the here and now. They seek purpose in their lives, and they expect to find it in their workplace and how they live: in what they eat, wear and buy. Companies, if they are to succeed both with their workforces and their consumers, need to be purposeful – and that has to express itself in their employment practices and in the goods and services they produce.

It should therefore be no surprise the US's famed big seven tech companies – Amazon, Nvidia, Microsoft, Apple, Meta Platforms, Tesla and Alphabet – have all to a greater or lesser degree as they grew deployed a commitment to purpose. The original intent of their founders was, following Aristotle, to use the gifts the gods had given them to make the world better. They have answered questions challenging their purpose and also, in the main, try to curate, respect and nurture their workforces, although for some not up to the point of recognizing trade unions. A sign of the changing times was that in 2019 181 CEOs signed the US Business Roundtable statement of the corporation's purpose: to benefit all stakeholders.

This commitment is even more true of the wave of startups and scale-ups. Interview the founders of unicorns – small companies whose most recent fundraising exercise has valued the company at more than a billion dollars – and they answer the same way: A clear purpose is an

multiple shareholders in companies whose mission was, above all, short-term profitability. The rise of free-market economics in the 1970s and 1980s gave an additional impetus: The only duty of a company was to maximize shareholder value. Despite these headwinds in both countries, there were individual companies that held out – Unilever, Cadbury, the John Lewis Partnership in Britain for example or Wells Fargo, Abbott Laboratories, Procter & Gamble in the US – managing to preserve the culture of purpose.

**JUMP TO THE 21ST CENTURY.** The knowledge-based "intangible economy" now accounts for more of GDP in every industrialized country than the former industrial "tangible" economy. Competitive advantage lies in the capacity to evolve business models based on the intangibles of data, intelligence and tech – and in marketing all that is wrapped up in the intangible asset of the brand. This can only be done by organizations with smart, committed and engaged workforces. Free-market economics has become discredited by its many failures, so ideological support for profit maximization as the sole corporate purpose has fallen. At the same time the decline of religiosity has left Western populations wanting answers to the question: Why? If faith and the life hereafter are not going to supply an



which went through an 18-month process with all of its staff to develop its recent purpose: to "bring energy to life." The leaders would also acknowledge how demanding it is to introduce and sustain purpose meaningfully into a long-standing company. NatWest, after its reversal, is recommitting to a purpose that's hardwired into its strategy, and even Unilever, despite its CEO's comments, is not discarding its more than century-long culture of wanting to make the best everyday products to improve the lives of everyday folk. But the purpose torch is being more decisively and convincingly carried by those fast-growing tech companies.

For them, it is easier: They began with this intent so it is already embedded in everything from human resources practices to shareholder relationships. It is a quiet and poorly understood revolution. Many asset managers and asset owners, for example, have yet to climb aboard, although here again the trends are clear. Better-performing portfolios and more successful venture capitalists are those who take the proposition seriously, and build it into their investment decisions. Western capitalism is facing challenges and is in the throes of change. The era of purpose is entering a second and more convincing phase of growth.

Takeaways

- PURPOSE IS WHAT DRIVES US: Whether as an individual or as a company, purpose gives us the meaning we need for the sustained drive to succeed.
THE NEW ECONOMY IS INTANGIBLE: Data and tech are wrapped up in the asset of the "brand," which can motivate people to act behind a larger purpose.
TOP PERFORMERS HAVE A PURPOSE: High-tech, next-economy firms are built around purpose and signal a new phase of growth for Western capitalism.

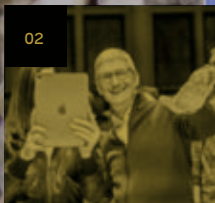
2004-2024

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02 **Think:Act**  
**JULY 2018**  
**Think:Act 25**  
**Purpose**



**AUG. 02, 2018**  
**First \$1 trillion dollar company**  
 Apple's ascent makes stock market history.

02 **Think:Act**  
**NOVEMBER 2018**  
**Think:Act 26**  
**On Being Human**

**NOVEMBER 2018**  
**Think:Act 26**  
**On Being Human**



*To be or not to*  
**BCoP**

**THE LANDSCAPE OF CORPORATE RESPONSIBILITY IS SHIFTING. AS MORE CONSUMERS SEEK OUT PURPOSE-DRIVEN BRANDS, THE QUESTION REMAINS: WHO REALLY SEES IT AS A MISSION, AND WHO'S JUST IN IT FOR THE MARKETING?**

*Words by*  
**FRED SCHULENBURG**

2004-2024

2021 January February March April May June

01 02 03 04 05 06 07 08 09 10 11 12



**JEWELRY IS ANCIENT** and humans have been using it for millennia. It is also one of the more environmentally damaging businesses and one prone to unethical behavior, from the process of extraction to the deployment of chemicals in the various stages of turning raw materials into eye-catching trinkets and adornments. Danielle and Wade Papin were well aware of this when they set up their jewelry business Pyrrha in Vancouver, Canada, 30 years ago. From the very start the couple were committed to producing jewelry – products today range from a green onyx choker costing a few hundred dollars to a wide "multi talisman cuff" for over \$5,000 – in a more sustainable way, starting with using recycled materials. "When we started sustainability wasn't a big thing," says Wade. "But we were trying to do things differently."

In fact, Pyrrha would soon prove to be part of a growing movement of commercial entities, spanning numerous sectors and countries, that are united in their commitment to turning companies into a force for good by fundamentally changing the way they go about their business, from meeting stringent environmental and social sustainability standards to transparency in their processes, from every stage in the supply chain through to the end sale. Welcome to the B Corps.

**THE IDEA OF "BENEFIT CORPORATIONS"** – or B Corps – was hatched by three university friends in the US in 2006. It has since blossomed into a community of some 9,000 companies in over 100 countries, all prepared to put themselves through a rigorous application process in order to secure B Corp certification, which must be renewed every three years. Pyrrha got its certification in 2014. It remains one of only 45 B Corps in the jewelry space.

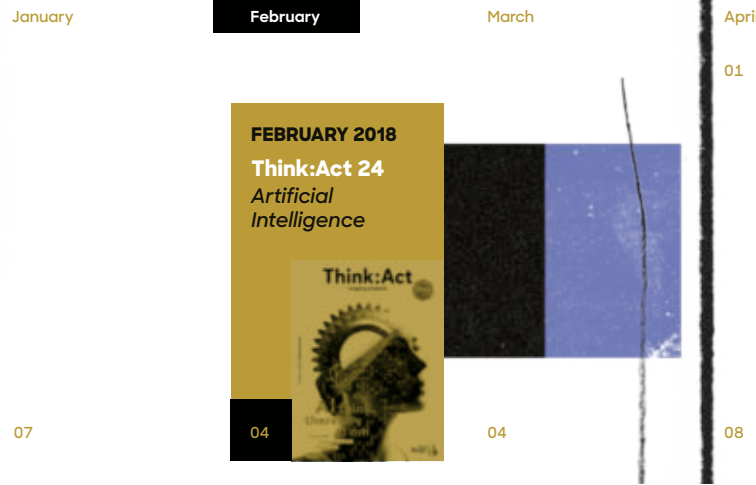
The movement as a whole, meanwhile, has expanded to encompass an increasingly diverse range of companies, from coffee shops and tech startups to beauty firms and financial services. The roster includes businesses like Edinburgh-based book publisher Canongate whose established independent status in a sector dominated by a number of big corporate concerns seemed



**MARCH 05, 2021**  
**Beef sales down 17% over 2021**  
 Plant-based meat is as good as and indistinguishable from real meat and has become both widely available and more affordable.

**FEB. 2021**  
**3D printing leaps ahead**  
 New medical implants can now be made quickly and affordably with pre-embedded electronics.





to chime naturally with the B Corp ethos through to such storied outfits like Rothschild wineries – and even multinationals.

**TO SOME OBSERVERS** this is all evidence that the vision of doing business better is working. Others, however, are questioning whether the goal of driving meaningful change will be undermined or simply diluted. The arrival of the likes of Nestlé-subsi-dary Nespresso, Patagonia, Natura & Co (owner of Avon) and Ben & Jerry's – the ice cream maker with roots in hippie counterculture yet now part of the sprawling Unilever consumer goods conglomerate – has raised concerns that the sector is at risk of being overrun by big multinationals for whom, some claim, the certification was as much a reputation-enhancing vehicle as a genuine driver of meaningful change.

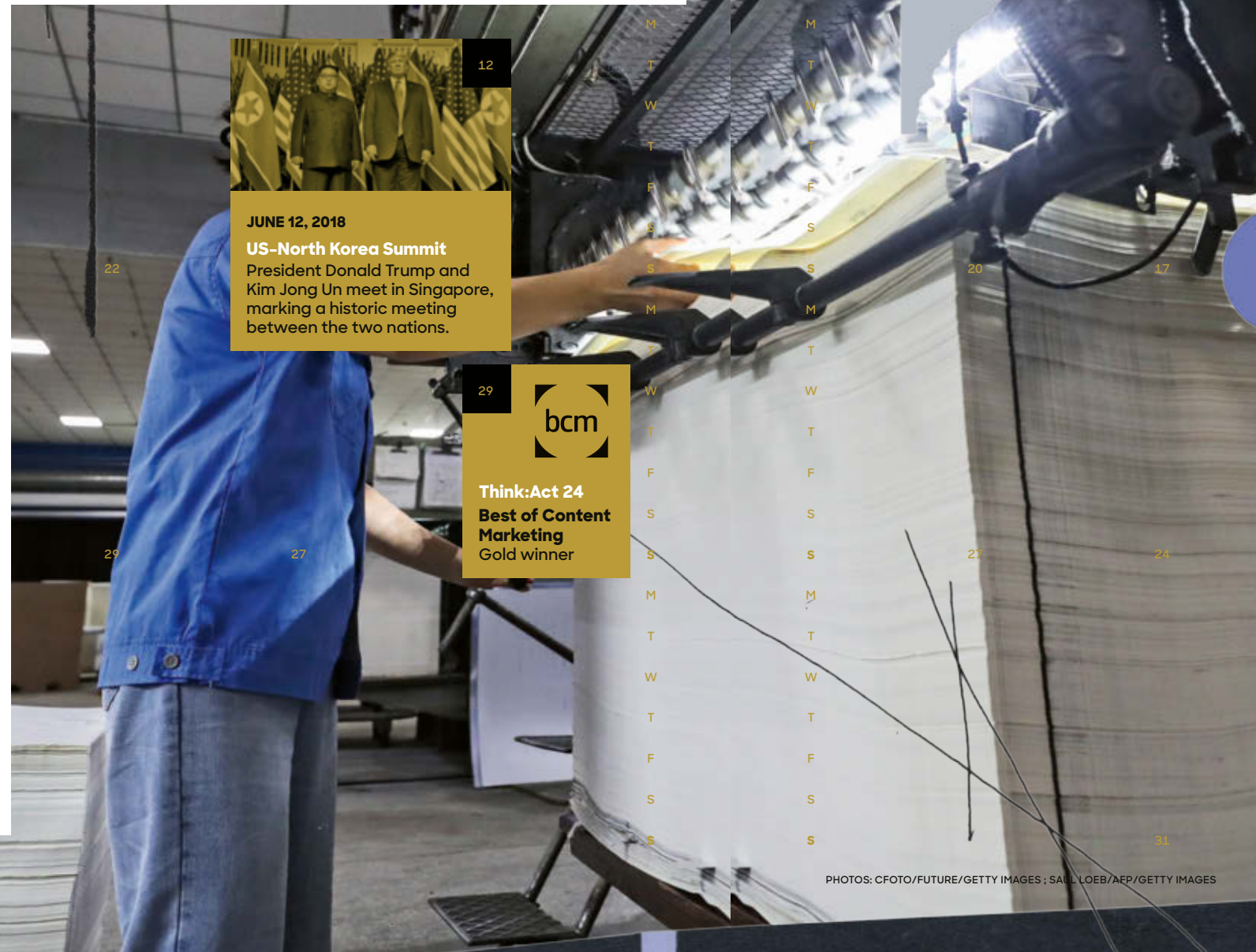
Nespresso's certification, for example, drew fire from within the B Corp community with one member, Glen Lyon Coffee Roasters, a small Scottish company, posting a stinging rebuke on its website. "When we heard that Nespresso was about to be certified as a B Corp our initial reaction was dismay," the company wrote, adding that there was "no escaping the fact that the huge volume of waste that this company is responsible for is bad for the planet." In particular, it singled out Nespresso's signature capsules which it claimed contributed to over 12,000 tons of aluminum waste each year, "equivalent to 60 Statues of liberty."

Meanwhile, some 30 B Corp companies in the US signed an open letter protesting the Nespresso certification, saying that it put the whole standard at risk. In an interview with the trade journal *The Grocer*, Mary Child, Nespresso's UK and Ireland sustainability manager, countered that the company's "precision consumption method uses exactly the right amount of energy, water and coffee to produce each cup." She went on to add that this was "particularly important because the biggest

proportion of our carbon footprint is the supply of green coffee, so aside from saving resources and reducing waste, this approach minimizes our overall carbon footprint."

Over in Vancouver, the Papins say that they have some mixed feelings about the evolution of the B Corp space. In particular, they worry that "micro-sized" businesses like theirs – Pyrrha employs 30 people – are disadvantaged compared with bigger entities who have more resources and some of whom, they fear, may have different motives for acquiring B Corp status. They sense a tension between the desire for scale and the maintenance of rigorous standards. Attempts to engage with B Lab, the nonprofit that undertakes the certification, in order to discuss their concerns have not really yielded meaningful results, says Wade.

Others share the sentiment expressed by the Papins. "There is a danger that companies treat the certification similarly to an ISO standard, maybe



**JUNE 12, 2018**  
**US-North Korea Summit**  
President Donald Trump and Kim Jong Un meet in Singapore, marking a historic meeting between the two nations.



“Third-party certification is going to be a necessity as people ask more questions.”

**Danielle Papin,**  
Co-founder of Pyrrha

tweak a few things but largely carry on as before," Paul Hargreaves, chief executive of Cotswold Fayre, a foods and drinks business, and a B Corp ambassador, wrote recently. "The B Corp movement must mean more than some tweaking around the edges; we need significantly transformative and regenerative businesses making more difference than we are currently doing."

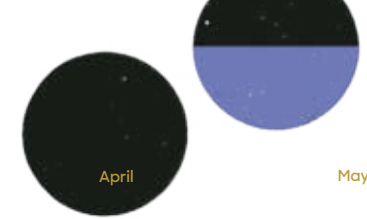
**BOTH INSIDE AND OUTSIDE THE SECTOR,** others point to the fact that small and medium-sized businesses account for some 95% of B Corps and that the involvement of bigger players with their enhanced scale is precisely what can deliver change. "We need the big players too," wrote Jonathan Petrides, founder of London-based allplants, a B Corp, in a letter to the *Financial Times*. "When behemoth multinational corporations see the benefits of shifting towards the B Corp model, the positive global impact that would create would be enormous." The Papins also add that overall they believe that it is a good initiative, something they want to be part of. "The good outweighs the bad," says Danielle. "The companies that are B Corps are better for the planet, for the environment," adds Wade.

Such tensions and debates come at a time when the ESG (environmental, social and governance) space is facing increasing headwinds. There have been more and more questions about the bottom-line impact of ESG policies with some shareholders and investors demanding that boards pay more attention to profits than purpose.

**SPREAD THE WORD**  
Print publishers may enjoy a benign reputation, but issues with sustainability at many levels of the process mean only a handful have applied for, and received, B Corp certification.

2004-2024

2025-2044



July

August

September

October

November

December

2017

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May

June

THINK:ACT 22

Think:Act runs A Day In Data before the coining of the term "Surveillance Capitalism." →See our update for the next decade on p.80



01

02



OCTOBER 2017 Think:Act 23 Complexity

08

15

01



Think:Act 23 Nobel Prize winner Richard Thaler writes for Think:Act on "choice architecture."

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OCTOBER 15, 2017 #MeToo The #MeToo Movement against sexual harassment and assault gains worldwide attention.

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Against an increasingly uncertain geopolitical and economic backdrop – wars, inflation and faltering growth – such views gained traction in what became dubbed the "ESG backlash." (ESG advocates might note that it is precisely the inability to address the problems they are highlighting that is contributing to wider disrupting factors.)

THE QUESTION OF THE COSTS AND BENEFITS of adopting ethical business practices has always been a thorny one. In the case of B Corps the application process can prove arduous and many companies turn to consultants to help guide them through demanding questionnaires and the need in certain cases to fundamentally reconfigure the way a business is governed, structured and run. Once certification has been secured, however, a company's status is guaranteed to be permanent. There have been cases, however, where B Corp status has been revoked, such as with the brewery Brewdog which lost its certification after allegations of bullying and poor workplace culture.

It's not just a case of internal systems: Parts of the process are not necessarily within any one company's control. "Publishing has a heavy supply chain although the sector is working very hard to improve it. Measuring our impact was challenging," says Caroline Gorham, Canongate's production and systems director, who led the three-year application process. Founded 50 years ago, the Edinburgh-based company has since established a solid reputation for itself as one of the UK's most prominent independent publishers with Booker Prize winners and former US presidents among its constantly growing roster of authors.

Book publishing enjoys something of a benign reputation. Yet the big picture is more complicated. While many books now boast declarations of being printed on recycled paper, book production (from paper mills, to inks, to glues and laminates) can

0.8%

The percentage of all certified B Corps that were also publicly traded, according to the most recent available figures at the time of publication.

SOURCE: B LAB GLOBAL 2023 ANNUAL REPORT

still be a messy business. And then there is the process of shipping the physical books, packaging and all, to the retailers and the end reader. One of the main changes that Canongate had to make was to revise its articles of association. The publishers now state that Canongate intends to promote the success of the company for the benefit of its members, employees, customers and suppliers, as well as having a material positive benefit in society and the environment.

Danielle Papin says that at the time Pyrrha made its application it was already doing a lot of things required for certification in terms of their business practices and organization. For example, they paid the living wage, used recycled metals and ran a zero-carbon studio space. The application process made them "formalize, do stuff – and continue to do so as you are held to account." It brought more production in-house and had to



PRECIOUS METALS B Corp certification is open to multi-nationals and smaller businesses, with Nespresso and Vancouver-based jewelry label Pyrrha both having met the requirements.

resort to finding resourceful alternatives – sometimes with unexpected results. One part of the finishing process involves a "tumbler machine," a rotating barrel filled with lots of tiny pieces of steel that burnish the jewelry. Over time the steel gets dirty and is then typically cleaned using highly toxic chemicals – something the Papins wanted to avoid. The solution came via a tipoff: try Coca-Cola. "It worked like a dream!" says Danielle.

Overall, it is easier for companies to move to B Corp status if it is something that they already care about, says Danielle. To start from scratch and comprehensively change a company's culture and processes would be massive.

IS IT WORTH IT? Companies are happy to talk about the benefits B Corp status brings to areas such as internal culture, relations with, and trust among, customers and partners. "We have had a lot of positive feedback from authors, agents and other publishers," reports Canongate.

Getting a sense of the bottom-line impact is, unfortunately, a far less easy feat. Danielle Papin says that there is a lively B Corp trading ecosystem with companies occupying different sectors within the community doing business with each other. The benefits of B Corp can also be found in the form of goodwill as it underpins and articulates the company's position in markets and communities that place a value on sustainability. "B Corp [status] helps us get over the hurdle of why we are charging what we are [as a premium brand]," says Danielle Papin.

And, looking to the future, the Papins believe that regardless of any current questions or concerns about B Corps, "third-party certification is going to be a necessity for any company as people ask more questions – they want to know how things are made, where they are made." Lazy reputational box-ticking simply won't wash.

Takeaways

- CUSTOMERS ARE ASKING QUESTIONS: The addition of some larger multinationals is raising questions about the integrity of the B Corp certification.
BUSINESSES MUST DO MORE THAN "TWEAK": Critics of the certification model want to see more proof of significant transformation and regenerative practices.
THE EFFORT WILL PAY OFF: The reputation boost for smaller companies with the certification can be enjoyed by larger companies too, but must be earned.

2004-2024

2025-2044



numbers

January February March April May June 2017 2032 July August September October November December



2004-2024

2025-2044

# Sustainability

# 理念

20  
 Think:Act  
 MAY 2017  
 Think:Act 22  
 Trust

23  
 bcm  
 Think:Act 21  
 Best of Content  
 Marketing  
 Gold winner

Collages by **MIKE McQUADE**

PHOTOS: STOCKTREK IMAGES, ANAND PUROHIT, BNBB STUDIO, ANNMARIE YOUNG, GETAR TAHATA ALAYA (GETTY IMAGES)

July August September October November December 2016

2033 January February March April May June

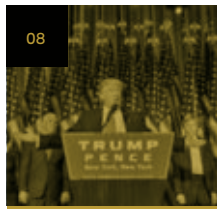
# Managing the storm ahead

2004-2024

03 07 04 02 10 14 11 09 17 21 18 25 24 28 25 23

November December 2016

Words by **JEREMY RIFKIN**  
Portrait by **JAN ROBERT DÜNNWELLER**



**NOV. 08, 2016**  
**US elections**  
Donald Trump is elected President of the United States, shocking the political establishment.



**DECEMBER 2016**  
**Think:Act 21**  
*Vigilant*



**Think:Act 21**  
**"My belief is that you should learn to fail. And fail often. Failure is the biggest driver of success and I encourage everyone at Dyson to do it. Risk is good and I encourage my engineers to make bold decisions."**

**James Dyson**, Inventor and founder of the Dyson Company

**SOCIAL THEORIST JEREMY RIFKIN RETURNS TO THINK:ACT TO ARGUE FOR THE NEED TO REALIGN OUR RELATIONSHIP WITH WATER AND TO EXPLORE NEW, SUSTAINABLE BUSINESS OPPORTUNITIES.**

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2033 January February March April May June



**W**HAT WOULD HAPPEN if we were to awaken one day – all 8 billion of us – only to realize that the world we live in and experience every day, and to which we are deeply attached, suddenly appeared eerily alien, as if we'd been teleported to some other distant planet where all the identifiable markers by which we've come to understand our existence and read our environment were simply missing – no less our sense of agency?

**THAT FRIGHTENING PROSPECT** is now. Everything we thought we knew about our home in the universe now seems so misbegotten. All the familiar signposts to which we've been attached, and which gave us a sense of belonging and direction, seem to have disappeared in a puff. In their wake, it's we who feel dispossessed and lost on our own planet. And each of us, in our own way, is frightened and unable to conjure up options as to where to turn for solace and engagement.

What's occurred to make us suddenly feel like aliens in our own small orb of the universe? It's difficult to hear this, but for a long time – at least the past six millennia of what we've come to identify as "civilization" – we misjudged the very nature of our existence and to what we owe our lifeline. To put it bluntly, our species, particularly in the Western world, has come to believe that we live on terra firma, a verdant green expanse of solid ground upon which we stand, thrive and have come to call

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PHOTOS: JABIN BOTSFORD/TWP, PIERRE SUU, DEIMAGINE (GETTY IMAGES)

# 10% more

The proportion by which the number of tropical cyclones reaching Category 4 and Category 5 may rise over 2021 figures, even if global warming is limited to 1.5°C.

SOURCE: INTERGOVERNMENTAL PANEL ON CLIMATE CHANGE



**APRIL 2033**  
**Building with balance**  
A movement for architecture that blends with nature takes off following a high-profile corporate commission.

our home in the cosmic theater. That sense of place was shattered on December 7, 1972.

**THE CREW OF THE APOLLO 17** spacecraft on its journey to the moon took a quick photo of the Earth from a distance of 29,400 kilometers, showing in vivid detail a beautiful blue orb illuminated by the sun, changing the very way humanity would come to perceive our home. The long-held vision of a verdant and green Earth was instantly reduced to a veneer atop of which has always been a water planet circling the sun and, to date, seemingly alone in its multiple shades of blue in our solar system and perhaps in the universe. On August 24, 2021, the European Space Agency introduced the term "Planet Aqua." America's National Aeronautics and Space Administration (NASA) concurs, saying on their website that "looking at our Earth from space, it is obvious that we live on a water planet."

Of late, our water planet has become the center of attention in our neighborhoods and communities, in the halls of government, and in industry and civil society. The reason is that the planetary hydrosphere is rewilding in ways that were seemingly unthinkable just a few years ago, taking us into the early stages of the sixth extinction of life on Earth. Our scientists tell us that upward

2025-2044



January February March April May June 2016 2033 July August September October November December

# “The human-built environment is now a stranded asset and will have to be rethought and redeployed.”

of 50% of the species on Earth are now threatened with extinction within the next eighty years, many in the lifetime of today's toddlers. These are species that have inhabited the Earth for millions of years.

Our climate is heating up from the emission of global warming gases into the atmosphere – CO<sub>2</sub>, methane and nitrous oxide. Here's why the planet's hydrosphere is affected. Every 1°C rise in temperature on Earth from global warming emissions results in faster evaporation of water from the ground and the sea into the atmosphere and a 7% increase in the concentration of precipitation in the clouds and more violent and exponential water events – frigid winter weather that brings with it powerful atmospheric rivers and blockbuster snows, massive spring floods, prolonged summer droughts, deadly heat

**Jeremy Rifkin,** Economic and social theorist

waves and wildfires as well as catastrophic autumn hurricanes and typhoons – each devastating the planet's ecosystems with the loss of human life and the lives of our fellow creatures, along with destruction of the societal infrastructure.

**THE WARMING OF THE PLANET** has also unleashed a long-sequestered hydrosphere. Our water planet is evolving in wholly new ways that we can barely fathom. Ecosystems everywhere are collapsing and the lives of our species and our fellow creatures are increasingly at risk. The entire human-built environment is now a stranded asset and will have to be rethought, reimagined and redeployed.

As the saying goes, crisis creates opportunity. And our species finds itself mired in the greatest crisis since we first inhabited the planet – a mass extinction event taking place in real time. Rethinking

## THE CONDITIONS FOR A PERFECT STORM

Higher sea levels help make hurricanes more destructive.

**HURRICANE KATRINA** REACHED its peak strength on the morning of August 28, 2005, in the Gulf of Mexico. The storm had rapidly intensified over the "unusually warm" waters of the Loop Current that flows between the

Yucatán Peninsula and Cuba, growing from a Category 3 storm to a 5 in just nine hours.

A study conducted in 2013 compared the actual impacts of Katrina in New Orleans with a similar hypothetical

hurricane occurring 100 years earlier. Factoring in a sea level rise of 0.75 meters and the associated loss of wetlands, it concluded flood levels would have been up to 60% lower in 1900 than observed in 2005.



**JUNE 23, 2016**

### Brexit referendum

The United Kingdom votes to leave the European Union, leading to ongoing political and economic consequences.

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**JEREMY RIFKIN** is the founder and president of the Foundation on Economic Trends, the president of the TIR Consulting Group LLC, a senior lecturer at the Wharton School's Executive Education Program and the author of 23 books on how scientific and technological advancements have impacted the economy, the workforce, society and the environment.

Every aspect of where we've come from, what we've believed in, how we've lived, and where we need to go to adapt and reaffiliate on Planet Aqua, whose hydrosphere is transforming itself in novel ways, is the business before us.

**THAT SAID, WE WILL NEED** to reassess every aspect of the way we live – how we engage nature, pursue science, govern society, conceptualize economic life, educate our children and even orient ourselves in time and space on our water planet. This reset brings to the fore the next stage of "The European Dream." For the last 23 years, I've had the privilege of working with the European Union in advancing a Green Deal agenda, focusing on the need to mitigate the emission of global warming gases into the atmosphere. Now it's imperative to couple the Green Deal with a Blue Deal to address the existential water crisis brought on by a rewilding hydrosphere caught up in a globally warming planet.

We need to roll up our sleeves around the world and begin to explore the vast new business opportunities and employment prospects that come with a massive realignment in thinking of water as a "life source" rather than a "resource." After all, we live



**OCTOBER 2033**

### Climate-driven tech innovation boom

Startups and big companies alike start to focus on climate-resilient technology, reshaping industries.

on Planet Aqua. Coming to that realization is the threshold for rethinking our worldview, the narratives we live by, and the essence of our existence on our tiny oasis in the Milky Way. Rebranding our home "Planet Aqua" and relearning how to live on a water planet is the key to renewing our species' journey in the millennia to come. Enjoining a Blue Deal with the Green Deal is the business at hand. All else is a distraction.

## Takeaways

**FORGET ABOUT "TERRA FIRMA":** Only about 30% of the Earth is dry land. We live on a water planet and will benefit from realigning our thinking to reflect the fact.

**WEATHER IS CHANGING THE WATER:** Global warming is causing all the water on Earth to behave differently and we still don't fully understand how this will evolve.

**GET READY TO MAKE A BLUE DEAL:** Crisis creates opportunities, and there may be big business ahead in mitigating the effects of rising temperatures on water.

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2004-2024

2025-2044

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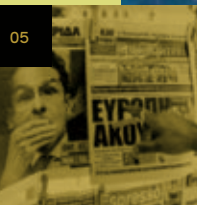
March

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# Liquid assets



**JULY 05, 2015**  
Greek bailout referendum  
Greece rejects the austerity proposals offered by Europe with a majority of 60%.



**DECEMBER 12, 2015**  
The Paris Agreement  
An international treaty on climate change is adopted by 196 countries, aiming to limit global warming.

**THE COLORADO RIVER IN THE WESTERN US IS A CASE STUDY FOR WHAT'S AT STAKE WHEN RAPACIOUS INDUSTRIAL GROWTH, AGRICULTURE AND URBANIZATION COALESCE TO DEplete A NATURAL RESOURCE THAT HUMANS HAVE TAKEN FOR GRANTED FOR TOO LONG.**

**CLIMATE CHANGE MAKES THE ISSUE OF WATER SECURITY ALL THE MORE CHALLENGING - WITH LESSONS FOR US ALL.**

**CHANGING NATURE**  
The Colorado River winds through the Utah and Arizona high deserts along its 2,300-kilometer path through five US and two Mexican states.

2004-2024

2025-2044

January February March April May June 2015 2034 July August September October November December

# IN

THE DYSTOPIAN THRILLER *The Water Knife* by Paolo Bacigalupi, the American West has turned into a dark and desiccated world. The rich live in tightly guarded high-rises called arcologies with lush gardens, fountains and vertical farming operations. The millions of less lucky souls subsist in dark and dilapidated suburbs without electricity or running water, hustling and killing for the occasional bottle of water from a humanitarian aid organization.

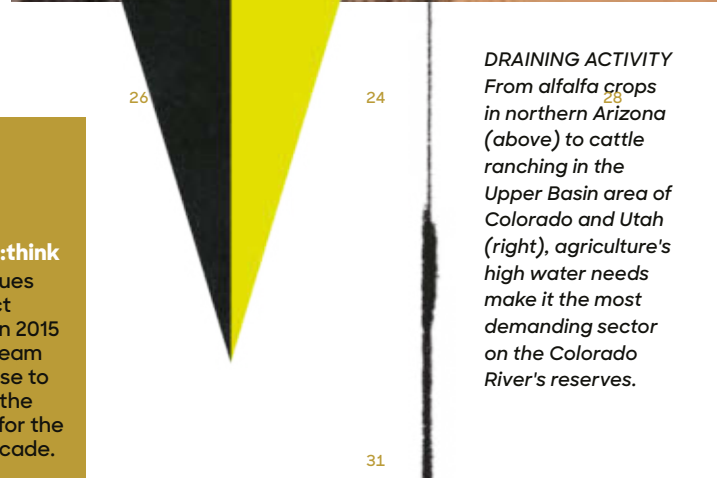
In this dark world, water is much more than a resource. Water companies have themselves become rogue states with private militias, making sure that California and Las Vegas stay well hydrated at any cost. Meanwhile, Texas and Arizona are failed states with large refugee populations gnashing at barbed wire fences. Published in 2015, *The Water Knife* conjures up a hellscape that sends itself off as science fiction. In the mid-2020s, though, it seems a little bit less far-fetched every time a new drought record is broken.

**IN REALITY, LIFE IN AND AROUND** the Colorado River Basin has become more tenuous than engineering marvels like the iconic Hoover Dam outside Las Vegas might have you believe. The Colorado River, which meanders for more than 2,300 kilometers southward from the Rocky Mountains before it empties into the Gulf of California, supplies more than 40 million people in seven US states and northern Mexico with water and provides irrigation for 22,258 square kilometers of farmland. But by the time it reaches its mouth, the river is reduced to a murky trickle – the result of decades of overuse. An already tangled web of outdated laws and agreements commonly referred to as "Law of the River" has become increasingly messy, thanks to competing interests among different geographies and a tug of war between agriculture, urban growth and industrial use, all exacerbated by accelerating climate change. This volatile mix forces all who depend on the river to make some hard choices in the very near future.

For the time being, feats of human ingenuity have kept catastrophe at bay. In bone-dry Arizona, the Central

2004-2024

**THINK:ACT**  
**Time to rethink**  
No new issues of Think:Act came out in 2015 while the team took a pause to reunite the magazine for the coming decade.



**DRAINING ACTIVITY**  
From alfalfa crops in northern Arizona (above) to cattle ranching in the Upper Basin area of Colorado and Utah (right), agriculture's high water needs make it the most demanding sector on the Colorado River's reserves.

## IRRIGATION'S IMPACT ON THE RIVER'S WATER

Where the Colorado River goes each year in trillions of liters (also known as cubic kilometers, or km<sup>3</sup>).

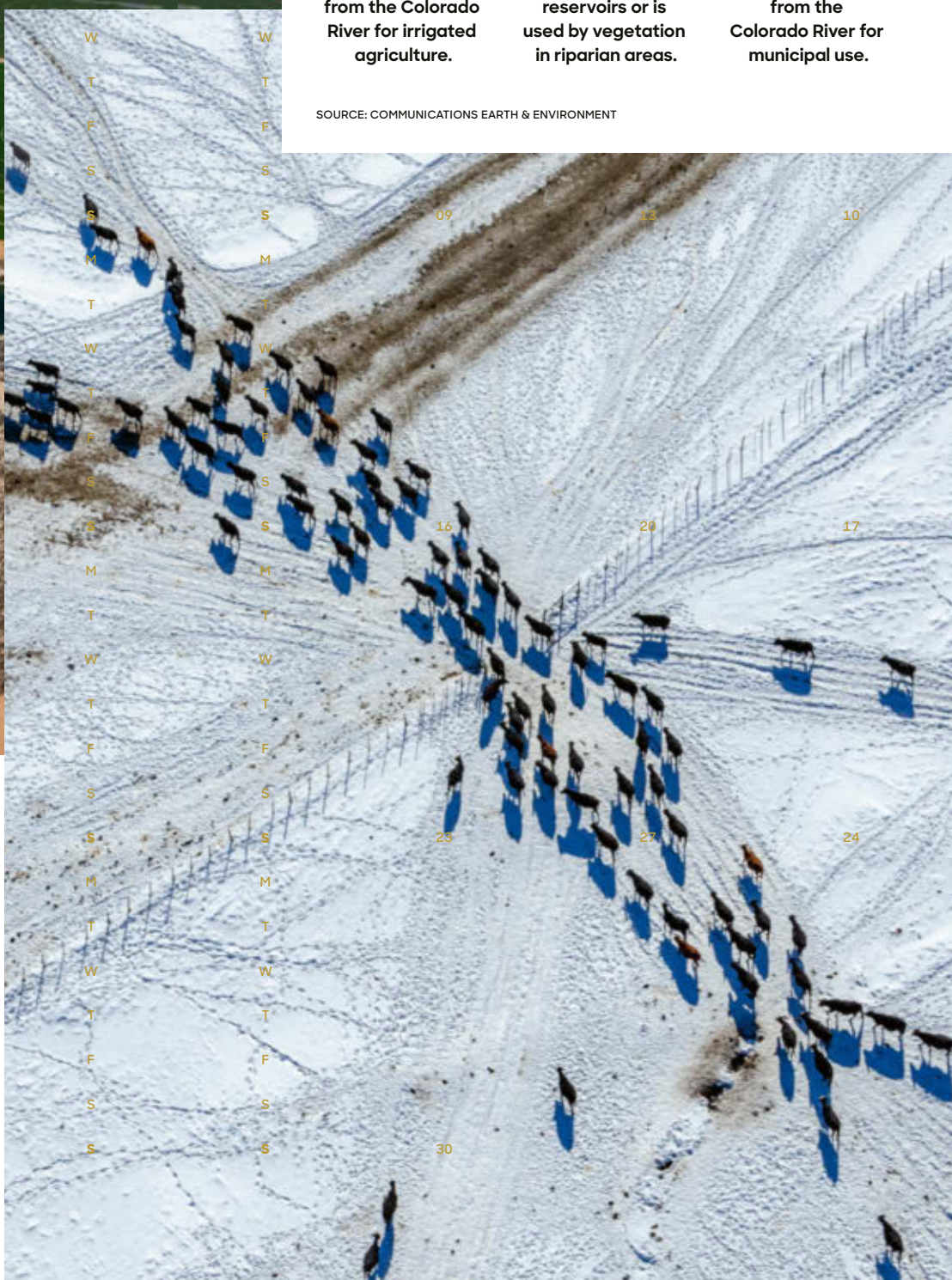
12.5 6.9 4.3

The amount of water diverted from the Colorado River for irrigated agriculture.

How much water evaporates from reservoirs or is used by vegetation in riparian areas.

The amount of water diverted from the Colorado River for municipal use.

SOURCE: COMMUNICATIONS EARTH & ENVIRONMENT



Arizona Project snakes its way through barren landscapes for more than 500 kilometers and is the lifeblood for the cities of Phoenix and Tucson. In Southern California, farmers rely on the water flowing through the massive concrete channels of the Yuma Project and the All-American Canal. Without those sparkling arteries, the entire US would have to forgo lettuce and many other crops. Then there are the massive but dwindling artificial bodies of water dammed in Lake Powell and Lake Mead, without which that old Las Vegas magic would come to a standstill.

**THE ARRANGEMENT BY WHICH WESTERN STATES** tap into the river dates back to 1922 when the Upper Basin, consisting of Colorado, New Mexico, Utah and Wyoming, and the Lower Basin, comprising California and Nevada, signed the Colorado River Compact. Arizona and Mexico then came on board in 1944. Based on just 30 years of hydrological records, the treaty assigned each of the two groups an optimistic 9.3 cubic kilometers (km<sup>3</sup>) of water annually, plus another 1.2 km<sup>3</sup> for farmers south of the border. Largely left out were 30 Native American tribes that have lived in the Basin for ages and to this day are fighting in court for their federally recognized water rights.

Ellen Hanak, an economist and water expert with the Public Policy Center of California in San Francisco, says that agreement cemented a fateful course. "The allocations were made during a relatively wet period and without great knowledge of hydrologic modeling, meaning they created a fundamental imbalance of supply and

PHOTO: DRPIXEL/GETTY IMAGES

July August September October November December 2014 2015 January February March April May June

demand, which today is about 20% off." The sizable mismatch between what the river can deliver and what humans consume was easy to miss as long as the large reservoirs built by a new agency called US Bureau of Reclamation held enough storage for drier years. But, as Hanak adds: "The system has been in long-term decline since about 2000."

Worries over water long predate the current problems. Geologist and explorer John Wesley Powell, who led a historic expedition in 1869 down the Colorado River through the Grand Canyon, warned at an irrigation conference in Los Angeles back in 1893: "I tell you, gentlemen, you are piling up a heritage of conflict and litigation over water rights, for there is not sufficient water to supply these lands." Not surprisingly, ever since the compact came into force, states and powerful water authorities have been wrestling with older water rights versus younger water rights for new entrants such as the booming cities of San Diego or Phoenix.

**THE ONGOING MEGADROUGHT** has not only exposed infamous "bathtub" rings on the canyon walls lining a dwindling Lake Mead and left marinas high and dry, but also laid bare the systemic shortcomings of a scheme that was not designed for today's population growth, large-scale agricultural production and industrialization. Conservation efforts were only instituted as the predicament became more obvious – and pressing. After various stopgap measures at the state and federal level, a renegotiation among all stakeholders is due in 2026. "We will have to figure out how to bring demand down to the new long-term average supply, and how to do that in ways that are economically, politically, socially and environmentally feasible," says Hanak.

That's easier said than done: Everybody wants to dip their straw into the Colorado River and has good reasons to back up their claims, from farmers who have been tending to their lands for generations to developers who promise new housing will bring fresh tax revenues to communities and economic development agencies that argue building new plants with often water-intensive operations will attract high-value jobs.

Amazingly enough, however, residential and commercial use are not what's driving the crisis. According to a 2024 study that looked at the overall

**OCTOBER 19, 2014**  
**Pope Paul VI is beatified**  
Thirty-six years after his death, the Catholic Church honors Pope Paul VI.  
→ See our interview with the Pope's AI advisor Paolo Benanti on p.68

# HOW MUCH WATER AI REALLY COSTS

**GenAI is a game changer for water consumption.**

**A few dozen AI chatbot queries consume half a liter of surface water according to Shaolei Ren, associate professor at the University of California, Riverside.** "The little data that tech companies disclose are just the tip of the iceberg. They don't factor in their whole supply chain beyond cooling, from electricity generation to chip manufacturing," he says.

That includes less obvious factors such as the massive amounts of water needed to dilute the toxic waste created by mining rare earth minerals, the key ingredient for magnets used for the hard drives whirring in data centers.

Inez Hua, a Silicon Valley-based sustainability engineer with Purdue University, has calculated that it takes more than 6,900 cubic kilometers, or one-seventh of all the water discharged globally by rivers every year, to neutralize such pollution in East and Southeast Asia alone.

Ren thinks several things need to change to hold Big Tech more accountable for its growing water consumption. Shifting where queries are run and at what time could help lower the load. And sustainable AI standards could be introduced, akin to the labeling found on food.

## 2,000 kilograms

How much dry rice could have been grown with the 22 million liters of water Meta used to train its Llama 3 open-source AI model.

## 519ml

How much water GPT-4 requires to generate a single 100-word text.

## 45kg

How much beef could have been produced with the 700,000 liters of water Microsoft used while training GPT-3.

SOURCES: UC RIVERSIDE, THE WASHINGTON POST

**TO THE LAST DROP**  
With restrictions cutting the water the Central Arizona Project (left) can deliver, Phoenix is now using gray water to cool the Palo Verde nuclear power plant (above).



**MARCH 2025**  
**A global circular economy**  
Businesses focus on reusing, recycling and repurposing materials on a large scale, significantly impacting the manufacturing and resource extraction industries.

consumption, alfalfa and hay are responsible for almost half of the river's water use, with all municipal, commercial and industrial uses combined only accounting for just 18%. What's more, booming cities in the Sun Belt and California have over the past decades become much more efficient with their water management.

When the same researcher polled 28 urban water utilities in the region, it was found that total water use between 2000 and 2020 had dropped by 18% while the population grew by 24%. "A lot of smart people have come up with solutions. Cities have really improved their conservation efforts in the face of growth," says Felicia Marcus, who chaired the

California State Water Resources Control Board before moving to Stanford. Innovative approaches like replacing lawns with drought-resistant vegetation, monitoring and updating leaky city lines and promoting low-flow fixtures and appliances have made a difference.

**CULTIVATING WATER-INTENSIVE** and relatively low-value crops such as hay is problematic for another reason: Roughly one-fifth of those bales are exported by ship to feed cattle in places like Japan, China, the United Arab Emirates or Saudi Arabia. Experts count those exports as billions of liters of "virtual water" that irreplaceably leave the system. To be fair, farmers are considering novel approaches as drastic cuts become more likely. In places like the Imperial Irrigation District in Southern California, they are selling water rights to cities and in turn do not plant or fallow some fields. Other options include switching to less thirsty crops or harvesting fewer times.

In some cases, though, changing traditional ways can have unintended consequences. Fallowing too much acreage, for example, risks creating erosion, dust storms and invasive weeds that will affect surrounding areas. A stop to irrigation threatens species that have become reliant on drainage water such as the endangered desert pupfish. "There's a limit to how much land can be fallowed. Otherwise you destroy the economy of agricultural communities," warns Marcus. "A farmer can trade money for water and walk away. But what about the tractor salesman, the fertilizer salesman, the seed

2004-2024

2025-2044

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saleswoman? There's a whole economy around growing food that you need to consider."

**SAVING THE STRESSED BASIN** may require entirely new ways of thinking about the problem. At least, that's the approach Stanford University economist Paul Milgrom is taking. In 2020, he was awarded the Nobel Prize for his pioneering work in helping the US government successfully auction off broadband spectrum to enable modern mobile communications. When Milgrom looked at the convoluted water rights, he saw an equally broken system. "We are trying to meet a 21<sup>st</sup>-century set of challenges with 20<sup>th</sup>-century technology and 19<sup>th</sup>-century laws. What we have, fundamentally, is a market design problem," Milgrom said in late 2023 laying out how water rights could be reapportioned.

So far, it's just a thought experiment that Milgrom co-authored with Ph.D. student Billy Ferguson that aims to deliver water to those who need it most and are willing to pay for it, adjusting for conditions each year. At its heart is a voluntary "Water Incentive Auction" in which the government first buys back existing rights and then sells to the highest bidders, who would be free to privately trade them. "Radio spectrum and water have more in common than you might think," says Ferguson. "Both are resources where rights were allocated long ago, and many decades later their best uses are different. We did not expect mobile broadband, and the American West was not anticipated to develop as it did."

Making supply and demand meet through a flexible and modern market mechanism, he adds, has the potential to address over-allocation,

# WATER IS NOW MORE SCARCE

The Colorado River Basin is far from the only area facing a dwindling water supply.

# 50%

How much of the world's population experiences severe water scarcity at least part of the year.

# 2 billion

The number of people worldwide who don't have access to safe drinking water.

# <1%

How much of the water on Earth is available for human use and not tied up in salt water, frozen in the ice caps or simply inaccessible.

SOURCES: UN, EPA



**A MOUTH OF MUD**  
After generations of fishing for totoaba, a large sea bass, the activity is now illegal at the mouth of the Colorado River in the upper Gulf of California and the surrounding Colorado River Delta Biosphere Reserve.

# "We are trying to meet a 21<sup>st</sup>-century set of challenges with 20<sup>th</sup>-century technology."

**Paul Milgrom,** Nobel Prize-winning economist

kept shattering heat records in 2024, it wooed Intel and Taiwan Semiconductor Manufacturing Company (TSMC) to build three new chip fabs there, which each need tens of millions of liters of ultrapure water every day.

There's no better place than Las Vegas, the villainous epicenter of the novel *The Water Knife*, to highlight the cognitive dissonance between blaming agriculture for the deepening water crisis and falling for tech's siren call. The city is home to a new, giant entertainment venue called The Sphere which is powered by 150 Nvidia workstation GPUs (short for graphics processing units), plus lit up by 16 displays and 1.2 million programmable LED pucks. If running at full capacity, this digital monster will draw 28 megawatts of power and consume or evaporate up to 2 billion liters of pristine surface and ground water each year. For now, water expert Felicia Marcus demurs that the nightmarish scenario embroiling Las Vegas described in *The Water Knife* is far off, but adds an ominous warning: "It could happen if things don't change. We have to learn to live within our means."



**The Colorado River: Chasing Water**  
by Pete McBride, 224 pages. Rizzoli, 2024.

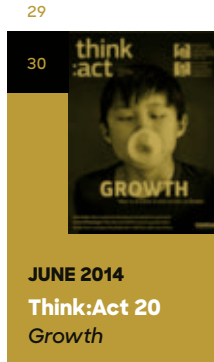
**JULY 2035**  
**Virtual global workforce**  
Virtual reality workplaces become the norm, eliminating geographical barriers and reshaping the global job market.

incentivize conservation and untangle the web of outdated legal arrangements. Equally important, the two authors recommend setting up guardrails to protect weaker communities and to let policymakers prioritize various outcomes that different communities value. "I have come to appreciate how monumental the challenge is," Ferguson admits. "But I am still young and hopeful. As the Colorado River reaches its breaking point, we want to have our framework sitting and ready." Milgrom concurred when unveiling their proposal: "There's every reason to believe this can work. While it won't reverse climate change or make it rain, it would go a long way toward providing long-run water resilience."

Technological progress, though, adds a new twist to the ongoing water tussle. Data centers, the backbone of cloud computing and the networked



**FEBRUARY 20, 2014**  
**Annexation of Crimea by Russia**  
Russia annexes Crimea from Ukraine, leading to widespread international condemnation and paving the way to the war in Ukraine in 2022.



**JUNE 2014**  
**Think:Act 20 Growth**

2004-2024

2025-2044

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July

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September

October

November

December

2013

2036

January

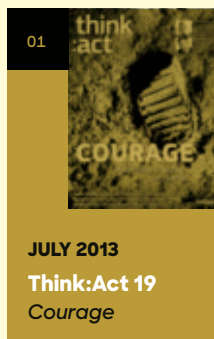
February

March

April

May

June



# Materials

## OUR MATERIAL USE IS CHANGING AS THE WORLD SHIFTS FROM BIOMASS-BASED AGRARIAN METABOLISM TO A MINERAL-BASED ONE.

OUR MODERN WORLD is made of materials. Yet in an age of increasing digitalization, where smartphones, the cloud and underground cables reduce our reliance on visible physical objects, it can be easy to forget that almost everything we use exists thanks to substances we take from the Earth. Crucially, our insatiable appetite for materials is starting to take a toll on the planet. According to the UN's 2024 *Global Resources Outlook*, our material use has increased more than threefold over the last 50 years (while the global population roughly doubled). By 2060, it may rise by a further 60%, which could derail climate targets and impact economic prosperity.

The irony is, we desperately need raw materials to live more sustainably: The transition to renewable energies will require huge amounts of copper, iron, sand and fossil fuel-based plastics. Inspired by Ed Conway's book *Material World*, and supported by UN data, we take a look at the materials shaping our lives and why they matter more than ever.

### 13.2 tons

The global average per capita demand for materials in 2024 (up from 8.4 tons in 1970).

### 3x

The increase in our material use in the last 50 years

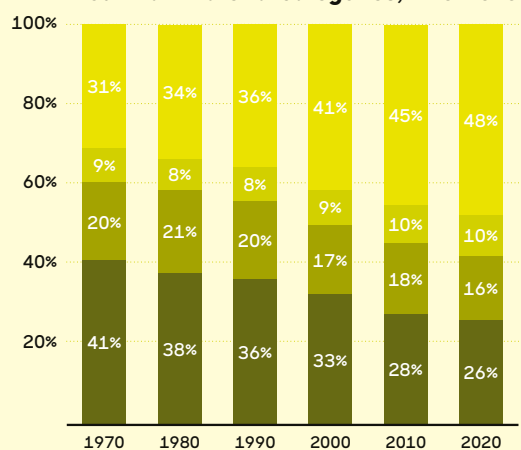
### 10x

High-income countries cause 10 times as many climate impacts through consumption than low-income countries.

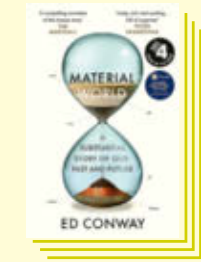
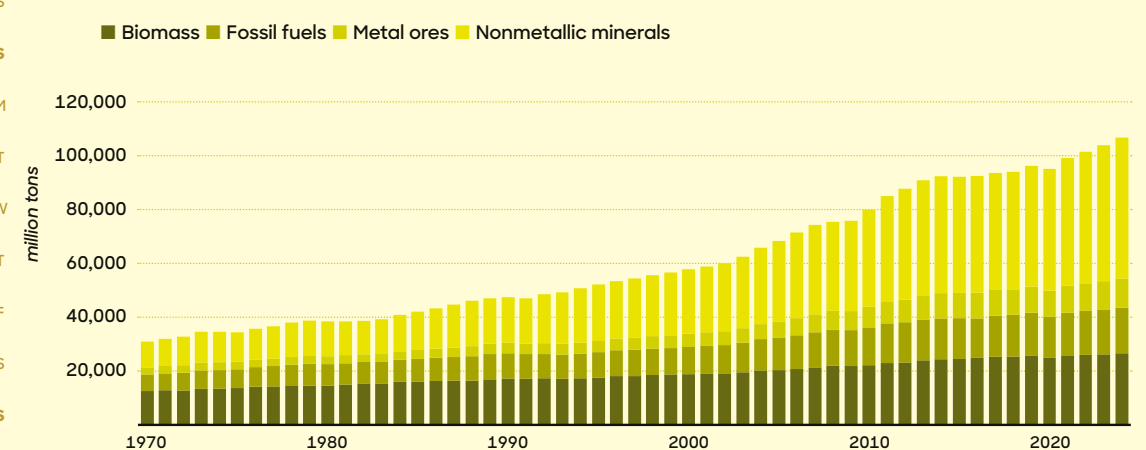
“Without concrete, copper and fiber optics there would be no data centers, no electricity, no internet.”

**Ed Conway,**  
Writer and Economics and Data Editor of Sky News

#### Shares of global material extraction, four main material categories, 1970-2020



#### Global material extraction, four main material categories, 1970 - 2024, million tons.



**Material World: A Substantial Story of Our Past and Future**  
by Ed Conway,  
512 pages.  
WH Allen, 2023.

2004-2024

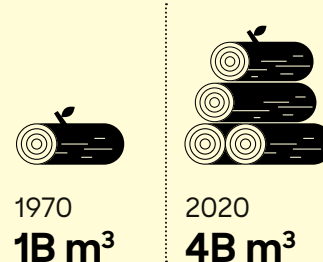
2025-2044

## Biomass

Crops, crop residues, grazed biomass, timber and wild-caught fish

→ Increased industrialization has led to a significant reduction in the percentage of biomass we extract compared with other materials, although overall consumption continues to grow. Crop consumption is rising due to a growing global population, as well as a shift toward more meat-based diets that require more crops for animal feed. Greater biofuel production is also a factor.

**TIMBER EXTRACTION GROWTH**  
has been driven by investments in infrastructure and increased material living standards.

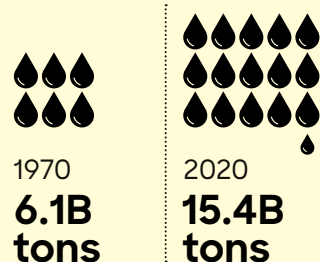


## Fossil fuels

Coal, anthracite, lignite, peat, gas, oil and tar sands

→ Renewable energy use may be growing, but we are still heavily reliant on fossil fuels, which supply more than 75% of global energy. Fossil fuels underpin the extraction and processing of materials. Until this changes, "modern civilization will remain fundamentally dependent on the fossil fuels used in the production of these indispensable materials," says Canadian scientist Vaclav Smil.

**FOSSIL FUEL GROWTH**  
went up 152%, yet their share of global extraction decreased from 20% in 1970 to 16% in 2020.

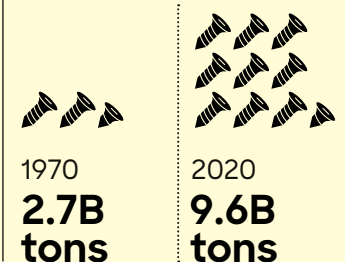


## Metal ores

Including aluminum, copper, iron, gold, lithium, tin and many more

→ From buildings and bridges to cars and tools - iron and steel (an alloy of iron and carbon) have long been fundamental to our built environment. Metals also play a key role for the energy transition that lies ahead, namely in its transmission and storage. This will see increased demand for aluminum and copper as well as battery materials such as lithium and cobalt.

**METAL ORES EXTRACTION GROWTH**  
accounted for around 9% of all global material extraction in 1970, and around 10% in 2020.

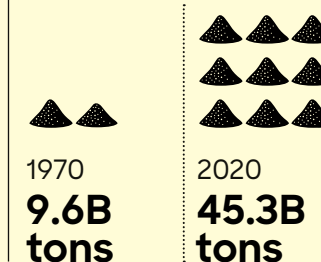


## Nonmetallic minerals

Including sand, gravel, limestone, gypsum and clay

→ Sand is the most exploited natural resource in the world after water, but its use is largely unregulated. We are now consuming it faster than it can be replaced by geological processes that take hundreds of thousands of years. The ultimate hidden champion, sand is fundamental to many vital elements of society, including cement, glass, silicon chips and optical fiber cables.

**NONMETALLIC MINERALS EXTRACTION GROWTH**  
grew 372% over the course of 50 years.



PERCENTAGE FIGURES TAKEN DIRECTLY FROM SOURCE, INCLUDING ROUNDING UP.

SOURCE: UN GLOBAL RESOURCES OUTLOOK 2024



January

February

March

April

May

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2013

2036

July

August

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30%

81%

\$100

Next-g  
leader

# Stratad3A

Collages by **MIKE McQUADE**

2004-2024

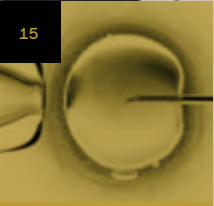
2025-2044

21



**JANUARY 21, 2013**  
Obama begins his second term as US president  
Barack Obama is sworn in for a second time as president of the United States.

15



**MAY 15, 2013**  
Stem cell clones  
US researchers describe the first production of human embryonic stem cells by cloning.

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PHOTOS: ALEX WONG, SCIENCE PHOTO (GETTY IMAGES)

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PHOTOS: KLAUS VEDFELT, LUIS ALVAREZ, TOM WERNER (GETTY IMAGES)

July

August

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2017

January

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June

04



**JULY 4, 2012**  
**The Higgs boson particle is discovered**  
 CERN scientists confirm the discovery of the Higgs boson, a breakthrough in particle physics.

02

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2004-2024

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**NOVEMBER 2012**  
**Think:Act 18**  
**Comeback**

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# Filling the gaps? sneakers' shoes

Interview by **GEOFF POULTON**  
 Illustrations by **JAN ROBERT DÜNNWELLER**

PHOTO: RICHARD JUILLIART/AFP/GETTY IMAGES

**AN INNOVATIVE LEADERSHIP MODEL, AND A NOVEL PRODUCT, HAS PUT A NEW SPORTS BRAND ON THE FRONT FOOT TO TAKE ON THE SNEAKER KINGS. WHAT DID ON DO DIFFERENTLY TO GET IN THE RUNNING? AND WHAT CAN OTHERS LEARN FROM ITS SUCCESS?**

**AN INTERVIEW WITH CO-FOUNDER CASPAR COPPETTI.**

**I**T ALL STARTED with a simple piece of garden hose. Plagued by injuries, professional triathlete Olivier Bernhard was looking to rekindle a childlike feeling of freedom in his running. While experimenting, he glued pieces of hose to the bottom of a pair of running shoes, instantly creating a softer landing and springboard-like feel when pushing off.

The first On prototype was born. Bernhard pitched the idea to Nike, his sponsor at the time, but after a polite "no," he turned to his former agent, Caspar Coppetti, and David Allemann, who were working as marketing executives. Convinced they had a unique, marketable product, the three set up On. In just over a decade, the firm has gone from unknown Swiss startup to publicly listed global operation and one of the world's hottest sportswear brands, with tennis legend Roger Federer now an investor and partner.



19

17

21

31

2025-2044



2004-2024

ACCORDING TO Alyson Meister, an IMD Business School professor of leadership and organizational behavior, On's success since it started operations about 15 years ago is very heavily tied to the company's unique culture. "On has an unrelenting focus on cultivating a culture of autonomy, accountability and collaboration. It empowers its employees to act with entrepreneurial spirit, fostering a sense of ownership and creativity that permeates all levels of the organization," she says.

On's three co-founders now run the company together with two co-CEOs, an unusual management structure, but one they believe allows greater bandwidth and better decision-making. "The co-CEOs, along with the founders, play an active role in maintaining and communicating the company's values and mission," says Meister, who has conducted in-depth research into On's operations. "This leadership model, which initially faced skepticism, has proven to be a significant asset by combining complementary skills and fostering mutual respect and success."

To learn more about this unusual company, we spoke with On Co-founder and current Executive Co-Chairman Caspar Coppetti. In this exclusive interview, he reflects on the company's rollercoaster journey, walking away from the "golden cage" of his marketing career and the challenges of retaining a startup spirit and unconventional management structure in a rapidly growing multinational firm.

**THINK:ACT**  
**Digital content**  
 The Think:Act brand extends to include videos and podcasts.

# 7.6x increase

How much market share On gained at US retailer Dick's Sporting Goods between January and October 2023, reaching 6.1%. Globally, it reached 0.7% the same year.

SOURCE: EUROMONITOR/REUTERS

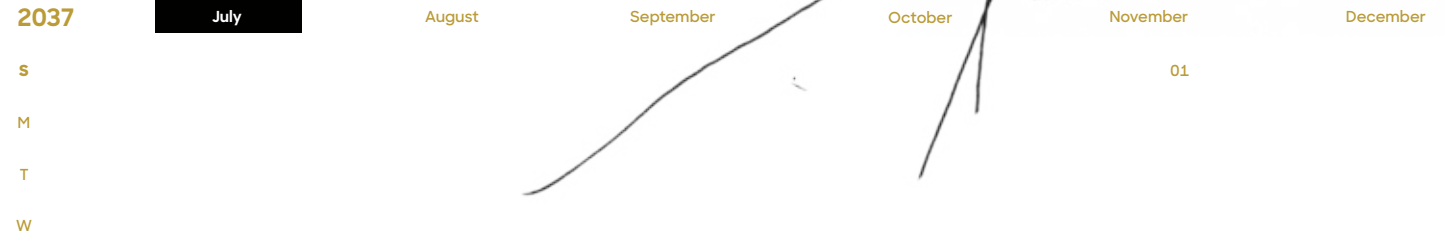
PHOTO: PIXDELUXE/GETTY IMAGES

**When you started On in 2010, you were leaping into a very mature market with a lot of established names. What made you think you could stand out from the crowd - was it headstrong arrogance or more a wide-eyed naive?**

It was definitely the latter. From my side, the story actually started with a "no." When Olivier (Bernhard, On co-founder), who had codeveloped the technology, asked me to help him with marketing, I said: "Are you crazy? We won't stand a chance against the big names." But when he showed me a prototype, as a marketeer, I was intrigued. The shoe had a very visible technology, which wasn't really a thing at the time - certainly in running shoes. For years, I hadn't been able to run without pain, but when I tried this shoe from Olivier, I immediately felt a difference. So we started giving out prototypes to runners, especially those with injuries. The feedback was great.

David (Alleman, On co-founder) and I had long dreamed of being entrepreneurs but we lacked a convincing idea. Suddenly, here was our chance. We never made a full initial business plan or market assessment for On. We thought the market was so big that there was bound to be a niche of some sort. Little did we know how big this market would become, and how big our niche would be.

**Think:Act 17**  
 Jeremy Rifkin writes a guest column in which he says: "Most economists fail to understand that all economic activity is borrowing against Nature's energy and material reserves."  
 → For his latest opinions turn to p.34



2025-2044

**At the time, you were in your 30s with a senior position at an advertising agency. How easy was it to leave your career behind?**

It was very scary and also very, very tough. But also incredibly liberating. We were all pretty naive about what it takes to design and develop a physical product, manufacture it and ship it around the world; it's a very complex process. For the first year or so, the feeling of imminent failure was a weekly occurrence.

**How do you get through those moments of feeling like it might all fail?**

The funny thing is you get used to it. People often romanticize the startup life but it's not romantic at all. It's just really, really hard. As a startup, there's always so much to do in the now, but you also need to build for tomorrow. There's a constant tension of where to put your energy. Bad things will inevitably happen, but every time you make it through a tough situation, it gives you that little bit more confidence for next time. It also teaches you not to paint the highs too high or the lows too low.

**When you set up On, you said you wanted to have the most expensive product on the market. Why was that?**

When you're from Switzerland and starting a brand based on innovation, the premium option is the only one available. We also saw that there was no truly premium running brand - some of them offered premium products but they also offered

**SEPTEMBER 2037**  
**First AI-created language gains global recognition**  
 A new language developed entirely by AI is adopted by millions, influencing global communication, literature and artistic expression.

**CASPAR COPPETTI** is the co-founder and current executive co-chairman of On. Prior to founding On, Coppetti was a managing partner and chief strategy officer for the advertising agency Young & Rubicam. He also worked for two years as a management consultant and has a doctorate in economics from the University of St Gallen.

cheaper ones, so they were diluting themselves. We felt that the discerning, demanding runner would be willing to spend more on a high-quality, high-tech product, which turned out to be right.

**How easy was it to stick to this? Did you have to turn down short-term gains in favor of the longer-term vision?**

Definitely. The playbook for building a premium brand is pretty clear, but it does take a lot of discipline. One of the key elements for us was that we wanted to be price- and margin-stable. So we had to find very premium retailers that provided good service and didn't want to sell products at a lower margin. But they can be the hardest ones to get. There was a particular store in Munich we wanted to work with, for example, but it took years to finally get our products stocked there. And in that time, we turned down several other stores in the city, because we knew what we wanted. Again, it comes back to that balance between now and the future. Knowing when to be patient is important, but it can be hard to do, especially when you're moving really fast and running out of money.

“People often romanticize the startup life, but it's not romantic at all. It's really hard.”

**Caspar Coppetti,**  
 Co-founder and executive co-chairman of On

July August September October November December 2011 2038 January February March April May June

“This notion of the superstar CEO taking all the strategic decisions doesn't reflect reality.”

Caspar Coppetti, Co-founder and executive co-chairman of On

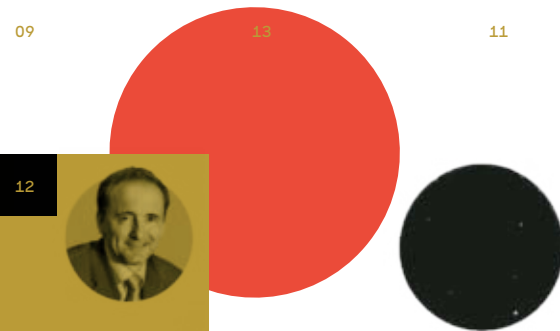
Let's talk about company structure. On is still very much founder-run, which doesn't always happen when startups mature and gain more investment. How have you managed to do that and why?

As the brand started to take off, around 2012, we realized that the three co-founders were always the bottleneck and we didn't have enough bandwidth. Typically, founders hire people below them to build out the pyramid. But we had had very positive experiences operating as three founders without one single CEO, so we decided to bring on two additional equity partners, Marc (Maurer) and Martin (Hoffman), who are now co-CEOs. That has given us tremendous bandwidth. Essentially, there's always one partner around, no matter where we all are.

The second key point is, even though scaling a sportswear brand requires a lot of investment, we wanted to retain control at board level. When we completed the IPO in 2021, our investors said they wanted us to be custodians for the brand over the long term. With the voting shares we have, together we control 61% of the votes, which provides long-term stability. That means On can't be taken over by a competitor and we can build the company for the long run.

Doesn't running the company by committee make it hard to make decisions sometimes?

I don't think so. There have been three of us doing this for 14 years now, and five of us for 11, and things have gone pretty well. I also think that this notion of the superstar CEO taking all the strategic decisions just doesn't reflect reality. If you do that, one person has to spend a lot of time convincing people and trying to get buy-in. Or they just decide whatever they want. With the five of us, if someone has a proposal, then they need to have at least one other person on board. The others might then take on a challenger role. That has served us extremely well. We find better solutions because none of us can make stupid mistakes or run off in the wrong direction. And if we're not aligned, then we know we haven't found the right solution. But it does take a lot of respect and trust in each other. You can't be self-serving.



Think:Act 17 "After 9/11, the world stood still for a moment. Nowadays we can't allow anything to stand still." Jim Hagemann Snabe Then CEO of SAP

You mentioned the IPO, and the fact that it was important to maintain control from your side. What else did you have to weigh up going into that?

At the time, I was very skeptical of the IPO. It wasn't something that I was looking forward to or wanted to celebrate, because we didn't want to sell the company. But we'd reached a point where it made sense. And it made most sense to do it in the United States. First of all, it's the largest market. Secondly, a lot of our peers are listed in the US, so there are more benchmarks and we can learn more. And the investment community is just more savvy - they understand the sector much better. Thirdly, there's a strong narrative in the States that founder-led companies are more profitable. In Europe, companies with dual share structures are regarded with skepticism, because it's often second- or third-generation families that aren't helping to build the business. I think it would have been a lot harder for us to get the dual share structure in Europe.



APRIL 2038 The return of ancient music traditions With advancements in archaeology and digital recreation, music from Mesopotamia and Mesoamerica is revived.



Short Takes

Discover the bonus video interview with Caspar Coppetti at rolandberger.com/en/coppetti

in previous generations. I think it is also important to remember the mental health benefits of movement. During the stressful startup years, sports really helped keep us sane - processing things on a run or a bike ride was hugely beneficial. Ultimately, movement makes us happier and more positive. That's why we believe that if people move more, they can be more creative, collaborative and hopefully better things will come out of that.

Takeaways

- KNOW YOUR NICHE: When offering a premium product, don't dilute your line for the sake of a larger market. Your core audience will appreciate your focus.
STICK TO YOUR VISION: Patience is hard, especially when you're running out of money, but short-term gains aren't a win if they deviate from your end goal.
SHARE RESPONSIBILITY: Drawing on equally invested people during decision-making processes increases your bandwidth and helps find better solutions.

2004-2024

2025-2044

SEPTEMBER 2011 Think:Act 17 Modularization of Business

January February March April May June 2011 2038 July August September October November December

# Leading with love



**ON YOUR LEVEL**  
The fastest-growing organizations are ditching hierarchical leadership models in favor of collective methods that bolster their ability to adapt.

01  
**NOVEMBER 2038**  
**Y2K 2.0**  
Awareness of the Y2K38 problem (similar to the Y2K Bug) grows, with heightened media attention.

08  
**JANUARY 2011**  
**Think:Act 16**  
Rethinking Growth

**STAYING ENGAGED AND FLEXIBLE IS KEY TO NAVIGATING OUR ERA OF POLYCRISIS. THE CHALLENGES CAN SEEM OVERWHELMING, BUT ONE THING IS INCREASINGLY CLEAR: IF WE'RE GOING TO MAKE IT OUT OF THESE DARK TIMES, IT WILL BE A COLLABORATIVE EFFORT.**

**JUNE 30, 2011**  
Germany reverses its stance on nuclear power  
Germany announces a plan to phase out all of its nuclear power plants by 2022.

**H**OW DO YOU KNOW that your chief executive is not a deepfake clone? To be more precise: That WhatsApp message you just received from a strange but secretive source, followed by a voice note which sounded very much like your boss ... can you believe it, or not? It is not a frivolous question. *The Times* reported this summer that "at least five FTSE 100 companies and one FTSE 250 company have been subject to impersonation attacks this year," and these are just the reported cases.

**THE REAL FACTS OF BUSINESS LIFE** are challenging enough without the virtual – and the fake – world providing more headaches for the C-suite. But at a time when we have learned to talk of the global "polycrisis" and the confusion it brings, it is not surprising if leaders are susceptible to being scammed as they seek inspiration from a variety of sources. "We are caught in a historical moment," says Gianpiero Petriglieri, associate professor of organisational behaviour at INSEAD. "Leaders risk being overwhelmed by the scale of the challenges," agrees Laura Empson, professor in the management of professional services firms at Bays Business School, City, University of London.

One business book publisher recently sent this author a list of its new and forthcoming titles, and these included *Toolkit for Turbulence*, *Adaptive Resilience*, *Strategy in the Age of Disruption* and *Leading with Vulnerability*. Happy days are clearly not here again – yet. What is the nature of this leadership crisis, and how can we find a way →

Words by **STEFAN STERN**  
Photography by **LARS TUNBJÖRK**

2004–2034

2025–2044

July August September October November December 2010 2039 January February March April May June

through it? We face "complex situations in which there isn't an obvious answer or clear choice, and solving problems depends on the brainpower and engagement of everyone, not just the top leaders," as Herminia Ibarra, professor of organisational behavior at London Business School, has put it.


Ibarra argues that learning and adaptability are vital when there is so much uncertainty. She lists five critical leadership skills which she says will help organizations learn and adapt. These are:

- **Crosscutting:** Develop networks that include a diversity of people and make new connections. Have lunch with someone you don't know so well for a change!
- **Collaborating:** Foster psychological safety to increase team performance and to encourage people to feel good about speaking up. Less of the "vigorous advocacy" and kowtowing to the Highest Paid Person's Opinion (hippo).
- **Coaching:** Have critical conversations that help develop others' potential, with leaders resisting the instinct to tell people what to think and what to do.
- **Culture shaping:** Shape organizational culture by molding and embedding useful corporate practices, while "taking a wrecking ball" to those which have shown that they no longer serve any productive purpose.
- **Connecting:** Grow in empathy and authentic leadership. "Today more than ever who you are and how you connect to others matters," Ibarra points out.

This is a helpful checklist. And perhaps there are already some very good examples out there of managers and leaders doing the right thing and succeeding by it. In a series of recent blog posts for *Forbes*, the management writer Steve Denning has been arguing that some of the most prominent and successful names in business have been getting a few basic (and not mysterious) things right for some time. It starts with the familiar but too often neglected thought, popularized by the original and

greatest management writer Peter Drucker, that businesses have one key goal or purpose: to find a customer and keep it. "The fastest-growing firms are no longer preoccupied with inert methods and processes, hierarchical control, outputs and profits – a way of managing that results in low capacity to adapt and innovate and low levels of staff engagement," he wrote recently. "The fastest-growing firms embody dynamic mindsets that lead to value creation, empowerment, collaborative networks and process-enabled outcomes, and faster growth. Power has shifted to customers who have new options and information about those

01



**Think:Act 15**  
"There's no sense in sprucing up a commercial if you're putting out the same message as your competitors."  
Philip Kotler, Marketing expert



OCTOBER 2010  
**Think:Act 15**  
Complexity



29



**Mobile Think:Act**  
The first digital version for iPad makes its debut.

“Two things need to happen: Shit has to get done, and people have to be held together and moved.”

13  
**Gianpiero Petriglieri,** Associate professor at INSEAD

10 15 12  
options ... So these firms recognize that they must understand and delight customers as a necessary prior step to making money, and must create new business models," he added.

**THIS MUCH IS CLEAR.** But carrying it out is not always straightforward. There are usually legacy issues of culture and practice to deal with; but also the classic dilemma of the "knowing-doing gap," as Stanford professors Bob Sutton and Jeff Pfeffer labeled it. And it is at this point that all eyes, both inside and outside the organization, turn to the leader and the question is asked: What are you going to do to fix our problems? Who is in charge around here? Perhaps this is not really a fair (or sensible) question. As Empson argues, the big problems we all face in business are "too complicated to be solved by individual leaders." A world facing a polycrisis needs collective leadership.

Empson has been studying professional service firms – lawyers, accountants, management consultants – for most of her academic career. It is here she has observed the potential benefits of shared and collective leadership, in contrast to the mythology and wishful thinking which lies behind the idea of the leader as a heroic soloist. "Collective leadership is an antidote to that [mythology]," she says. "We have always turned to 'heroic' leaders in times of crisis," she adds. This is where populism draws its strength. Populists "create a spurious sense of certainty," she adds. "But today at work we have a complex coalition of colleagues: →

18

**FEB. 2039**  
**The first trillionaire**  
An investor in renewable energy is the world's first person to reach personal wealth in the trillions.

**JUNE 2039**  
**The Antarctic Treaty**  
The 1959 treaty formed between 12 countries is expanded to include regulations for sustainable resource extraction and environmental protection.



2004-2024

2025-2044

January February March April May June 2010 2039 July August September October November December

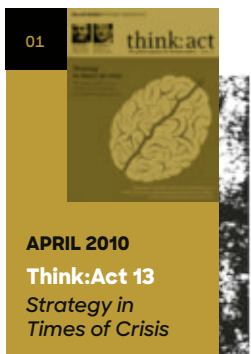
nonhierarchical, multigenerational. This breaks down the old distinction between leaders and followers. It is a world where everyone – and no one – is a leader."

The post-pandemic world has also introduced an existential crisis in our relationship with work. But the current generation of leaders may struggle to answer these questions. According to Empson: "The future of work isn't out there, it has to be cocreated." And this is why leadership may start to look very different in a range of settings, she believes. "In a polycrisis you can't just drive into it in a conventional way. You need a multi-layered and pluralistic approach. These problems are interconnected."

Lastly, what about women and leadership? wonders Epson. "They may have a different relationship with hierarchy. Women may respond to a lack of power by finding collective power." Empson has support from elsewhere in academia. Archie Brown, emeritus professor of politics at Oxford University, made some similar arguments in his 2014 book *The Myth of the Strong Leader*. He too favors what he calls "collegial leadership" over those who "dominate colleagues and concentrate decision-making in their own hands."

SO, HOW ELSE CAN WE BE CERTAIN that the boss is not a deepfake, or a robot? Clearly, they need to pass a human being test. Gianpiero Petriglieri's latest work, set out in a 15-minute YouTube talk, discusses "leadership as a kind of love." That's right: love. Petriglieri makes a beautifully simple point. He says that, if you want your people to move (to change, to act differently), then they have to be moved – emotionally. Robots and deepfakes can't do this. Leaders will have to show some humanity if they want a human response. "I am trying to reconcile people with their experience," he explains. "So much of our writing as academic or practitioner – really divorces leadership from people's daily experience. It dehumanizes it, either making it too virtuous, too pure, or too mechanical. So the leader either becomes this kind of saint, an anointed person, purposeful and values-based, or this kind of Machiavellian mechanic."

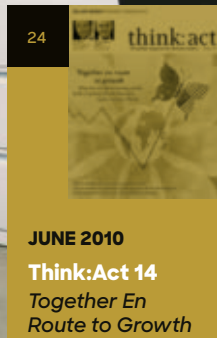
How do his students and executive clients react when he talks about leadership as a kind of love? "People



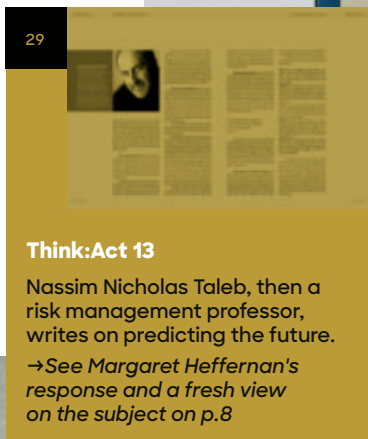
APRIL 2010 Think:Act 13 Strategy in Times of Crisis

THE NEAREST EXIT A strong workplace network can help see what might make someone leave an organization – and what might make them stay.

respond in a very interesting way," he says. "Most people tell me – 'oh my God, that is so interesting and so refreshing, and I completely endorse that, but I bet you have lots of people who find it strange.' So they always project the foreignness of this idea onto someone else. 'I would like it, but I can't ...' But to say that leadership is a kind of love does not mean that leadership is good. There is a range. The worst kind of love is narcissistic. 'I don't actually love you, I love myself in your presence.' Love can be a kind of language that is used to justify your views. Abusive leadership can be like this. The most common experience is of mediocre love: 'I love you, but I'm afraid of that, and so I will try to control you.' The leadership is diminished by the impossibility of letting go of control. The best kind of love is the most difficult: How do I really see you? How do I set you free? I think leadership has that range.



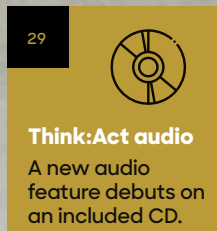
JUNE 2010 Think:Act 14 Together En Route to Growth



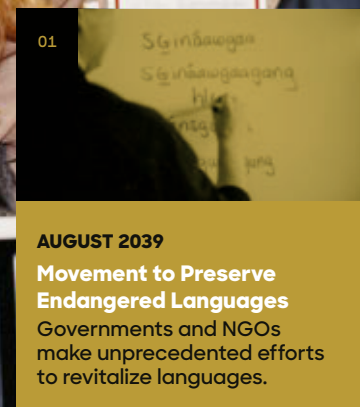
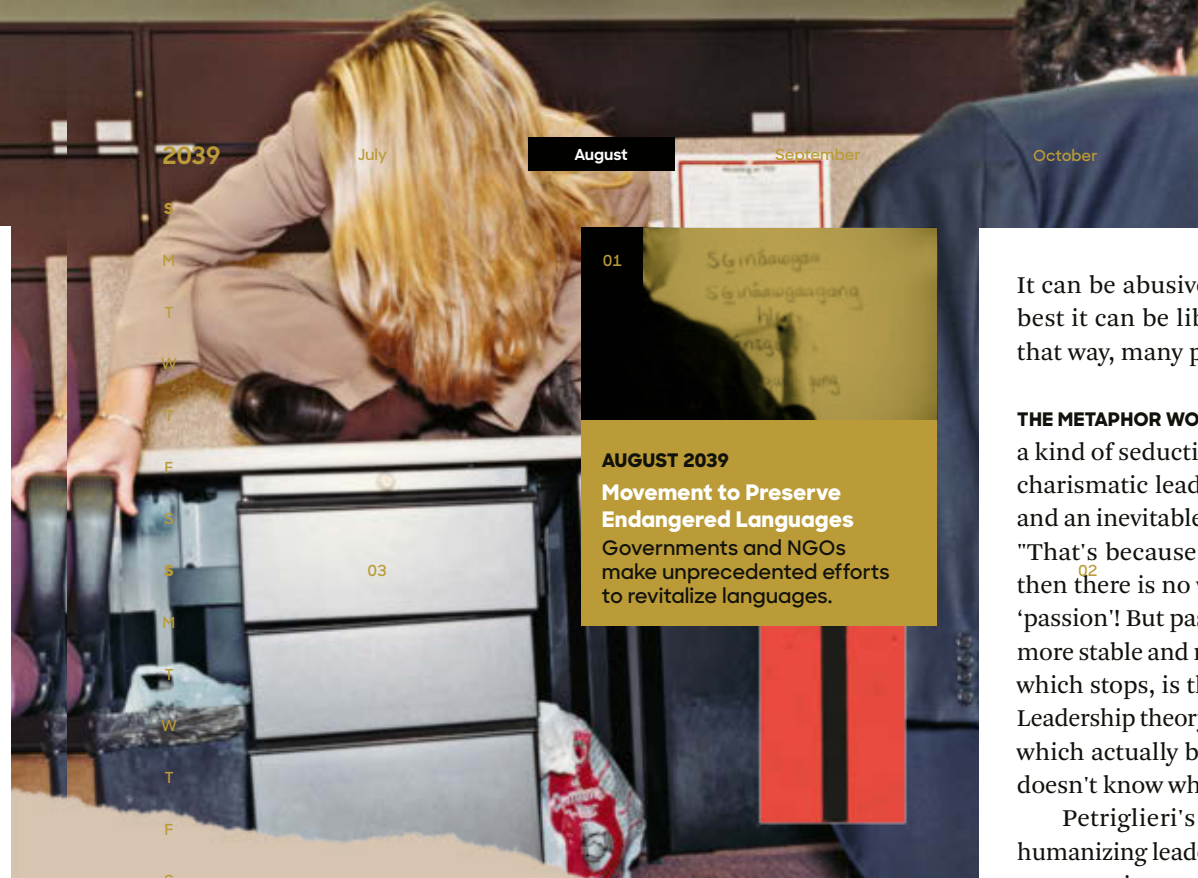
Think:Act 13 Nassim Nicholas Taleb, then a risk management professor, writes on predicting the future. →See Margaret Heffernan's response and a fresh view on the subject on p.8



Think:Act 12 Astrid Awards for Design Communications Winner (Honors)



Think:Act audio A new audio feature debuts on an included CD.



AUGUST 2039 Movement to Preserve Endangered Languages Governments and NGOs make unprecedented efforts to revitalize languages.

It can be abusive – or at least constraining. At its best it can be liberating. And when I qualify it in that way, many people go 'oh, yes.'"

THE METAPHOR WORKS. Charismatic leaders perform a kind of seduction. But then what? "The arc of the charismatic leader is always an impossible ascent and an inevitable disappointment," Petriglieri says. "That's because the seduction is so intense, and then there is no way it can deliver. Everyone is into 'passion'! But passion has to evolve into something more stable and reliable. "Indiscriminate seduction, which stops, is the mark of the insecure character. Leadership theory caters to that insecure masculinity which actually becomes toxic. It seduces but then doesn't know what to do next."

Petriglieri's discourse about love surrounds humanizing leadership. "Our theories and especially our practices are still attached to a metaphor of machinery," he explains. "The love metaphor is a way to get away from the mechanistic. I do this in class – I say: If you thought about love what would you worry about? Am I loving the right people or am I wasting my time? Am I really caring? Do I get love back? Do I get hurt? People respond because it gives them a lens. Two things need to happen for any organization to exist. Shit has to get done, and people have to be held together and moved."

And of course, love provides armor against AI, robots and algorithms. "Algorithms are Taylorist wet dreams," Petriglieri says [see box at left]. Its digital indoctrination ... the Taylorist dream can be realized. "To me love is the antidote to that. The best kind of love is an investment. And it's a liberation. It's the opposite of an indoctrination." The way through our current troubles, then, will involve collective leadership, adaptability and a human response. We should not be shy about that. As the poet W.H. Auden once wrote: "We must love one another or die."

# ONE HUNDRED YEARS OF MANAGEMENT IDEAS

Every era has its own idea of how to run a company.

**TAYLORISM** Frederick Winslow Taylor published *The Principles of Scientific Management* in 1909, codifying his belief in efficiency at work. Taylorism may have been well intentioned but can justify harsh and inhuman practices.

when objectives were in conflict, or became too rigid.

**TQM** Total Quality Management was developed by US business guru W. Edwards Deming, but perfected in post-war Japan. Again, what started off as a good idea became distorted, causing a loss of faith in the very idea of "quality."

1980s world. The book *Reengineering the Corporation* by Michael Hammer and James Champy advocated radical surgery, which sometimes paid off – but also left some corporate patients in a worse state.

**AGILE** Emerging from the high-tech world, agile has been held up as an answer to the corporation's problems. But it is not for everyone. The principles – of being responsive to customer demand – are good.

**MBO** Management by Objectives was an idea developed by Peter Drucker in 1954. It had a plausible common-sense factor: keep objectives in mind. The difficulty came

**BPR** Business Process Reengineering was seen as a panacea for a recessionary

## Takeaways


- LEAD WITH LOVE: If you want your people to act differently, then they have to be moved – emotionally. It is important to show your human side.
- POLYCRISIS NEEDS COLLECTIVE LEADERSHIP: The issues facing today's organizations are far too complex to be solved by an individual leader alone.
- BUSINESS IS PERSONAL: Leadership is a person-to-person dynamic and can be shaped into a positive experience that combats the coldness of algorithms.

July August September **October** November December 2009

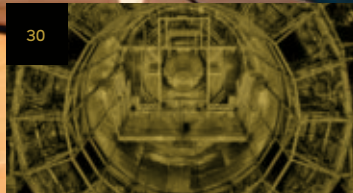
# The bot's

01  **think:act**

**OCTOBER 2009**  
Think:Act 12  
Crisis

13 

**Think:Act 12**  
"You have no idea how difficult it is to be a good politician in Africa. You are battling hunger, AIDS and the lack of schools. By comparison, the work of a European head of state is a piece of cake."  
Mohamed Ibrahim, Founder of Celtel

30 

**NOV. 30, 2009**  
Large Hadron Collider  
CERN announces that the LHC has become the world's highest-energy particle accelerator.

# best friend

2004-2024

2040 January February **March** April May June

**IN A WORLD WHERE MORE AND MORE WORK IS AUTOMATED, HOW WILL PEOPLE CONTINUE TO ADD VALUE? IS IT TIME TO CHANGE YOUR HUMAN TALENT STRATEGY?**

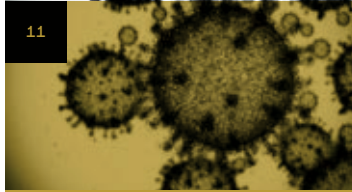
Words by **BENNETT VOYLES**  
Photography by **LARS TUNBJÖRK**

**A**RTIFICIAL INTELLIGENCE is making dramatic strides these days. Many business thinkers argue – perhaps rightly so – that we are on the cusp of a new industrial revolution. "It's the most important invention since alternating current, in terms of productivity," says Joseph Fuller, a professor of management practice and co-leader of the Managing the Future of Work initiative at Harvard Business School. Bob Goodson, president of Quid, an AI-powered market research firm, goes even further, likening the rise of generative artificial intelligence (GenAI) to the introduction of the mechanical loom in the late 18<sup>th</sup> century, "but instead of textiles, the material is words." The point is the same: get ready for major change.

Fuller says his models suggest that GenAI will reduce labor needs by over 40% even as it enables individual workers to be 40% more productive. Some of this is already happening. "Every programmer or head of IT or head of solutions that I speak to says, 'we've become 20% more efficient using this tool,'" says Amit Joshi, professor of AI, analytics and marketing strategy and director of the Digital Excellence Diploma program at the IMD Business School. "For some weird reason, everybody says 20%." For managers, these changes pose important questions not just about your AI choices, but your

talent strategy. Who should you be recruiting now? What skills will they need to develop? And, not incidentally, how do you make sure your helpful co-pilot doesn't push you out of the cockpit?

**THERE ARE COMPETING SCHOOLS** of thought about what talent strategy makes the most sense in the AI era. Fuller argues that GenAI offers companies an opportunity not just to optimize particular steps, but to engage in a wholesale rethinking of how they operate – a revolution that will require fundamental changes in operations, job descriptions and management. But today, he says, most companies are still thinking too narrowly. "They want a solution right now for training, they want a solution right now for diversity or whatever it is, and you get this cycle that is solving for the old X," Fuller says. Joshi believes the degree of urgency depends on a company's strategic situation. "My gut feeling is that it will very much depend on industry and context ... if you're heavily in software development, if you're a professional service firm, I don't think you have a choice," he says.

11 

**MARCH 2020**  
20<sup>th</sup> anniversary of Covid-19 being declared a pandemic  
The date sparks a renewed discussion on public health that helps to establish new strategies for strengthening global health systems.

Other companies – such as midsize financial or midsize pharma companies – may be able to move more slowly, Joshi argues. "I don't at this point think that there is going to be revolutionary change. But there needs to be evolutionary change for sure."

That means training current employees in how to use these new tools should be a priority, he says. Democratize experimentation, he suggests, but keep the experiments internally facing at first, in case something goes wrong. "At the same time," he adds, "be careful about your data governance structure, to ensure your GenAI system can't spill confidential information." It's important to think through the costs, as well, he warns. Posing a complex query to a large language model can cost as much as 10 or 15 cents, according to Joshi – which might not sound like much, but if your team is submitting a few thousand queries a day, that's suddenly a major new budget item.

Nor is building your own large language model necessarily cheaper. "A good number of organizations just don't understand the engineering scaffolding and the expense that's required in order to make this run. You don't just take this out →

**WHO'S THERE?**  
GenAI may increase productivity, thereby reducing labor needs, but machines can't replace some very human qualities that are essential to helping an organization thrive.

2025-2044



January

February

March

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01

02



Think:Act 09 Mercury Awards for Professional Communications Silver winner

01

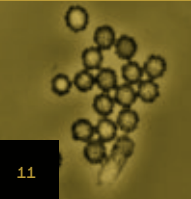
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APRIL 2009 Think:Act 11 Diversification

JUNE 11, 2009

Swine flu An outbreak of the H1N1 influenza strain is deemed a global pandemic.



11

11



Think:Act 09 Astrid Awards for Design Communications Winner (Honors)

22

WHAT HR EXECUTIVES WILL NOTICE FIRST about GenAI is how much it changes their own day-to-day work, says Joshi. "Everything from generating relatively run-of-the-mill job postings, to creating newsletters, to designing learning journeys for employees – all of these are things with which this tool can help," he says. Fuller believes AI will also change how people are managed generally.

In addition to providing electronic advice to make managers more sensitive, GenAI may also encourage the hiring of more socially sensitive people, a trend that is already underway. "Jobs that are growing as a share of the labor force, and particularly jobs that are growing as a share of income, are jobs that feature higher requirements in what are called social skills," Fuller says. "High math skills and high social skills – that's the absolute winning hand." The next best is

30



Think:Act 10 André Schmidt, professor at the European Business School, and Think:Act join forces to assemble a world map of protectionism for the OECD.

→ See André Schmidt's updated version for 2024 on p18.

ON THE OTHER FOOT While it seemed that GenAI had the ability to replace workers, they are in fact now in the position of managing their own AI applications to increase their job productivity.

low math skills and high social skills, which is followed by high math and low social skills. Some of those social skills are acquired in early childhood, he adds, and are fostered by the richness, diversity and stability of the community in which the child grows up. Others can be learned: "I would argue that a lot of people learn empathy by reading fiction," Fuller says.

Ironically, the rise of programs that can talk, sing and paint almost by themselves seems to be good news for liberal arts majors. "The Greek tragic chorus that this is the death of humanities' ... the hyper-emphasis that we've drifted into that you need to develop hard skills that relate to technology," is untrue, Fuller argues. "I think [AI] is a great boon to people in the humanities, because I think in the future you'll be much better off taking a course on logic and taking a course on rhetoric at a university than taking a course on code writing because 50% of the lines of code written in the United States in the last quarter were written by [Microsoft] Copilot," he

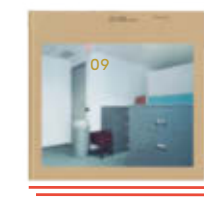
31

S says. "That doesn't mean that we don't need any coders," he adds, "but run-of-the-mill coders, bad coders, amateur coders – not so much."

BEING ABLE TO SEE THE BIG PICTURE is becoming more and more important. "Everyone is a manager now," says Carolin Fleischmann, research professor of international business at Rosenheim Technical University of Applied Sciences. "Even graduates who are just starting to work, because everyone is managing their own AI." As a result, every employee will need to be a very quick study. And it will probably help if they're curious. Goodson argues that the ability to ask insightful questions will be an essential skill. "I'm a big believer in the power of curiosity," he says. "Even at a company level, the culture of curiosity is really important."

Curiosity isn't just asking your AI assistant a question and accepting the answer the model spits out, experts warn. As with purely human problem-solving, the best AI solutions tend to come out of a conversation, not a one-time question and answer. Treat the bot as just another member of your team, advises Jeremy Utley, adjunct professor at the Hasso Plattner Institute of Design at Stanford University. His research has found that "teams that didn't treat AI like an oracle but instead treated AI like a collaborator, like a co-worker, got way better outcomes."

The most important quality of all in the AI era may be one that comes more easily to machines



Office / LA Office by Lars Tunbjörk, 120 pages and 32 pages. Loose Joints, 2024.

16



AUGUST 2040 EU hydrogen pipeline opens Built on redundant gas lines, it serves the continent at a relatively low cost.

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28

Takeaways

- AI IS ALREADY MAKING AN IMPACT: Studies are showing that GenAI is already having an impact on the workplace and is increasing productivity.
THINK THROUGH THE COSTS: Slow implementation will allow for the most targeted workplace solutions since GenAI may generate ongoing expenses.
LOOK FOR WHAT MAKES US HUMAN: We still need humans to work with automation and should seek out and develop the skills that set us apart from machines.

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PHOTOS: BSIP, PETMAL/GETTY IMAGES

2004-2024

2025-2044

High math skills and high social skills. That's the winning hand.

Joseph Fuller, Professor at Harvard Business School

July

August

September

October

November

December

2008

2041

January

February

March

April

May

June

01



**Think:Act 08**  
Best of Corporate Publishing Winner

07



**Best of Corporate Publishing**  
Think:Act is inducted into the award's Hall of Fame

21



**Think:Act 08**  
Galaxy Awards for Product & Service Marketing Winner

28



**Think:Act 08**  
Mercury Awards for Professional Communications Winner

27



**Think:Act 08**  
Midas Awards for Financial Communication Winner

01



**THINK:ACT 10**  
Mergers and Acquisitions

04



**NOVEMBER 4, 2008**  
**Barack Obama elected President of the US**  
Barack Obama will become the first African American president of the United States the following January.

Have intelligence

# Technology

Collages by **MIKE McQUADE**

PHOTO: EMMANUEL DUNAND/AFP/GETTY IMAGES

PHOTOS: ANDRIY ONUFRIYENKO, D3SIGN, FOTOGRAZIA, YEVGEN ROMANENKO, ANDRIY ONUFRIYENKO, ONURDONGEL (GETTY IMAGES)

2004-2024

2025-2044

January February March April May June 2008 2041 July August September October November December

# The Pope's TIA's nms

2004-2024

2025-2044

**FRANCISCAN FRIAR PAOLO BENANTI HAS CARVED OUT A RESPECTED NICHE AS THE VATICAN'S SEMI-OFFICIAL VOICE ON THE THORNY MATTERS OF RAPID TECHNOLOGICAL PROGRESS AND WHAT IT MEANS TO BE HUMAN IN THE 21<sup>ST</sup> CENTURY.**

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APRIL 2008  
Think:Act 09  
Europe

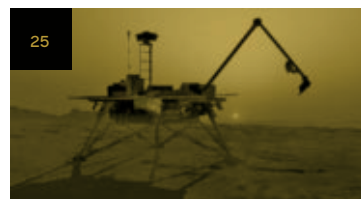
Interview by  
**STEFFAN HEUER**  
Portrait by  
**JAN ROBERT  
DÜNNWELLER**



Think:Act 09  
"It has long been proven that social and ecological engagement can go hand in hand with commercial success."  
José Manuel Barroso, President of the European Commission



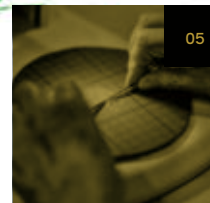
Think:Act 08  
Astrid Awards for Design Communications Winner (Honors)



MAY 25, 2008  
NASA Mars landing  
The Phoenix Lander touches down in the Green Valley of Vastitas Borealis at 23:38:38 UTC.



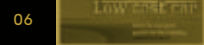
JULY 2041  
Algae-based protein  
The revolutionary new protein source becomes a global staple, reducing reliance on traditional agriculture as well as food scarcity in arid regions of the Global South.



DECEMBER 2041  
Crop agreement  
"Climate-resilient" seed banks are formed across Africa, aiding both crop diversity and food security.

July August September October November December 2007

AUGUST 2007 Think:Act 08 Low-Cost Cars



Bridging the worlds of faith and tech, you also work to facilitate a dialogue between tech companies such as Microsoft and Cisco and the Vatican. How would you describe Pope Francis' knowledge of AI? Pope Francis is 87 and not an engineer, but when you look at the pontifical declarations made by him, they are characterized by a really deep ability to perceive what the most challenging questions are for human beings. It started at the outset of his papacy with a visit to Lampedusa in July 2013 to pray for refugees and migrants lost at sea. He followed up with the encyclical Laudato si' in 2015 which addressed ecological concerns. And now you have the big topic of AI, where he has repeatedly spoken about the potential to contribute in a positive way to the future of humanity, but also cautioned that this requires a constant and consistent commitment on the part of those developing these technologies to act ethically and responsibly. Don't forget that one of the most viral images was the Pope "wearing" an AI-generated

## HELPING THE POPE WITH AI THOUGHTS

How some of Paolo Benanti's ideas found their way into Pope Francis' speech at the G7 on AI in 2024.

“ Human dignity and human rights tell us that it is man who must be protected in the relationship between man and the machine.”



Paolo Benanti

“ We need to ensure and safeguard a space for proper human control over the choices made by artificial intelligence programs: Human dignity itself depends on it.”



Pope Francis

You are a professor of ethics at the Pontifical Gregorian University in Rome, which is considered the Harvard of the Vatican, but you're also in the headlines frequently as the advisor to the Pope on artificial intelligence. Why does the Vatican need an AI advisor?

My daily work is at the university, teaching and writing. The idea of me advising the Pope is a misunderstanding by the media. I'm only a consultant. A consultant is a special role in the Vatican where the Pope appoints someone, usually a professor, to help work on some topics. I'm not someone who whispers into the Pope's ear. My role is to serve as an official element of advice in a broader framework. When the Holy See calls on consultants like me with a specific question, we write documents and have some kind of dialogue.

2004-2024

2042 January February March April May June

white puffer jacket. In his message for the Catholic Church's World Day of Social Communications in May 2024, he clearly stated: I, too, was an object of a deepfake. His own perspective, then, is not on himself - it's on the effect on people.

### What are, to your mind, the biggest and potentially existential risks that AI poses to mankind?

Just as when we first picked up a club 10,000 years ago, AI can be a tool or can easily be weaponized. It depends on culture, which serves as a complement to nature and arises out of language. If you can hack language, you can hack culture, knowledge and a core set of beliefs that characterize humanity. Language is a very powerful technology. First words were spoken, then written down, then came the printing press. Now we have a computed language. I think this is where the major risk comes from, because we learned during modernity to shape our

PAOLO BENANTI studied engineering before dropping out, joining the Franciscan Order and earning a Ph.D. in moral theology at the Pontifical Gregorian University, where he has taught on the moral questions of technology since 2008. He is also an AI advisor to the Italian government.

knowledge in an architectural way, with knowledge remaining in self-sufficient silos. Engineering is engineering. Science is science. Now, if you interact with an AI, the knowledge that the AI can suggest to you is oracular. Everything is mixed together - and you have to trust it. What we know of ourselves is not automatic knowledge, but something that is handed from one generation to another. Once you insert AI in this chain and it's not well designed, it could have a really profound effect on who we are and how we understand the world.

### In which specific areas do we need regulation? You have made the case that guardrails for AI are similar to mandating the use of seat belts.

When we develop a car, we start by drafting the rules for driving in public. Those rules are not made to constrain the technological evolution of cars but to avoid accidents. Because we have machines now that can automate decision-making or can be applied in medicine - in other words replace humans in a lot of processes - we need guardrails to avoid accidents in those realms. Think of it as some kind of safety belt to avoid that human dignity, the most fragile part of us, could be damaged by the speed of innovation. Innovation has to serve the public good.

### How much time do you think the public, politicians and regulators have to put these guardrails and mandates in place?

The world of technology is evolving really fast. But there is a flip side when regulations are put in place too fast, without us being able to understand or allowing new technology to develop. Take the privacy regulations passed in the EU called GDPR. We were able to define human rights around our data - and the slowness of this process turned out to be an advantage. It allowed us to protect not a fixed list of data, but all data that could be personalized. Now that AI can associate lots of new data points to a single human being, it also becomes protected data. The slowness of the legal process gives us not a list of forbidden and permitted technology, but the broad criteria to highlight what we'd like to protect when it comes



FEBRUARY 2042

### Personalized medicine

A leap in quantum computing allows pharmaceutical companies to develop personalized medicine at scale, accelerating the fight against diabetes and cancer.

“ What we are witnessing is a fundamental and deep transformation in the way of conceiving reality and ourselves especially [...] and what is meant by 'man as a moral agent.' ”



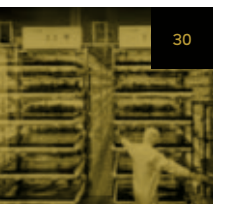
Paolo Benanti

“ We seem to be losing the value and profound meaning of one of the fundamental concepts of the West: that of the human person.”



Pope Francis

2025-2044



JUNE 2042

### Urban AI farming

India succeeds in utilizing AI and renewable energy to produce high yields of crops in urban areas.

January February March

April May June 2007

2042 July August September

October November December

to human identity – and dignity. The European Union's AI Act is going in the same direction because it isn't covering any industrial use of technology but focusing on protecting human rights.

The debate over regulation vis-à-vis progress is not new. Do you consider it an uneven race?

Regulation is always a compromise. I don't see it as a cat-and-mouse game. AI technologies are in some way temporary because they are continuously evolving. We also have to understand regulation as something temporary that needs to be adjusted.

What about enforcement? We are dealing with multinational players and multinational problems. Do we need global entities or something similar to the Non-Proliferation Treaty for nuclear arms?

It's certainly debatable if that treaty is really working, but something is better than nothing. Enforceability is the real problem, because we don't have global police that can step in. From my experience working on the United Nations' Artificial Intelligence Advisory Body, which was formed in October 2023, we have no solution. Sure, we can draft the ideal regulatory set up for the world, but then every country has its autonomy, which also involves the power of markets and money.

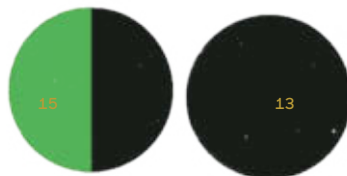
When it comes to ethics in AI, you're the driving force behind something called the Rome Call. What do you want to accomplish?

The Rome Call isn't a normative framework. It's an attempt to establish a setting in which different entities – churches or faiths, states or NGOs, universities and tech companies – can come together and define ethics for AI and then align what they do with those principles. Companies, for example, are discovering some kind of responsibility in their own processes and might mandate their engineers to take ethics classes. We hope we can create an ethical movement through shared principles, but we are not giving anyone a stamp of approval.

The initiative has been able to win over other world religions since it



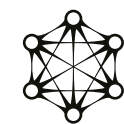
Technology is part of what it means to be a human being. That is the techno-human condition. Technology is always present, even though it's not always the same throughout the human story.



Our ability to fashion tools [...] speaks of a techno-human condition: Human beings have always maintained a relationship with the environment mediated by the tools they gradually produced.



10



### The Rome Call

Initiated in part by Paolo Benanti, the Rome Call is a nonbinding, inter-religious document to promote shared global responsibility for ethical AI. The first signatories included IBM and Microsoft.

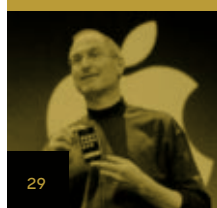
started in 2020. How can the world's large religions work together to ensure that AI serves all of humanity?

Having other faiths join is the most interesting part, from Asian religions to Judaism. It's a new perspective to look at how religions are leaving divisions and fights behind to say we are united on the topic of AI ethics. We want to make sure AI will be a tool for human development and not oppression.

What does that look like in practical terms?

Education is a good example. If you look at just Christianity, we are serving tens of millions of students. Then you have Buddhist, Shinto, Muslim and Jewish educational institutions all talking to future generations about the ethics of AI. We

JUNE 29, 2007 iPhone released Apple launches the first iPhone, revolutionizing the smartphone industry.



Think:Act 05 Astrid Awards for Design Communications Winner

We must establish a language that can translate moral value into something calculable for the machine. The perception of ethical value is a purely human capacity. The ability to work on numerical values is rather the ability of the machine. Algor-ethics is born if we are able to transform moral value into something calculable.



13

An ethical decision is one that takes into account not only an action's outcomes, but also the values at stake and the duties that derive from those values ... With the term 'algor-ethics,' a series of principles are condensed into a global and pluralistic platform ...



10



Homo Faber: The Techno-Human Condition by Paolo Benanti. 140 pages. Edizioni Dehoniane Bologna, 2018.

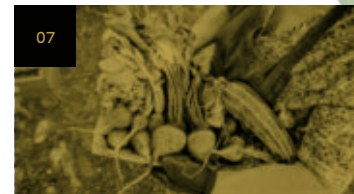
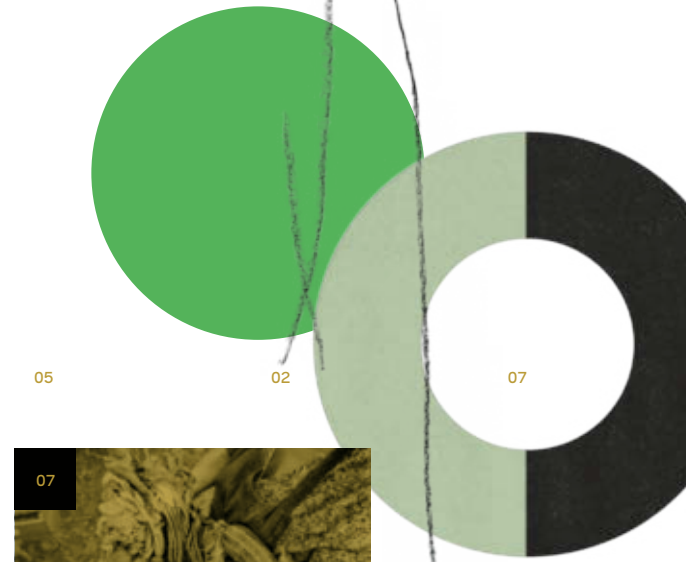
are fostering, nourishing a healthy sensibility of technology. This will have an effect, because it's part of the cultural process and how we understand reality. And we're not an industry. We are not thinking in quarters or investor returns. Religions work with long time horizons.

There's a debate as to whether those systems can become, or might have already become, sentient or conscious. Are some AI experts just delusional?

I come from an engineering background and I know very well that a Turing machine can only solve certain problems. And proof of consciousness is not such a problem. We have systems that may fool us into believing they are conscious, but not more. This makes it a hypothetical problem for now, while it is much more urgent and important to discuss the effects that these AI systems can have on human labor, equality and access to resources such as energy or water.

Let's assume we reach some form of super AI in the near future. What role will religions play when there are sentient beings other than humans among us?

If someone is interacting with a machine like an oracle, that is a religious approach. So, instead of fighting this new divinity, we should tell humans that they are treating machines as if they are gods.



OCTOBER 2042

Regenerative agriculture Chile pioneers a large-scale program to restore degraded farmland and boost crop yields without synthetic fertilizers, leading the region's fight against food scarcity.

Idols will arise when we follow a solution suggested by a machine that we cannot understand. There is a risk that such a religious view of machines will spread in society. People who are not able to understand what these systems are will use them – not because we built a new God, but because we didn't educate the public enough how to use these tools. To be honest, I would not be shocked if in a non-religious country like China, the power of AI will produce a sort of religious movement. Some may ascribe that to the absence of traditional religion and the human need to get answers. Let's remember how early Christians encountered Greek gods. So, forgive me the joke, it's not the first time that we have competitors in the market.

### Takeaways

AI CAN BE A TOOL, OR A WEAPON: Little in the world can be described as entirely safe or inherently dangerous. Human intention makes the difference.

REGULATION MUST BE ADJUSTABLE: Technology is in a constant state of evolution and the guardrails we put in place need to be able to move as needed.

THINK FOR THE LONG TERM: A healthy sensibility of technology requires education that remains focused on the horizon as well as the here and now.

July August September October November December 2006

# Rewiring



05  
**CP**  
Think:Act 05  
Best of Corporate Publishing Winner

2004-2024

# the neural networks

28  
AUGUST 2006  
Think:Act 06  
Best of European Business

29  
DECEMBER 30, 2006  
Saddam Hussein executed  
The former Iraqi president was sentenced to death by hanging.

30

31

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2043 January February March April May June

**OVERFLOWING WITH APPS AND PROMPTS TO INTERACT, SMARTPHONES PROMISED THE WORLD FOR A PLACE IN OUR POCKETS. NOW THERE'S A CALL TO RECONSIDER IF THIS SYMBIOTIC RELATIONSHIP IS TRULY BENEFICIAL, OR PARASITIC INSTEAD.**

Words by **GRACE BROWNE**  
Photography by **RODERICK AICHINGER**

**T**HE EARLIEST CELLULAR PHONE, first released in 1983, was Motorola's DynaTAC. It was better known as "The Brick," weighing in at over a kilogram and costing around \$10,000 in today's money. As the technology grew more sophisticated – and shrunk in size – these phones correspondingly exploded in popularity. IBM was credited with releasing the first-ever "smartphone" in 1994, called the Simon; it featured a touchscreen, fax-sending capabilities and an email and calendar function, but its success suffered due to a short battery life and it ended up lasting just six months on the shelves.

**THE FIRST TRULY SUCCESSFUL SMARTPHONE** was the BlackBerry, launched in 1999. It became synonymous with high-status white-collar workers who could stay connected to the office whenever they liked; a status symbol for the uber-busy, and ergo, the uber-successful. But there were rumblings that all was not well with this increasingly blurry line between home and office. A term arose to describe the growing obsession the owners had with their nifty device: the CrackBerry, which became the 2006 Webster's New World College Dictionary word of the year.

In 2007, *The Guardian* columnist Jonathan Freedland wrote about the frustration he had with his obsessive relationship with his BlackBerry. "I



22  
**MARCH 2043**  
Thought-powered tech  
The first successful human brain-computer interface implants allow individuals to control electronic devices with their thoughts.

**LESS TO LIKE**  
Research shows that adolescents who take a social media break see their mental health improve, even as their isolation from friends still on the platforms increases.

became transfixed by the palm-sized device, my eye returning constantly to its top right corner, to see if the red light was winking. If it was, the curiosity was unbearable. Sure, you knew it was bound to be spam or an office round-robin, but what if it was something else, something exciting," he wrote. If the BlackBerry was considered addictive, it seems nobody was ready for what was to come next. In 2007, the first iPhone was revealed, marketed by Steve Jobs as a combination of the iPod, mobile phone and a breakthrough internet communicator. By the end of 2013, one in five people across the globe had their own smartphone.

Kevin Roose, the technology columnist for *The New York Times*, described our relationship with phones as less an addiction than a "species-level environmental shock," as he put it. "We might someday evolve the correct biological hardware to live in harmony with portable supercomputers that satisfy our every need and connect us to infinite amounts of stimulation," he wrote in 2019. "But for most of us, it hasn't happened yet."

**AS CONCERNS ABOUT THE COMPULSIVE NATURE** of our relationship with these devices cemented, other worries arose. How were they affecting our work, our relationships, our health – or our brains? It was long thought that once our brains reached adulthood, they remained fixed that way for the rest of our lives. However, research in the 20<sup>th</sup> century turned that belief on its head with evidence that our brains continue to change and adapt as we grow older. That also means our brains continue to be amenable to outside forces that may tweak and influence our neural processes.

The term "addiction" is often bandied about when it comes to these devices in our hands, although whether it falls under the strictly clinical definition of the word typically reserved for addictive substances such as alcohol and opioids is up for debate. Nonetheless, a 2022 meta-analysis that looked at 82 studies across 150,000 participants concluded that up to a quarter of the general population could be suffering from "smartphone addiction." Indeed, Anna Lembke, a world-leading expert on addiction at Stanford University, has called the smartphone the "modern-day hypodermic needle." Ev- →

PHOTOS: SCOTT BARBOUR, STANISLAW PYTEL (GETTY IMAGES)

2025-2044

31

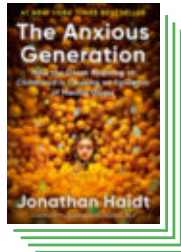
January February March

01 ery like, message or TikTok video gives us a boost of dopamine, the pleasure-seeking neurotransmitter, which in turn reinforces the need in our brains to spend more time on these devices, to scratch that itch.

This endless cycle, experts have argued, also has neurological implications. For one, our collective attention spans may be splintering into pieces. We're less able to deeply immerse ourselves in a piece of work or a good book, because the urge to check our phones is too great. This has been dubbed the "brain drain effect" – this theory maintains that even the mere presence of a smartphone in your vicinity reduces your cognitive capacity because your brains may be subconsciously working harder to ignore the impulse to check your phone.

IT MAY ALSO BE WREAKING HAVOC with our memory. The idea of "digital dementia," coined by German neuroscientist Manfred Spitzer, proposes that our constant reliance on and overuse of digital technology is causing issues with our short-term memory. And while once a technology reserved only for the wealthy adult, access to smartphones has become much more pervasive – and, crucially, reaching a much younger audience. Today's kids are exposed to screens from a young age: A recent study found that around 40% of kids in America have a smartphone by age 10.

22 Due to the much more malleable nature of an adolescent brain, experts are growing increasingly concerned about how this exposure to phones is reshaping the brains of young people. The "great rewiring of childhood" is what it's called by Jonathan Haidt, a social psychologist and professor at NYU Stern School of Business. Haidt is the author of the new book *The Anxious Generation: How the*



**The Anxious Generation** 02 by Jonathan Haidt, 400 pages. Penguin Press, 2024.

*Great Rewiring of Childhood is Causing an Epidemic of Mental Illness*, which instantly skyrocketed to the top of *The New York Times* bestseller list.

This early exposure to smartphones – as well as restricted playtime – is fundamentally altering children's brains at a time when they're slap bang in the middle of developing, he argues. According to Haidt, smartphones disrupt the natural development of the adolescent brain. Before a kid's prefrontal cortex has time to develop, smartphone use disrupts the development of impulse control, he says, fundamentally rejigging the brains of kids today.

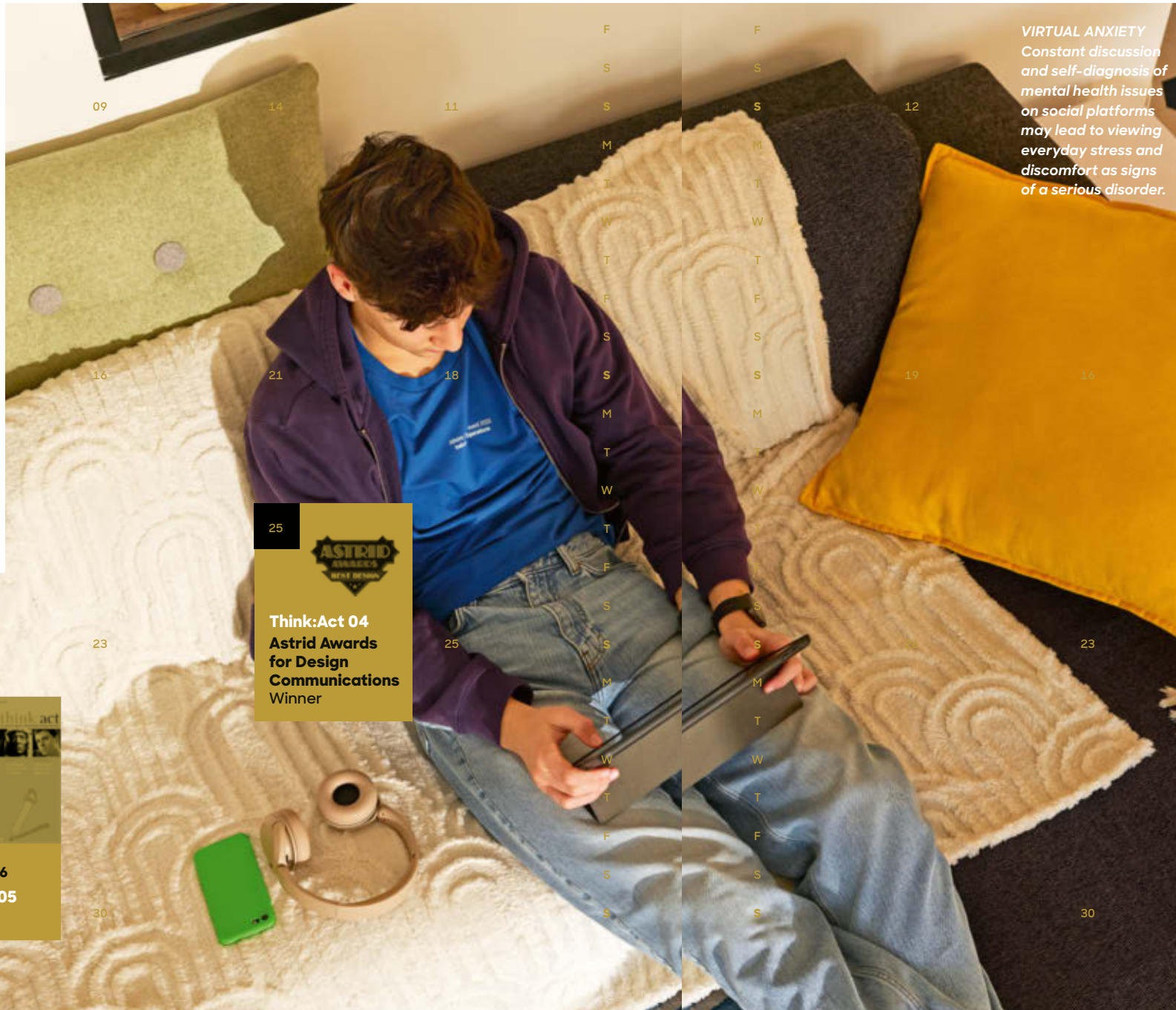
All of this leads to Haidt's ultimate argument and the crux of the book: that this screen-filled adolescence is what's behind the youth mental

2043 July August

health crisis that is currently raging. Haidt traces its inception to around the year 2012, when rates of depression, anxiety and self-harm in young people shot up. Between the years 2010 and 2015, suicide rates in 10- to 14-year-old girls rose by 167%, and by 92% in boys. And these stark figures can be attributed to the decline in a play-based childhood – and its replacement with a phone-based childhood.

The arguments in his book haven't escaped criticism, however. Haidt has been accused of cherry-picking small, underpowered studies to prove his points, and for mistaking correlation for causation. Critics argue that the youth mental health crisis is too complicated to attribute to a single cause, with an origin far more multifaceted

VIRTUAL ANXIETY  
Constant discussion and self-diagnosis of mental health issues on social platforms may lead to viewing everyday stress and discomfort as signs of a serious disorder.



2004-2024

28 **MERCURY**  
Think:Act 04  
Mercury Awards for Professional Communications Winner

28 **think:act**  
MARCH 2006  
Think:Act 05  
Growth

25 **ASTRID AWARDS**  
Think:Act 04  
Astrid Awards for Design Communications Winner

September October November December

# NEVER FAR AWAY

That phone in your pocket may be costing you more time than you think.

# 232 minutes

The global average amount of time a smartphone user will spend on their device each day.

# 58 times

How often the average smartphone user checks their device during a 24-hour period.

# 69% of uses

The percentage of daily interactions users have with their smartphone that last less than two minutes each, an average of 40 times in total.

SOURCES: PRIORI DATA, RESCUE TIME

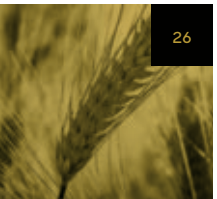
01 **OCTOBER 2043**  
South American nations take the lead in climate-resilient agriculture  
Brazil and Argentina become global pioneers in climate-resilient farming techniques.

in nature. "Mental health challenges are complex and there's no one cause," warns Heather Kirkorian, a developmental psychologist and professor at the University of Wisconsin, Madison.

MORAL PANICS AROUND TECHNOLOGY are certainly not a new phenomenon. Strikingly similar waves of panic arose with the advent of television in the mid-20<sup>th</sup> century, radio in the 1940s, even with the rise of the novel in the 18<sup>th</sup> century. The Greek philosopher Socrates worried about the effects of writing in ancient Greece, that it would destroy the ability to commit things to memory.

What does set smartphones apart according to Jenny Radesky, co-director of the American Academy of Pediatrics Center of Excellence on Social Media and Youth Mental Health, is just how quickly the technologies are adapting and sophisticating. "Part of the business model is to grow big, get to scale, be adopted as fast as possible, get a ton of users," she says. "And so I think we have less time to reach a homeostasis with technology where we feel like we've adapted to it, or the technology has adapted to us."

Kirsten Drotner, a media historian of media panics around technology, forecasts that this moral panic cycle will continue ad infinitum, with the invention of every new gadget or gizmo. It's what Amy Orben, a psychologist at the University of Cambridge, has dubbed the "Sisyphian



26 **DECEMBER 2043**  
Food supply chain security  
Drought-resistant crops help boost the economies of developing nations globally.

July August September October November December 2005 2044 January February

March April May June

cycle of technology panics." She writes: "With every new technology treated as completely separate from any technology that came before, psychological researchers routinely address the same questions; they roll their boulder up the hill, investing effort, time and money to understand their technology's implications, only for it to roll down again when a novel technology is introduced. Psychology is trapped in this cycle because the fabric of moral panics has become inherently interwoven with the needs of politics, society and our own scientific discipline."

THE RESEARCH IS STILL IN ITS INFANCY, yet the concerns about how smartphones are affecting our brains – as well as our children's – are unsettling enough to prompt a rethink of our relationships with these devices. So what can we do? In the 2010s, Tristan Harris was a product manager at Google when he became concerned about how the products he himself was working on were hijacking their users' attention. In 2013, he wrote a manifesto for his colleagues entitled *A Call to Minimize Distraction & Respect Users' Attention*. His screed, which warned that technology companies had a moral responsibility to shape society – and stealing its attention was not the way – earned him a new job title: design ethicist.

He left Google in 2015 to forge his own mission: to reform the attention economy. He founded what he called the Time Well Spent movement, with the goal of stopping "tech companies from hijacking our minds." He became one of Big Tech's biggest critics; *The Wall Street Journal* called him "the conscience of Silicon Valley." Today, Time Well Spent has been rebranded into the Center for Humane Technology, whose mission is to reverse "human

2004-2024



NOVEMBER 2005  
Think:Act 04  
Restructure

OCTOBER 12, 2005  
China launches Shenzhou 6  
The Chinese space program's second manned flight carries a crew of two for a five-day orbit.

Think:Act 03  
"Many companies are still structured like medieval castles, surrounded by high defensive walls. In the future, we will experience a more open system of knowledge exchange, a system in which people, information and ideas constantly circulate – as they do in an ecosystem."  
Homa Bahrami, Economist at UC Berkeley

Think:Act 01  
Best of Corporate Publishing Winner

AUGUST 2005  
Think:Act 03  
The Third Dimension

downgrading" – which he has described as the "social climate change of culture" – and realign technology with humanity.

After Harris first began calling out the industry, the companies started to take heed. Apple and Google began to roll out features that promoted "digital wellness." You could now track your screen time, set access limits, shush the incessant notifications and switch your phone to grayscale. These are all tweaks that Harris himself advocated for, but he also called them just baby steps in what will be a much longer journey.

INDEED, CHANGES MAY HAVE TO COME at a policy level to fight smartphone addiction. In the United Kingdom and the EU, governments have targeted the companies making the social media platforms and smartphones, passing regulations that penalize tech companies for failing to clamp down on illegal or harmful content, such as disinformation and

bullying, for targeting children with advertising based on their personal data or cookies and companies are forced to carry out risk assessments on the negative effects on the mental health of children to present to the commission.

When it comes to children, movements in the US tend to place the liability on parents to safeguard their own kids. "Unfortunately, it puts a lot of the onus of responsibility on individual parents to battle against multibillion-dollar companies," says Kirkorian. "There's a place for policy around things like privacy, things like manipulative design, where you're agreeing to things you don't know you're agreeing to." But she adds that "individual parents and kids should be armed with information about what might make them feel better, and what may make them feel worse."

The reality is that ever since the iPhone was first unveiled by Apple in 2007, we'll never be able to put the genie back in the bottle: Smartphones

FREE PLAY  
Social media use by children has risen alongside a focus on "goal-oriented activities" over unstructured time with peers, and both may negatively impact self-esteem.



"Mental health challenges are complex and there's no one cause."

Heather Kirkorian,  
Developmental psychologist

APRIL 2044  
50th anniversary of the end of apartheid  
Renewed reflection on racial equality shapes cultural and political discussions.

aren't going away any time soon. These devices in our pockets are now part of the fabric of modern life. But we can – and should – wrestle back control from the Big Tech companies feeding on our attention spans. For now, the jury is out on just how much damage they are wreaking on our brains. But it wouldn't hurt any of us to unplug from time to time.

Takeaways

- OUR BRAINS CONTINUE TO ADAPT: We build neural reserve throughout life and remain amenable to forces that may influence these processes into old age.
- CONCERNS MAY BE VALID: Credible studies have shown a number of negative effects related to increasing levels of smartphone usage, also in children.
- MORAL PANICS ARE NOTHING NEW: Every emerging technology has had its detractors, and valid criticism must be separated from speculative fears.

2025-2044



2004-2024

# A Day in Data

## WHAT DOES YOUR DAILY DIGITAL FOOTPRINT TELL COMPANIES ABOUT YOU?

January February March April May June 2005 2044 July August September October November December

6:50 AM

**D. turns off the alarm on her phone and checks her notifications.**

Her sleep has been tracked by her Apple Watch and she received an 88% sleep score – nice. She tells Alexa to play some rock music to help her feel more awake.

**Apple Watch**  
The Apple Watch tracks many forms of biometric data including your heart rate, blood oxygen levels, menstrual cycle, hearing, breathing and your heart's electrical signals.

**Siri**  
In July 2019, it was revealed that contractors employed to help improve Apple's Siri software were able to listen to private conversations that had accidentally been recorded.

7:20 AM

**She checks her Ring camera and catches the train into the city.**

Her phone knows she has left her house: Smartphones track their users' location movements.

**Amazon's Ring**  
Amazon's home security system, Ring, has documented surveillance ties with law enforcement.

**Amazon software**  
A 2024 Wired article reported that Amazon software was scanning people's faces in UK train stations in order to predict travelers' age, gender and potential emotions.

7:40 AM

**On the train, she idly looks for a new jacket on a website.**

Ads for the same jacket will now appear in her social media feeds for the next few days.

**Google Chrome**  
Google Chrome allows websites to target users with ads tuned to their interests based on browser histories.

**Web browsing history**  
Your browsing history is lucrative information as it enables a behavioral profile to be developed each time you open a webpage.

8:20 AM

**She gets to the office, and starts work with headphones on.**

She opens Spotify and selects a recommended playlist based on her previous listening history.

**Spotify**  
Spotify collects more than 100 billion data points every day, which it uses to reveal its audience's moods, mindsets, tastes and behaviors.

8:50 AM

**To procrastinate work, D. scrolls her Instagram feed.**

An ad for the jacket she was looking at earlier pops up in her feed.

**Instagram**  
A 2021 study found Instagram to be the "most invasive" app when it comes to just how much user data it collects and shares – 79%, including search history, location, contacts and financial info.

**MAY 2005**  
**Think:Act 02**  
*Flexibility*

**JULY 2044**  
**Bretton Woods Centennial**  
The 100<sup>th</sup> anniversary of The United Nations Monetary and Financial Conference takes place at Bretton Woods, New Hampshire, United States.

**Surveillance at work**  
Surveillance is particularly prevalent in the gig economy. It's been reported that many workers at Amazon have wearables that track every movement their body makes, how fast they complete tasks and the length of any breaks taken, even for the bathroom.

**UberEats**  
Uber Eats and other delivery apps have been accused of using black box algorithms that shortchange drivers' wages.

1:00 PM

**After a few solid hours of work, D. is hungry for lunch.**

She opens Uber Eats to order a salad, and a driver drops it off in 15 minutes.

2:00 PM

**Back to work - and her mouse movements let her co-workers know.**

D. doesn't realize, but her performance is being monitored and fed back to her employer.

**Netflix**  
Netflix uses personalization algorithms collected from user habits in order to recommend what to watch next. It even shows different users different thumbnails for the same content, with the aim of showing the one that will make the series or film look the most desirable.

5:50 PM

**When she gets home, D. sifts through Netflix to find something to watch.**

It recommends a new detective TV show, the most popular series in her country that day.

**Dating apps**  
Between 2015 and 2019, an estimated 32% of relationships started on the internet.

7:00 PM

**D. opens Hinge and starts to swipe through people in her area.**

The app's algorithm shows her whom it deemed to be most compatible with her.

8:00 PM

**D. gets a notification that she hasn't met her step count for the day.**

She heads out for a run and uses a popular fitness app, Strava, to track her progress.

**Strava**  
In 2018, it was revealed that Strava had published heat maps that accidentally revealed sensitive military positions in the United States.

Words by GRACE BROWNE Illustration by BRATISLAV MILENKOVIC

2025-2044

PHOTO: HULTON ARCHIVE/GETTY IMAGES

July August September

October November December 2004

# Fax to the future

### BEFORE HER 16 YEARS AS GERMANY'S CHANCELLOR, ANGELA MERKEL ENJOYED READING THINK:ACT - AND SHE WROTE TO US TO SAY SO. NOT BY POST OR EMAIL, BUT BY FAX ...

Dear Mr. Schwenker,

Thank you very much for your letter of December 16, 2004 and for sending me a copy of your new magazine "think:act." I found the articles on the topic of "growth" particularly interesting as well as the examples given of companies with exceptionally successful growth strategies. It is encouraging to see German companies among the examples presented here.

For me, these articles make it very clear what is needed from a macroeconomic and national perspective if we want to achieve more economic growth in our country again, and that is more freedom for entrepreneurial initiative and creativity and, in turn, the necessary reduction in state influence. In this context, I would also like to reiterate the statements made by EU Commissioner Joaquín Almunia, who once again makes it very clear in this interview what is needed from a political perspective to achieve the Lisbon goal.

I wish you every success in your future work.

Kind regards,  
Dr. Angela Merkel



PHOTOS: CHRIS WINDSOR, FOTOGRAZIA (GETTY IMAGES), EVA TURRELL, INGO SCHILLER, NICK GREGAN

2004-2024

## Think:Act

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Roland Berger

Roland Berger Holding GmbH & Co. KGaA  
Sederanger 1, 80538 Munich, Germany  
Tel: +49 89 9230-0 | [rolandberger.com](http://rolandberger.com)

**Publisher**  
Stefan Schaible  
Global Managing Partner

**Head of Global Marketing & Communication**  
Kerstin Hoppe

**Creative Director**  
Christine Brand

**Editor in Chief**  
Neelima Mahajan  
[neelima.mahajan@rolandberger.com](mailto:neelima.mahajan@rolandberger.com)

**Editorial Support**  
David Born, Emanuele Savetti

**Digital Team**  
Natalia Wilhelm, Nina Reetzke,  
Gaia Bessone, Damaris Zimmermann

**Editor**  
Mark Espiner

**Sub-editor**  
Melissa Frost

**German translation**  
Christian Gschwendtner,  
Peter Vogt, Peter Hahne

**Design Director**  
Rodolfo Franca

**Photo Director**  
Anna Bianchi

**Art Directors**  
Franziska Goppold, Jennifer David, Laura Risse

**Print Manager**  
Silvio Schneider

**Project Managers**  
Thuy Lan Mai, Miriam Langnickel

**Production**  
Axel Springer Corporate Solutions

**Printing**  
X-Press Grafik & Druck GmbH

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In this issue we used special inks which separate from the paper, which means this magazine can be easily recycled to make other high-quality print products.



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### This issue's contributors:



**Will Hutton**  
is an economist, author, think tank leader, podcast host and regular columnist for *The Observer*. He has served as the president of the Academy of Social Sciences since 2021, hosts the We Society podcast and co-chairs the Purposeful Company.



**JR Dünweller**  
is a freelance illustrator with a background in industrial design, graphic arts and visual communication. His work has been used by *The New Yorker*, *The New York Times*, *The Atlantic*, *Die Zeit*, 032c, the Bavarian State Opera, *Apple*, *Moncler* and *Rimowa*.




**Stefan Stern**  
is a journalist and author. He was the *Financial Times'* management columnist from 2006 until 2010. His latest book, *Fair or Foul - the Lady Macbeth Guide to Ambition*, was published in 2024, following *Myths of Management and How to be a Better Leader*.

→ PAGE 22

→ PAGE 3 AND PORTRAITS

→ PAGE 56



Thinking is an immediate act. It can also have far-reaching consequences. When *Think:Act* was launched 20 years ago, its vision embraced both notions. It set its sights on the *here*, the *now*. And the *future*.

**B**

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of *Think:Act* as well as  
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