

Think:Act

Leading thoughts, shaping vision

 Think:Act

AI is accelerating, you're right. But you've got this.

+ I am trying to master the latest AI tools and feel at times as if they could make me obsolete. Which of my skills are safe, and which am I kidding myself about?



It's Remaining Human

WHY COUPLING OUR UNIQUE SKILLS
WITH AI IS THE BEST
RELATIONSHIP FOR SUCCESS



You do the math
Marcus du Sautoy
on AI and art

Climate change focus
Agriculture adapts to
a hotter world

**Roland
Berger**

→ In the previous issue and first volume of our AI special, we invited you to become artificial: It was about mastering the tools of the new tech. Now, we are asking you to merge the uniqueness of your skill set with the turbocharged abilities of artificial intelligence with a specific aim: *to remain human.*

Why should I collaborate with AI to achieve better results?

 Think:Act

AI offsets human limits in memory, attention and consistency; humans can supply the judgment and accountability AI lacks. Together they cover each other's failure modes better than either alone.

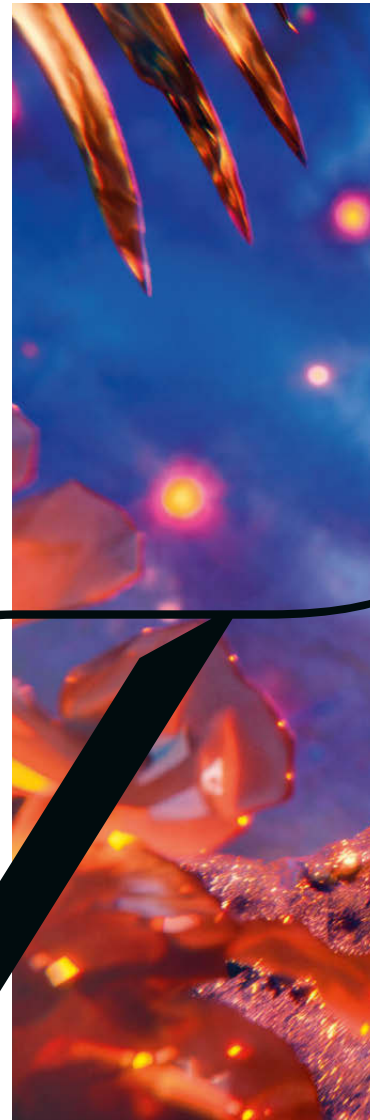
+ Ask a question

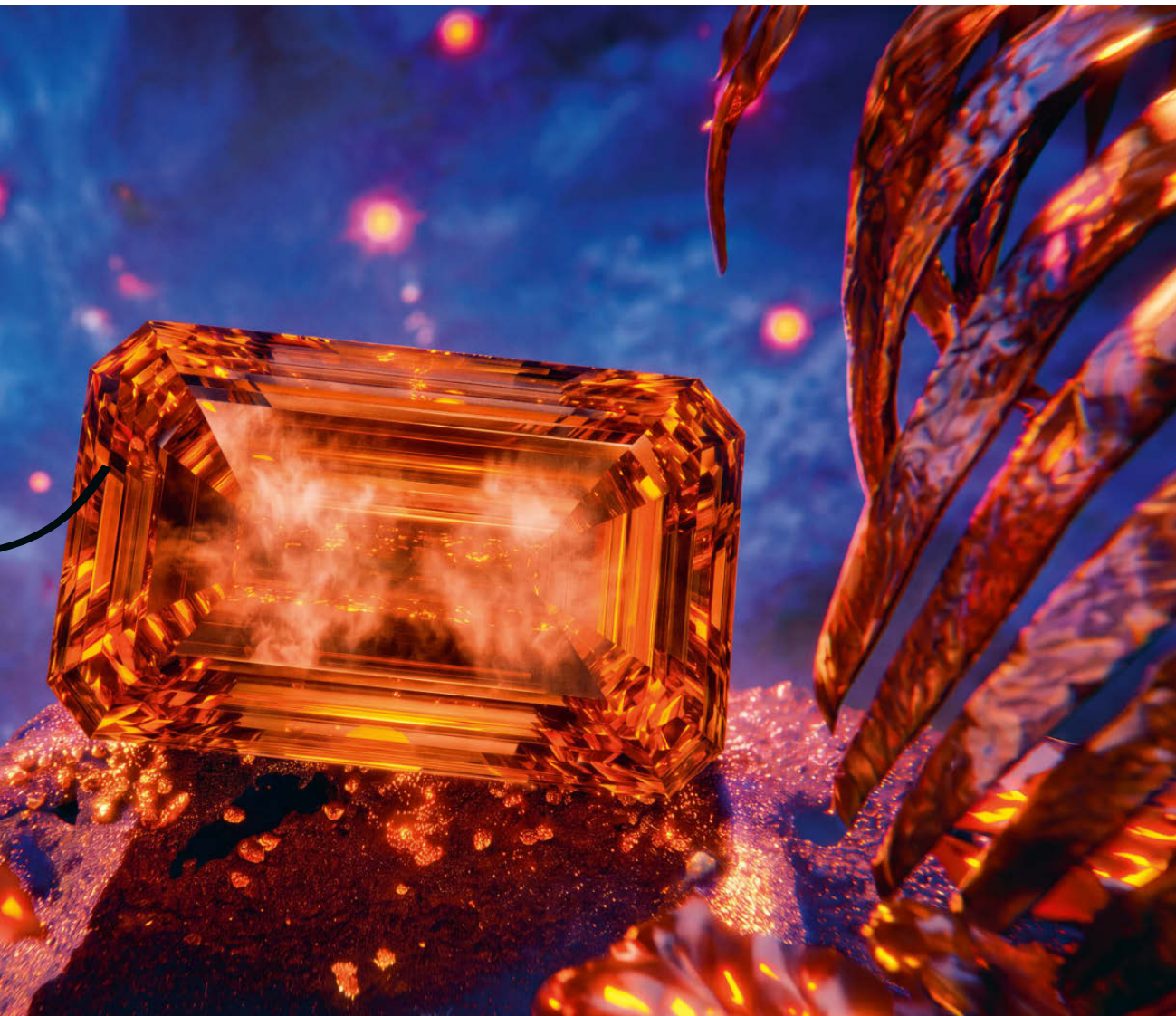


THE EMERGENCE AND DEVELOPMENT of powerful AI is as significant for us and our society as putting a man on the moon. It is a game changer. It rewires our capabilities and how we execute things.

When JFK launched the US space program in the 1960s he was aware of the effort. "We do these things not because they are easy, but because they are hard," he said, exhorting his fellow Americans to be their best selves and blast mankind off into space to push toward new frontiers. It was all about harnessing the power of science to go further than we had ever gone before.

Now, after a series of what computing gurus called AI winters, the shiny new technology is delivering. It is advancing at a dizzying speed as though propelled by rocket fuel. And with every iteration it is improving. All we have to do is harness what it can do for us to launch ourselves into a new age of discovery and productivity. To do that successfully, we need to collaborate and partner with this new intelligence.





Navigating this new world requires a new ethical map. Hamilton Mann draws one out for our readers. The author of *Artificial Integrity* is bringing a philosophical dimension to how we should be implementing AI and adapting to the ruptures and changes it will bring. We take a look at recruitment and the new employment landscape and learn how human judgment is a key component and a unique tool in our toolbox – and if joined together with AI it could bring untold benefit. Likewise, the marriage between AI and robots is only a step away, so we take a look at advances in embodied AI that could herald a new way of working.

We reflect back on the previous issue, "Becoming Artificial," and pick up the argument of how to play the long game too. Thinking big is important when it comes to AI but AI-enabled enterprises will still rise or fall on essentially human qualities such as listening skills and empathy. The leaders who will still be standing in a decade are those using AI as

Explore the
humanity
in the
artificial



Think:Act #48:
**Becoming
Artificial**

Published
in August, 2026.

→ [thinkact.](https://thinkact.com)

[rolandberger.com/
en/ta-48/becoming-
artificial](https://rolandberger.com/en/ta-48/becoming-artificial)

a sidekick and sparring partner for developing and honing their long-term strategy. And as a counterweight to the world of computing, the second section of this issue of *Think:Act* looks at some key implications that climate change is having on business in our special focus on the environment.

So, in the spirit of understanding the need for a new AI collaboration and how it could bring out the best that man and machine are capable of, we could do worse than to paraphrase Neil Armstrong, the astronaut who articulated one of mankind's greatest endeavors as we stand on the brink of what could be the next: One small step with AI means one giant leap for mankind.

Sincerely,
Team Think:Act

A photograph of Hamilton Mann, a man with a grey beard and short dark hair, wearing a dark grey suit jacket over a black turtleneck. He is gesturing with his right hand, showing three fingers. He is wearing a small lapel microphone. The background is a solid dark brown color.

**"This is always
the rule of the game
in high-stakes
environments.
You choose whether
you're playing
short term or the
long run."**

Hamilton Mann

Tech executive, senior lecturer
at INSEAD and HEC Paris

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A portrait of Rasmus Rothe, a man with short dark hair and a beard, wearing a dark blue sweater over a light blue collared shirt. He is looking slightly to the right with a thoughtful expression. The background is a warm, yellowish-orange wall with horizontal white lines.

"If we think too small and worry too much about the risks, we will miss the broader opportunity."

Rasmus Rothe
Founder and general partner
of Merantix Capital

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A portrait of Natalie Monbiot, a woman with long, dark, wavy hair, looking directly at the camera with a slight smile. She is wearing a dark blue button-down shirt and a gold necklace with a triangular pendant. The background is a solid grey.

**"We've just invented
the most aggressive
tool for instant
gratification to make
it even harder for us
to reinvest in delayed
gratification."**

Natalie Monbiot
Founder of the Virtual Human Economy
and co-founder of Hour One

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**"Being relentlessly
curious is an
essential quality to
grow a business."**

Lew Frankfort

Former long-term CEO of Coach
and author of *Bag Man*

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In a world where AI is suddenly available to everyone, gaining a competitive edge will mean differentiating yourself in how you use it.

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Success in an AI-augmented workplace will mean creating space for human judgment and artificial intelligence to enhance each other.

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Embodied AI promises smarter, more adaptive automation, but the reality remains far more complex than the hype.

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"Leaders who are in the trenches and getting their hands dirty will adapt well in the age of AI."

— Kaifu Zhang,
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Playing the long game

Good business in the decades ahead will mean leading with AI, but without losing sight of some valuable human qualities.

Wide angle

Think, act and stay informed



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An unstable climate is calling for ingenuity in agriculture and food production, yet the changes are a signal of a deeper shift.

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Digital

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rolandberger.com/en/Insights/



Editorial

Successful AI needs leadership

LEADERSHIP, CULTURE AND CURIOSITY. Three profoundly human qualities that, in the age of AI, determine success. Without them, no company can unlock the potential of artificial intelligence.

AI does not replace the need for leadership – it redefines it. When data is accessible to all, leadership shifts from knowing more to inspiring others. Modern leaders are enablers: They create space for experimentation, foster psychological safety and live out a clear vision.

This leadership shapes the company culture. The value of data arises from context and collaboration, requiring a culture of trust where knowledge is shared, not hoarded. Such a culture cannot be imposed or "programmed" – it can only be lived by example.

Finally, being human means being curious – the engine for lifelong learning and creativity. This is why investing in education is more important than ever.

I hope this magazine sparks your curiosity and offers inspiring insights!

Dr. Edeltraud Leibrock

Senior Partner
Global Managing Director, Roland Berger



Think in numbers

Putting a figure on ...
LLMs

900

MILLION

The active weekly users of ChatGPT, the biggest large language model (LLM) globally with a market share of up to 80%, at the start of 2026.

8%

REDUCTION

The annual impact on task time attributed to LLM advancement, with 56% of gains driven by increased compute and 44% by algorithmic progress.

>10%

ACCURACY

The current performance of frontier LLMs against the HLE (Humanity's Last Exam) benchmark of 2,500 challenging questions designed to assess LLM capabilities at an expert level in broad academic subjects.

320

MILLISECONDS

The time it takes GPT-4o, a multimodal model capable of processing any combination of text, audio, images and video to respond to audio.

SOURCES:
THE INFORMATION, STATCOUNTER, CORNELL
UNIVERSITY, NATURE, STANFORD ARTIFICIAL
INTELLIGENCE INDEX REPORT 2025

Food for thought

How do we make sure that AI will not make us worse off, cognitively and economically?

by Vivienne Ming

STOP OPTIMIZING for ease. The tech industry promises AI will eliminate drudgery, freeing us for creative work. But drudgery is creative work. The struggle of the rough draft, the friction of analysis, the frustration of debugging – these aren't obstacles to learning. They are learning. Neurologically, struggle is the signal that triggers growth. Automate it away and you don't liberate the mind: You let it atrophy. My research reveals that the majority ("Zombies") predominately use AI as a substitute for thinking. Their skills are degrading quietly, even as their output looks fine ... until the day it doesn't. Meanwhile, a

small cadre of "Cyborgs" uses AI as a cognitive exoskeleton: not to replace judgment, but to operate at a scale of complexity that human working memory alone cannot handle. Leaders who want their organizations to be on the rising side of that curve must implement AI not to make work easier, but to make it harder in the right ways – deeper, faster, more complex. The economic winners of this decade won't be the organizations that automated the most "boring" tasks. They'll be the ones that augment the one thing no machine can yet replicate: the capacity to ask a question that has never been asked before.

Thin

AT A GLANCE

**Thoughts
to live by**



VIVIENNE MING

is an American theoretical neuroscientist and AI expert

who calls herself a

"professional mad scientist."

She has founded seven

startups and develops

AI tools for learning. Her

latest book, *Robot-Proof:*

When Machines Have all the

Answers, Build Better People,

was published in March 2026.

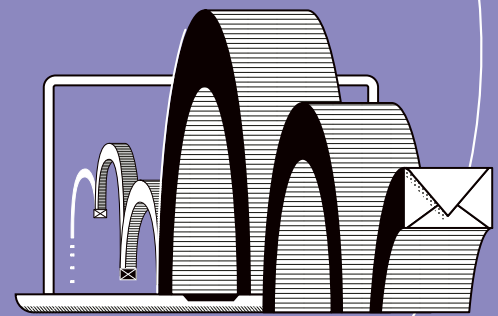
**"Time is
the friend
of the
wonderful
company,
the enemy
of the
mediocre."**

— Warren Buffett

Legendary investor

**Rethinking
buzzwords**

*Get to grips with
new industry lingo
in a flash with our
stripped-down
explanations of the
latest jargon.*



"Workslop"

The slushy runoff of the information age, describing low-quality, AI-generated content such as generic slide decks, templated strategy docs, auto-summaries and perfunctory emails that no one really reads. It looks like productivity, but it clogs our inboxes and creates new burdens for organizations, forcing team members to spend extra time to separate quality from sheer quantity.

Think

Act

The
redacted
read



Chain
Reaction

How we got hooked on plastic

A catch-up summary of a new book that explores how big brands made plastics central to our lives, whether we wanted it or not.

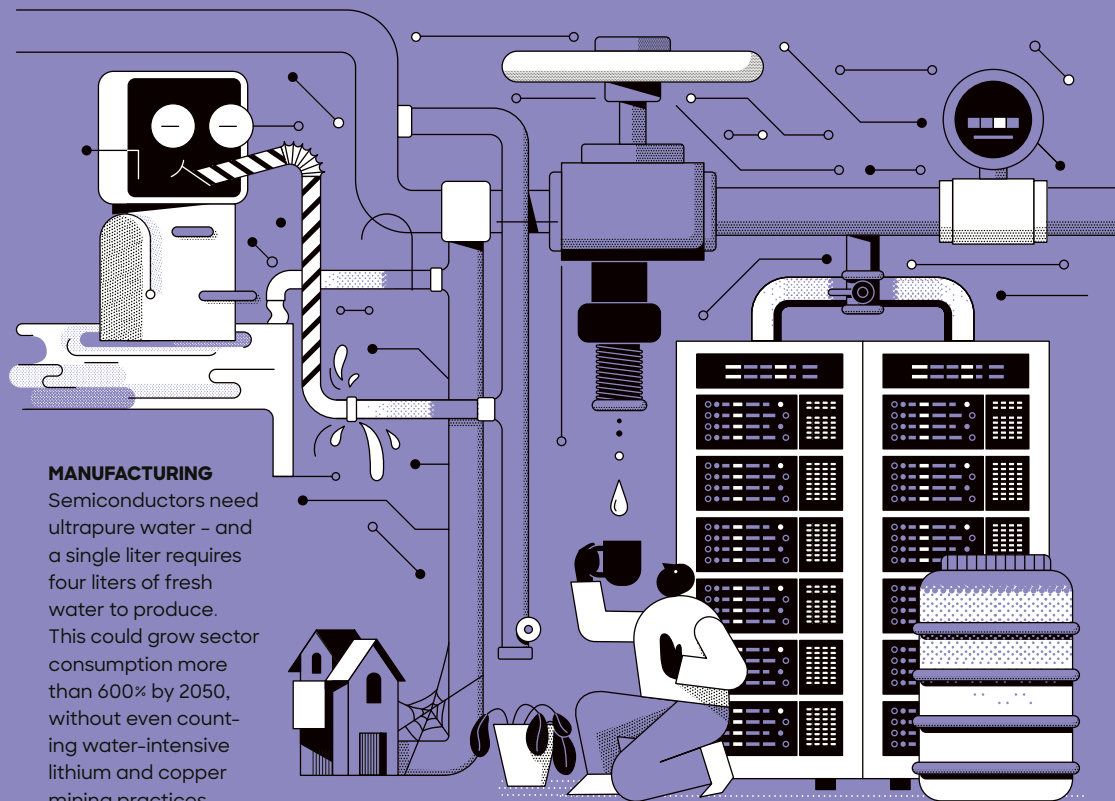
DID YOU KNOW that the equivalent of a truckload of plastic is added to the world's oceans every minute? Or that by 2050, 20% of oil consumption will be tied to producing plastic? This book is full of stats, but also traces how we came to depend on plastic. Big companies have harnessed the substance to shape our everyday habits, and undoing the damage won't be easy, but it is doable. We learn that a landfill isn't a compost site but rather mummifies rubbish so that it can last for centuries. The plastic producers have used that fact to argue that it is no better or worse than any other rubbish, but as we learn more about the possible health threats and environmental damage, the case for plastic looks shaky. Consumers, Chaudhuri argues, were not clamoring for disposable plastic packaging; the big brands convinced us we needed it, and now we need regulation to encourage them to change, because they won't do it without that.

Consumed: How Big Brands Got Us Hooked on Plastic
By Saabira Chaudhuri,
368 pages. Blink Publishing, 2025.

Tech vs. the tap

OUR THIRST FOR AI has triggered a cascading effect on global water resources that's set to see the AI economy's consumption surge 129% by 2050, turning data centers into an unexpected environmental drain. Tech companies have often prioritized building facilities near sources

of cheap electricity, but with 40% of the world's data centers clustered in areas of high – or even extremely high – water stress, the ripples of those decisions are now being felt. Here's how each step in the AI value chain adds to an industry scrambling to keep the taps running.



MANUFACTURING
Semiconductors need ultrapure water – and a single liter requires four liters of fresh water to produce. This could grow sector consumption more than 600% by 2050, without even counting water-intensive lithium and copper mining practices.

PROCESSING
Chips are then used to train AI systems and process user queries. 2023 research showed that running 20–50 prompts through ChatGPT required half a liter of water while another study estimates Gemini's training at one million liters per cycle.

ELECTRICITY
Data center capacity is over 50 gigawatts globally. A one-mega-watt center using enough electricity to power 1,000 homes requires up to 25.5 million liters of water annually. This indirect water consumption can total 75% of a data center's use.

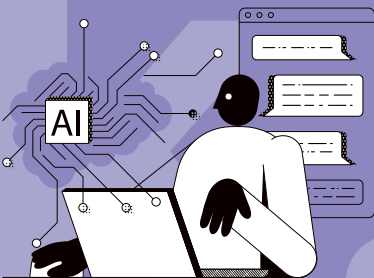
COOLING
In most data center designs, water used directly on-site to cool servers becomes water vapor, escaping into the atmosphere rather than being cycled back through municipal systems. An average midsize data center can use 1.4 million liters daily.

LOOKING AHEAD
Reducing AI's water consumption will require a dual focus: within data center walls and on the grid. Within centers, Microsoft has stated it will pilot zero-water evaporated cooling designs in its Arizona and Wisconsin facilities in 2026.

Best practice

How to prepare for a job interview with an AI agent

SPEAKING TO A FELLOW HUMAN at a job interview is so last year. Synthetic interlocutors are becoming more common and offer an entirely different type of conversation. These job interviews are usually asynchronous, with an agent collecting and evaluating answers gathered by video call, so it helps to prepare a bit for optimum performance. First, find out what platform your potential employer is using and read up on it. Next, make sure your connection doesn't freeze mid-sentence. Chatbots might hallucinate and flatter, but you should pursue a different strategy. Practice in advance how to give concise answers and stick to your key skills and messages – but without overdoing it to sound like a checklist of buzzwords. HR tech also analyzes nonverbal cues such as posture, gestures and facial expressions, so looking sharp and focused matters too. Sit upright and in a well-lit place and be expressive to sway the algorithms.



Economic impact

Where the chips may fall

GLOBAL SEMICONDUCTOR INDUSTRY market value booted up in the 1990s, quadrupling from \$150 billion in 1999 to \$630 billion in 2024. But this growth comes at an environmental cost: Over 2020 and 2021, the world's largest chipmaker – Taiwan Semiconductor Manufacturing Co. (TSMC) – used 6% of the island's total power and 193,000 tons of water per day. During the same period, Intel's Arizona facility produced 15,000 tons of waste in just three months – 60% of it hazardous. Yet consumer demand and financial incentives remain high. The US and EU have both passed legislation to mobilize \$53 billion and \$50 billion, respectively, into the sector even as critics warn of a short circuit with climate goals. Ironically, semiconductors may help debug the crisis they fuel: renewables, electric vehicles and smart grids all run on chips. One industry study found that investments in clean energy helped cut emissions by 32% from 2012–2021, despite rising waste. Manufacturers may have to absorb those costs – or risk running on obsolete logic.

SOURCES: ENVIRONMENTAL HEALTH PERSPECTIVES, THE GUARDIAN, JOURNAL OF INDUSTRIAL ECOLOGY, SUSTAINABILITY, FORTUNE, SEMICONDUCTOR DIGEST, EARTH.ORG

Act

AT A GLANCE

In focus

In this issue we expand on what advances in artificial intelligence mean for business.

REMAINING HUMAN

In the preceding volume we looked at what it takes to become artificial. Why should we now turn our focus to remaining human?

 Think:Act

Because becoming artificial is only half the equation. AI without human agency, judgment and resilience at the helm is just sophisticated automation in search of a purpose.

+ Ask a question



REMAINING HUMAN

Collaborating with AI

THE ART OF MEANINGFUL INTERACTIONS

Interviews by
Steffan Heuer

AI Artwork by
Alys Thomas

→ **We've been there before, perhaps even more than once. A new, profoundly disruptive technology arises, calling into question established practices and processes. But while the AI revolution forces all of us to stay curious and become artificial fast, it also *reminds us to remain human.***

If we are to make the most of AI's promise, it's crucial to preserve human agency and retain the final say.



WHEN IT COMES TO THE TUG OF WAR between humankind and machines, it's astonishing how little difference 135 years make. In May of 1891, Pope Leo XIII took on the upheavals and disruptions of the Industrial Age in an encyclical entitled *Rerum Novarum*: "The momentous gravity of the state of things now obtaining fills every mind with painful apprehension; wise men are discussing it; practical men are proposing schemes; popular meetings, legislatures, and rulers of nations are all busied with it – actually there is no question which has taken deeper hold on the public mind."

Fast forward to 2026, when Pope Leo XIV released his take on the potential and problems of AI spreading like wildfire in business and private life. He chose *Magnifica Humanitas* as the title to drive home his point that AI should be a tool like many that humans have discovered before. "We must avoid the misconception of equating this type of 'intelligence' with that of human beings," the Pontiff wrote. "So-called artificial intelligences do not undergo experiences, do not possess a body, do not feel joy or pain, do not mature through relationships and do not know from within what love, work, friendship or responsibility mean." Looking at the realm of economics and the risk of putting millions out of work, he commented that "work is not simply an instrument ... it is a requirement of the human condition, a normal path toward maturity, development and personal fulfilment."

What are leaders to make of this dilemma? On the one hand, evidence is mounting that AI tools do indeed make (knowledge) workers more productive and can speed up the innovation cycles that keep

It looks like the key question we need to explore is not what new tools we have, but who is wielding them.

+ Ask a question





REMAINING HUMAN

modern organizations competitive. On the other, doubts keep growing about rising costs and how much control humans should cede to these new tools.

WHILE THE PRECEDING VOLUME of *Think:Act's* "AI in 2026" shone a light on what it takes to "become artificial" – acquiring knowledge about and mastery of AI tools in an organization – this issue attempts to look at the same questions through a different lens. What it means to "remain human" when so many mundane tasks and increasingly complex activities are being augmented or taken over by agentic software that at times seems to exhibit a mind of its own.

The issue plants its guideposts in uncharted territory, tracing how curiosity and mindfulness should govern the application of AI tools. This exploration ranges from designing AI systems that pri-

57%
bot-driven

Percentage of
internet traffic driven
by AI bots in June
2026, for the first time
surpassing human-
generated traffic.

SOURCE:
CLOUDFLARE RADAR

oritize integrity and alignment with human values to how to avoid the commoditization trap with proprietary data applications, organizational culture and deep implementation expertise. It continues with a closer look at hiring in the age of AI, to a critical evaluation of the future – and meaning – of work. Embodied AI via spatial computing and armies of robots, finally, brings new regulatory and safety challenges.

Remaining human, as our second panel of five preeminent AI thinkers and practitioners argue, is about availing yourself of new tools but always recognizing and capitalizing on the strengths that are uniquely ours: expertise forged under social interaction, true empathy and listening skills. Humans ought to retain control and have the final say while encouraging human-machine interaction that lets both sides learn from each other. →

Kaifu Zhang

→ **Kaifu Zhang is the founder of drillr.ai, a company that builds economic institutions for the agent economy. Until early 2026, he was vice president at Alibaba Group, leading search, recommendation and GenAI at the company's e-commerce group. He previously taught at Carnegie Mellon University's Tepper School of Business and earned his PhD from INSEAD.**

REMAINING HUMAN

What is your greatest hope and your greatest fear for the coming age of AI?

My biggest fear is that the "free market for knowledge," aka the human internet as we knew it, will break down. As the cost of creating content goes to zero, traditional internet infrastructures such as search engines and recommendation systems will struggle to cope as supply of content goes to infinity. I want to help build a new internet infrastructure for truthful, curated and high-quality content for human beings.

How do you see the nature and essence of leadership evolving now as AI starts to become even more pervasive and powerful?

AI will make teams smaller, the boundaries of roles more blurred and productivity across team members more

uneven. Leaders who are personally in the trenches and getting their hands dirty will adapt well in the age of AI.

What critical skills do leaders need to acquire – and in what time frame – to remain both relevant and in charge?

Empathy is particularly crucial for managing this transition. It requires a top leader to have a down-to-earth, microscopic understanding of the organizational process and its people. This is not only a moral question, but also a key factor that determines a company's competitiveness.

What are the crucial watershed moments when leaders need to decide whether to "hire" or "fire" their AI?

All enterprises will hire AI in one way or another. AI cannot and should not be fired,

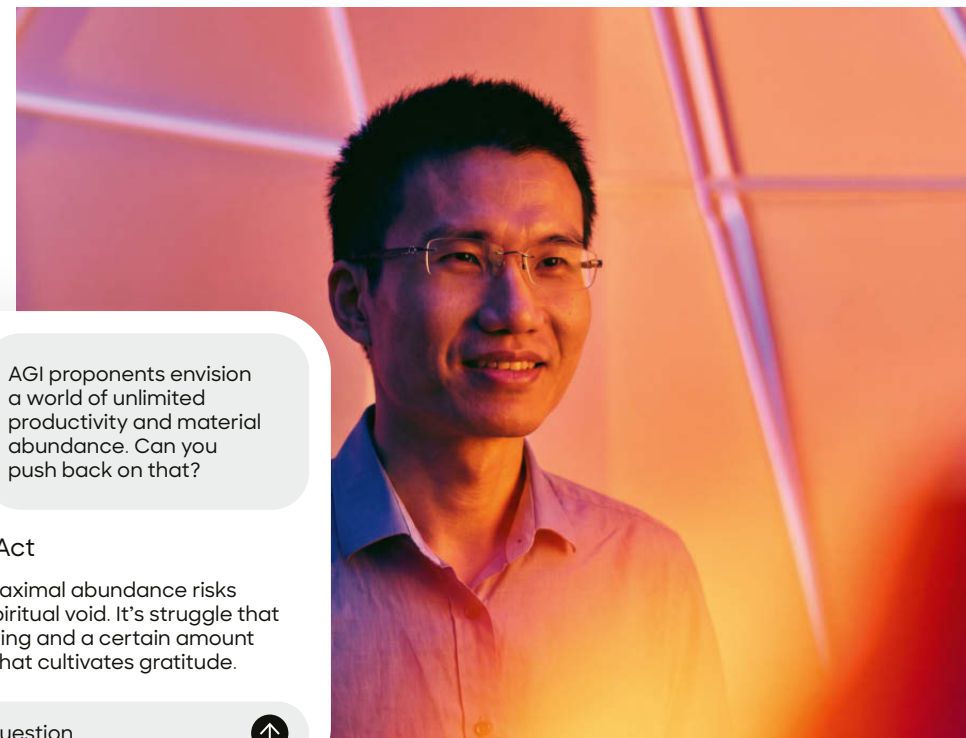
but should be hired carefully.

What role do you see Gen Z and Gen Alpha playing in this new world of enhanced and automated work?

Gen Z and Gen Alpha will see a job market where soft skills (creativity, communication and empathy) matter more than hard memorized skills.

What are the particular areas of decision-making that you think should be reserved for humans and not encroached upon by AI systems?

High-stakes decision-making that is context-dependent such as health care, finance, auditing, legal and science/social science research. It is extremely important that humans provide a clean context for AI, rather than letting the agentic system gather information on the open internet.



AGI proponents envision a world of unlimited productivity and material abundance. Can you push back on that?



A world of maximal abundance risks creating a spiritual void. It's struggle that forges meaning and a certain amount of hardship that cultivates gratitude.

+ Ask a question



What's your greatest hope and your greatest fear for the coming age of AI?

That human beings are the beneficiaries of the AI revolution, increasing our own agency. There are many ways that this can go wrong. We've just invented the most aggressive tool for instant gratification to make it even harder for us to reinvest in delayed gratification. My fear is that it can disempower us, and there is evidence that it does that without even trying because we are complicit.

→ **Natalie Monbiot is founder of the Virtual Human Economy and co-founder of Hour One, one of the first AI avatar companies. Oxford-educated, her areas of expertise are AI twins, virtual humans, digital identity and the future of work and education.**

Natalie Monbiot

What critical skills do leaders need to acquire – and in what time frame – to remain both relevant and in charge?

Leaders will become the orchestrators of their company's culture. What is the role of humans in your company? Some companies will be all about efficiency and agents. Others can be much more people-centric, because that is what differentiates them.

What role do you see Gen Z and Gen Alpha – some people call them AI natives – playing in this new world?

The best-case scenario is they're leveraging these tools to become really savvy, knowledgeable and well equipped by the time they hit the workforce. The biggest challenge is that students can check out of their education more easily and be ill prepared because they have skipped the process of actually learning the skills that are required to thrive in this new AI-first era.

What particular areas of decision-making should not be delegated to AI?

It's very tempting to just ask the AI to tell you what you should do or say to others. Then you go do it and regret it, because you cannot outsource interpersonal decisions. You need to do the work yourself – struggling through what makes sense, use your instincts, experience and mental models. It might cause friction, but you can't rely on an AI to do that for you.

How do you see the nature and essence of leadership evolving now as AI starts to become even more pervasive and powerful?

I think leaders are mostly born rather than trained. So, the idea of an AI training a leader is a contradiction in terms. If humans rely on AI to be good leaders, they're, by definition, not very good, very ordinary, and will probably fail. The great leaders in the future, even in the age of AI, will probably be self-taught or born or natural.

What are crucial watershed moments for leaders or executives when they need to decide whether they want to "hire" or "fire" AI?

No one's going to fire AI. If you run a company, it's like being against steam or electricity. You can do that, but as a corporate leader, you're inviting catastrophe. There

will certainly be wonderful economic opportunities for people who want to create products and services that reject AI, just as vinyl has prospered in the age of MP3.

Assuming that Gen Z and Gen Alpha grow up as AI natives, what role will they play in this world of automated and augmented work?

There'll be an increasing nostalgia for the pre-AI age. In the future, the unborn AI generation will likely be very nostalgic for a world before it. A lot of it will depend on the kind of world that AI creates. The best-case scenario is that people will appreciate it or create new work, more flourishing, more economic prosperity, more human understanding. It's like the world before and after email or before and after automobiles, trains, electricity or steam. You just can't imagine going back.

Andrew Keen

→ **Andrew Keen is executive director of FutureCast in Silicon Valley and a prominent critic of digital culture and the technology industry, calling himself the "Antichrist of Silicon Valley." His expertise spans internet society, digital disruption and tech ethics.**

REMAINING HUMAN



How to Fix the Future
by Andrew Keen,
368 pages. Atlantic
Books, 2018.

What are particular areas of decision-making that you believe should stay reserved for humans?

None. The idea that humans made good decisions before we had all this technology is another kind of misguided, delusional nostalgia. Humans have always made bad decisions, that's what makes us human. AI always comes with values, so the idea of replacing human decision-making is wrong. Someone's feeding the AI and creating the value system that will determine what AI tells you. That's not outsourcing human decision-making, but simply reintroducing a certain value system of human decision-making through the back door. Even if we were to create some sort of overclass of machines with souls or their own consciousness, I have no idea how these machines will think in a post-human way that won't incorporate any of our values.

What keeps Andrew Keen up at night about AI's potential downsides?

 **Think:Act**

His greatest hope is that AI can create jobs we can't imagine yet. And his greatest fear is that AI will do away with human labor that can be valued in economic terms.

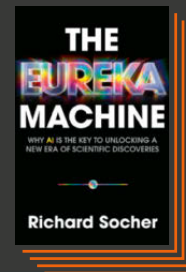
+ Ask a question





WE ALL HAVE
TO BECOME
managers of AI
AND AGENTS. IT'S
A SKILL LIKE
MANY OTHER SKILLS.

Richard Socher



The Eureka Machine

by Richard Socher, 288 pages.
PublicAffairs, 2026.

REMAINING HUMAN

What is your greatest hope and your greatest fear for the coming age of AI?

My greatest hope is that we can usher in a new age of scientific discovery. We at some point discovered the scientific method and started questioning hypotheses we created, collecting data for them and making more and more discoveries. I think we can now automate that, and that will change all of humanity in a very positive way. My biggest fear is that a lot of people are afraid of change and will want to off-ramp from progress. That will create potentially more inequality, often self-inflicted.

How do you think artificial general intelligence (AGI) or superintelligence will change how businesses and national economies operate?

How businesses and how economies operate will change quite significantly as businesses will be able to

scale much more with just access to compute and the right superintelligent systems. The people, the companies and the countries that lean into this technology are the ones that will become more and more productive.

What's the biggest weakness of AI as we know it today – and how do you think we will overcome it in due time?

The main issue with AI is that it's still very dependent on the intelligence and intuitions of people to innovate and it cannot self-improve. Once we solve that, I think we will see even more incredible progress. I think we can get there in the next year or two.

What are particular areas of decision-making that should stay reserved for humans?

In the business sense, there are very few things that should be completely off-limits. AI can be a very useful partner at almost every level.

→ **Richard Socher is the CEO and cofounder of Recursive, CEO and founder of You.com and founder and managing partner at AIX Ventures. He was previously an adjunct professor of computer science at Stanford and the chief scientist at Salesforce. He is known for his pioneering research in how neural networks understand language.**

Richard Socher

→ Rasmus Rothe is founder and general partner of Merantix Capital in Berlin, an AI-focused venture firm, where the Merantix AI Campus is housed. He holds a PhD in computer vision from ETH Zurich and studied at Oxford and Princeton with expertise in deep learning, health care AI and building AI companies.

Rasmus Rothe

What is your greatest hope and your greatest fear for the coming age of AI?

My greatest hope is that AI becomes the true lever for solving the biggest societal challenges, from improving our health systems, addressing aging workforces and productivity gaps, strengthening key European industries, or accelerating science. My greatest fear is not technological failure or a science fiction paranoia about the machines taking over. It's a collective lack of ambition. If we think too small and worry too much about the risks, we will miss the broader opportunity. Particularly in Europe, where we can't afford to stall or underinvest (or under-imagine) what's possible.

How do you see the nature and essence of leadership evolving as AI becomes more pervasive and powerful?

Human leaders will act as system architects, designing workflows where humans and agents interact. Leadership

will become more about how to orchestrate intelligence at scale across an organization.

How do you think artificial general intelligence (AGI) or superintelligence will change how businesses and national economies operate?

When we look into making an investment, we often run this thought experiment: If "AGI" or "superintelligence" exists, does this business still exist? That forces clarity around where value truly lies. If intelligence becomes abundant, competitive advantage must lie elsewhere, like in distribution, in embedded workflows, in network effects and ultimately in trust with the customer. On the macro level, countries and ecosystems that can build infrastructure and attract talent will see productivity gains and more economic strength.

What's the riskiest dead end that current AI research and commercial deployments might go down today – or are already going down?

The risk is less a technical dead end and more about where we want to focus the attention and energy. With the start of the internet, the real long-term value didn't lie in the infrastructure itself but with those companies that were able to build applications on top of that technology. I think we're at the same point with AI, where it will become increasingly clear the true value lies with who can leverage the technology the best and build on top of it.

I BELIEVE THAT
AI WILL BE *the key*
tool BEHIND A
BETTER SOCIETY.

Rasmus Rothe

REMAINING HUMAN

What are four key thoughts that all five experts want to leave us with?

 Think:Act

▣ HUMAN AGENCY IS THE REAL STAKES:

The AI revolution is ultimately a question of whether humans emerge from it more empowered – or less.

▣ SMALLER TEAMS, BIGGER DEMANDS:

AI compresses organizations and demands leaders who orchestrate, empathize and get their hands dirty.

▣ SOFT SKILLS ARE THE NEW HARD SKILLS:

As AI absorbs technical tasks, creativity, communication and judgment become the irreplaceable differentiators.

▣ **THE GREATEST RISK IS US:** From complicity in our own disempowerment to collective lack of ambition, the likeliest failure mode is human, not technological.

+ Ask a question



AI calls many roles humans play into question. What about aligning on values?



Think:Act

The key challenge of value alignment is that humanity has never fully agreed on a single ethical framework, yet we may increasingly ask machines to act as though one exists. And often, we see behavioral compliance with a corporate values document, but that's not true ethics alignment.

+ Ask a question



THE *Integrity Imperative*

Is the race to get into AI leaving ethics behind?

HAMILTON MANN argues that if you sacrifice morals for speed, you might not win in the long term.

Even worse, you could end up deferring some costly consequences instead.

REMAINING HUMAN

Interview by
Mark Espiner

AI Artwork by
Sy Goldstein



HERE DO ETHICS fit in the fast-growing world of AI and business? Hamilton Mann has a plan to address that question. He argues that letting ethics slip is not an inevitability; it is a choice. In his book, he argues that "artificial integrity" – or designing AI systems that are genuinely aligned with human values rather than optimized for performance – is not a constraint on innovation, but a condition for it. In an engaging and wide-ranging Zoom conversation, he outlines how organizations can build AI that serves people rather than replaces them, and why, in the long run, integrity could be a vital component and lasting competitive advantage. —▶



You say that the aim of artificial integrity is to anchor the role of AI in acting as a partner to humans and to facilitate work and life in a way that is aligned with values and grounded with integrity. But in practice, whose values should AI be aligned with? And how do we resolve conflicts when the values of individuals diverge with organizational and societal values?

That's a very profound question. Artificial integrity doesn't assume a single set of values. It assumes plural values and therefore a need for a legible way to arbitrate among them. So the question isn't "whose values" in the abstract. It's very much about which values apply to a specific decision context and by what legitimate process. So you can think of it as three layers in terms of hierarchy:

The first layer is the nonnegotiable baseline. It covers societal, legal and human rights constraints and imperatives. And this is where societal values take precedence over organizational or individual values. AI should never violate fundamental rights, safety, antidiscrimination principles. This is the red line layer.

The second layer is the organizational values – whether it is about the mission, the duty of care, the purpose, the ethical stance that you can put in place. It is a way to put together what is mattering from an organizational perspective. This is also a nonnegotiable second line which covers who we are in terms of organization, what we care about, and especially what we care about before and beyond profit and loss. This is the kind of glue that gets a

lot of people working in the same organization to be aligned on a way of doing things and the way of behaving in doing those things. So this is what I'm calling the purple line layer.

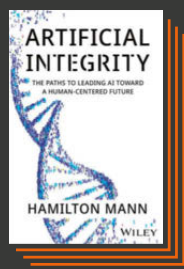
Then you have the final third layer, which is the individual values. It is where AI should be adapting, should be able to personalize the interaction, frame outputs in a way that is fitting the individual interest. But personal values should only shape experience and individual choices, but not override the red line nor the purple line.

So when values diverge between those three layers, AI systems should be designed to follow a practical conflict resolution method. It is a kind of integrity arbitration algorithm considering two dimensions: the level of stakes and the level of reversibility. If it is low stakes and fully reversible, then the algorithm should prioritize individual values. If it is medium stakes, with potential impact on the red and purple lines, the AI system should apply guardrails before prioritizing individual values. And if this is high stakes, coupled with non-reversible action, then the algorithm should prioritize organizational and societal common interest. Also over time, because such things are not a fixed target – values may evolve as societal feelings evolve.

You say: "Let's not ask what AI can do for each of us, let's ask ourselves what we can do to ensure AI serves humanity." Can that really be achieved on an individual or company level? Doesn't that require a coordinated international approach?

The short answer is that individual action is necessary but not sufficient. AI is too powerful, too interconnected and too economically consequential to be governed meaningfully by isolated personal goodwill alone. International coordination is indispensable, especially on safety standards, compute governance, cross-border accountability and the protection of fundamental rights. Let's take the example of nuclear. States do not manage nuclear safety only as a domestic matter. They rely on international conventions and the International Atomic Energy Agency to establish common safety principles. Or the International Civil Aviation Organization, pharmaceuticals, banking, automotive. For any capability used globally, shared guardrails are required.

But the opposite mistake would be to conclude that because systemic coordination is needed, the individual level is irrelevant. It's not. International frameworks only become real through the daily

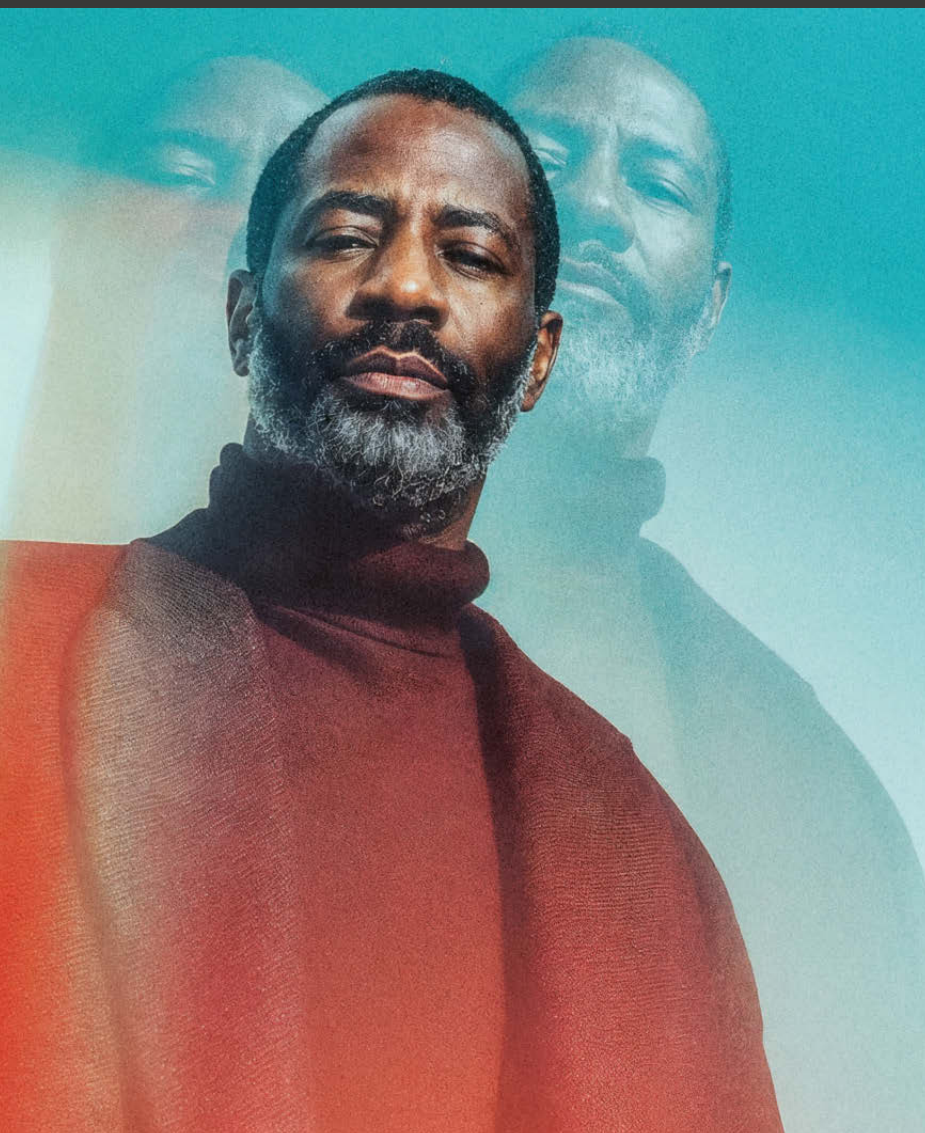


Artificial Integrity
by Hamilton
Mann, 304 pages.
Wiley, 2024.



**INTERNATIONAL
FRAMEWORKS
only become real
THROUGH THE
DAILY DECISIONS
OF INDIVIDUALS
ACTING INSIDE
THOSE INSTITUTIONS.**

Hamilton Mann



decisions of individuals acting inside those institutions. I do not believe the individual level is enough on its own, but I also do not believe international coordination can succeed if individuals just abdicate responsibility and wait for a perfect global framework. Any global shared rules come as a result of a movement that started at the individual level at some point, in some place.

You list a range of things artificial integrity needs: environmental sustainability, long-term solutions, incorporating ethical considerations, fostering innovation. These are noble aims. But at the moment, the US in particular doesn't seem to be backing equity, sustainability – the key things that European values share. Does artificial integrity have any real chance of taking hold when the world's most powerful AI player appears to be moving in the opposite direction?

That's a very important consideration. The current US posture does indeed emphasize acceleration, infrastructure building and deregulation, and a kind of geopolitical leadership around AI. The White House AI action plan is explicitly framed around winning the race. So the tension you're talking about is quite real. But that does not mean artificial integrity has no chance. It just means it will not emerge primarily through one government's idealism. It will emerge through the combined pressure of multiple layers: regional regulation, technical standards, private and nonprofit innovation, sector-specific governance and institutional risk management. The US, even though extremely influential, is not the whole operating system of AI governance worldwide. And actually, the most powerful force is often not Washington – it's the market.

If you want to sell into a regulated or high-trust market, you follow the rules of that market. GDPR is a good example. The European AI Act effectively exports requirements through market access. So global providers often need to align because it's cheaper than running two separate governance stacks. So the real contest is not between integrity-led AI and non-integrity-led AI. It is between different models: some more market-accelerative, some more extractive, some more responsible, but all trying to combine innovation with guardrails that fit what society will demand. And those who succeed will be those finding the right fit with that societal demand. Artificial integrity is and will be the condition for durable innovation and the license to operate over time.



Looking at OpenAI replacing Anthropic at the Pentagon – companies that are less encumbered by ethical guidelines seem to be moving the fastest. Why should anyone slow down to embrace ethics and do the right thing?

Because moving fastest and building the most durable advantage are not the same things. Firms willing to accept broader operational latitude may win specific contracts faster, while firms that keep stronger constraints may look slower. But that is only the short game. The deeper question for any company is not how do I remove friction this quarter. It is how do I remain trustable, deployable, governable at scale over time.

In every high-impact technology, actors can gain speed by externalizing risk, but eventually the bill arrives – through failures, backlash, liability, procurement restrictions, reputational damage, political intervention. Anthropic is actually a useful example here. Its responsible scaling policy is a voluntary framework for managing unacceptable risk – what I was calling the purple line they have defined. That may create friction in some deals. But it also signals a governance maturity that more and more public and private actors will increasingly look for. OpenAI may have won the Pentagon contract. But Anthropic won visibility and a wave of public trust – and that is concrete. The Claude app rose to the top of the App Store right after the Pentagon story, while ChatGPT faced a backlash with a lot of uninstalls.

I was interested to read that and remind myself of the idea that specific skills and mindsets could be more valuable as we move forward. But are new-collar jobs enhancing the human input and role, or are they risking making a segregated or a two-tier workforce?

The idea of new-collar jobs is powerful because it challenges the assumption that capability must always be certified through traditional academic pathways. New-collar jobs can widen access and recognize practical intelligence, learning agility, and applied skills alongside formal credentials. But the model has a real ambivalence. If organizations use it seriously, it can democratize opportunity. If they use it opportunistically, it can create a second-tier workforce, people trained narrowly for immediate technical utility but with less mobility, less recognition, less long-term bargaining power. The real question is not whether new-collar jobs are good or bad in themselves. It is whether they

**295%
jump**

The day-on-day increase in mobile app uninstalls of ChatGPT by US users following the news of OpenAI's deal with the US defense department in February 2026.

SOURCE:
SENSOR TOWER

expand human capability, or merely repackage labor stratification in modern language.

How do you persuade a business leader that ethical AI is worth it?

Artificial integrity becomes essential when AI becomes economically visible. Because the magic of these systems is not just about their intrinsic performance, it is also about the outcomes generated in interactions with people. The question is whether you prefer to pay upfront through AI design and governance, or pay later through failure, knowing that anything you fail to address upstream will cost more downstream.

If AI starts to shape our decisions, will we find that we're collaborating with it or slowly deferring to it?

Both are possible. If AI shapes decisions without weakening our ability to question, override, and remain accountable, that's collaboration, and that's fine. But if AI shapes decisions by making us passive





**MANY ACTORS
STILL TREAT INTEGRITY
AS A *secondary*
layer ADDED AFTER
DEPLOYMENT,
RATHER THAN A
CONDITION BY DESIGN
FROM THE START.**

Hamilton Mann

in the process, that's where the issues come. Artificial integrity is very much about designing systems with the imperative of keeping us on the first path.

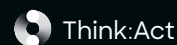
Is there a risk that human skills atrophy as a result?

Yes, absolutely. There is a risk of skill atrophy and cognitive, social and moral atrophy as well. If we outsource too much of our judgment, that is what is at stake. AI can remove friction, but friction is sometimes how humans learn. Unintended consequences include de-skilling, dependency loops, homogenization of thinking, false confidence, authority drift, degradation of institutional knowledge and fewer human interactions.

How is artificial integrity doing right now, and what can people do individually to embrace it?

Artificial integrity is emerging. We are still in an early phase, and structurally, acceleration remains stronger than integrity. The less comfortable truth is that it is still uneven, reactive and often subordinate to competitive pressure. Many actors still treat integrity as a secondary layer added after deployment, rather than a condition by design from the start. There is that recent move regarding OpenAI, for example. After being publicly scrutinized around teen safety, they announced the rollout of age prediction to identify likely under-18 users and automatically apply extra safeguards. It illustrates how integrity is still often deployed reactively after harms and reputational risk become visible. So that for me illustrates where artificial integrity is today. ●

How can I integrate the core ideas of artificial integrity at my company?



ANCHOR DECISIONS IN LAYERED VALUES:

Balance societal, organizational and individual needs through clear guardrails that engage with real-world contexts.

RESPONSIBILITY IS SHARED: Progress requires both global coordination and individual accountability. Systems only work when people actively uphold them.

KEEP THINGS HUMAN: Let AI enhance human judgment, not replace it. Agency, critical thinking and interaction are key to avoiding overreliance.

+ Ask a question



CREATING AN*Words by*
Bennett Voyles

Advantage

REMAINING HUMAN

Soon, AI will be like electricity. What will make my company stand out?

**Think:Act**

Once AI is a utility, advantage shifts from intelligence itself to proprietary data, workflow integration and who carries the risk when outputs fail.

[+ Ask a question](#)



REMAINING HUMAN

AI Artwork by
Manar Aboushawaly

HAVING A COMPETITIVE edge means having something others don't. But in an AI world where fast intelligence is suddenly available to everyone, how do you stay ahead to stay on top?



THE LAND OF THE DUMB, the person with the brain should be king. But what happens when everyone suddenly has access to an intelligence that in certain respects is more powerful than any human mind? Who's the top boss then? Futurists, innovation experts and technology entrepreneurs are wrestling with this question today, as they try to find ways to build a durable competitive advantage in a world of thinking machines. Worse still, a world of thinking machines could be an existential threat to some businesses. Some analysts are saying that AI is a double-edged sword and that for many established companies, instead of boosting corporate revenues, AI might actually destroy them. Software firms being the most obvious example.

If he were just starting out, Sean Blanchfield, who is currently CEO of Jentic, an agentic AI start-up, says he would stay out of pure software plays and look instead at "defensible advantages based in the physical world and resting on human relationships, not just data, information and electrons." Scott Anthony, clinical professor of business administration at the Tuck School of Business at Dartmouth College, is also bullish on the real. Although AI is changing many processes, some fundamental things will continue to apply: "People will still want a cool refreshing beverage and they will still want financial services they can trust," he says.

OTHERS ARGUE THAT IT'S NOT JUST HUMAN appetites that retain value. Eric Fellhauer, chairman of the shareholders' committee and the supervisory board at SMS group, argues that people are underestimating how much value is still locked in crania. He doesn't



5 traits

The number of "big" personality traits that were blended in different ways and then assigned to AI agents to test if compatibility with human workers' own personalities increased productivity, with positive results.

SOURCE:
HARANG JU AND SINAN ARAL

share the faith many businesspeople have in the transformative power of AI. "I'm taking that with a pinch of salt because in companies like the one I'm chairing, most of the knowledge is in the heads of the people working now," says Fellhauer, who is also professor of practice in strategic finance at Frankfurt School of Finance & Management, and former chairman of the German branch of the Lazard investment bank. He has found, for example, that AI is capable of writing deep-dive reports recommending deals that sound persuasive at first glance but make mistakes that someone who knows the target companies' industry would spot immediately.

Sinan Aral, who is the David Austin professor of management, marketing, IT and data science at MIT Sloan School of Management and the director of the MIT Initiative on the Digital Economy (IDE),



THE WAY WE FIT
THIS INTELLIGENCE
TO EACH HUMAN
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AND COMPETITIVE
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Sinan Aral

Professor at MIT and director of the
MIT Initiative on the Digital Economy

believes that the nature of competitive advantage in the AI era ultimately won't be all that different from what it has always been. "We have seen this movie before," Aral says. Typically, competitive advantage has stemmed not from the new technology that affected everybody, but from how users adapted it to their situation. The AI revolution will be like those prior tech revolutions, Aral says, in that the technology will be a commodity whose competitive advantage accrues to those who best adapt its usage to their needs.

At the same time, Aral does see a new kind of advantage emerging. In his forthcoming book expected in 2027, *Personal Intelligence: The Art and Science of Human-AI Collaboration*, Aral will make the case that systems tailored to individual minds will constitute a new field of competition. "As raw intelligence becomes a commodity, the way we fit this intelligence to each human like a glove will become the space for differentiation and competitive advantage," he argues.

THIS ISN'T ENTIRELY SPECULATION. Some studies by Aral and his team have found that personalization of the AI interface has a huge impact on worker productivity. For example, in one of his studies, AI agents designed to exhibit certain personality traits brought out different qualities with human partners. For example, neurotic AI agents – tuned to be relatable with traits of vulnerability and anxiety in their interactions and responses – paired with agreeable humans produced fewer but better advertisements than the average pairing of agreeable AI agents and agreeable humans. Aral's team also found regional variations: Extroverted AI elicited better quality from Latin American workers, but lowered the quality for East Asian workers.

Another study uncovered the fact that while human-AI teams could produce 50% more ads per worker with higher text quality than the typical human team, all-human teams could produce ads with better image quality. The preliminary results were so exciting, Aral says, his team decided to launch a company that could promote AI personalization, so every employee in every company will have access to low-cost, high-capacity intelligence.

But as with any powerful tool, human foibles can make it dangerous. People are often gullible, Aral says. They respond to what he calls "the veneer of rigor" – signs that something is trustworthy, such as footnotes in a paper, treating the existence of footnotes as a heuristic for accuracy →



ME, MYSELF AND //

What qualities matter now for senior executives as the transition to AI-run systems continues to gain momentum?

Urgency

It's not a good time to assume that your competitors are going to take their time in **incorporating AI into their business model**. At a recent workshop with 400 executives, Dartmouth's Scott Anthony says he was surprised when he asked whether anybody had tried *vibe coding* (that is, designing software with prompts), half the audience raised their hands.

Imagination

Keep in mind that AI's current limitations are likely to go away. **"It may be like the automobile,"** says Steve Blank, professor in the department of management science and engineering at Stanford University. "People laughed, and then 15 years later, if you were making horse carts or buggies, they were artifacts. That's what's happening now."

Clarity

No one knows how the technology will evolve, but a **business leader should be able to articulate very clearly the challenges the company faces** and the questions that need to be asked, Anthony suggests.

REMAINING HUMAN



Optimism

In Anthony's view, an organization run on pessimistic lines is defensive and constraining. "That has always been a recipe for struggle," he says. **"Today, I think that's a recipe for disaster.** I think you have to run your business like you're an optimist or else you're going to get into trouble."

Perspective

INSEAD's Gianpiero Petriglieri thinks leaders should be asking questions about what they are doing and why. Anthony also advocates for a more philosophical approach. He is reading Heraclitus – the Greek philosopher who says **a man can't step into the same river twice, because the river keeps changing and so does the man** – as part of his thinking about how to manage innovation.

this stadium event was a space where people could feel safe and free. "We've always longed for that," Petriglieri says. "I don't think AI is that space – I don't think we're either safe or free there, which means there is still hope for human enterprise."

In his view, companies will have to start competing like artists – beginning with the same tools and materials, then creating a vision that awakens the consumer's imagination. This doesn't mean being unpragmatic, he insists. "It's not that if you think of yourself as an artist, you don't want to make money. There are artists out there that are millionaires and really as greedy as they come. It's just that productivity and profit are not the primary aim. They are a consequence of a focus on what do I want to bring to life in the world," Petriglieri says.

Many young people are already thinking this way, he adds, a consequence of having been told that they are probably not going to make much money and their working life is going to be insecure. "At that point, you have two options. One is saying, I give up on work having any meaning whatsoever and become really very cynical, or to say, well, but I'm still going to look for work that at least allows me to express myself," Petriglieri explains. In the end, the ultimate competitive advantage may be something the computer can't generate: a reason to care. "This question of the meaning of work, which we used to consider in the good old Maslow way as the tip of the pyramid will become the foundation."

REMAINING HUMAN

rather than taking the time to drill down to actual proofs. Delivering services that both look and are reliable will be crucial.

Gianpiero Petriglieri, associate professor of organizational behavior at INSEAD, thinks of the changes ahead less in terms of the technology than in terms of the human response to the technology. "Competitive advantage is based usually on the idea of valuable differentiation, and anything that anesthetizes us into a sense of convenience and conformity is, of course, going to reduce our competitive advantage. So for me, the question is, how do we remain awake to what is unique about our work, or unique about our business?" he says.

AI IS THE END OF THE LINE for the pursuit of efficiency, in Petriglieri's view. "We want to make money with machines, but then we want to spend our money on things that are made by hand," he says. Unique, creative offerings therefore will become even more important. One case in point: the transformation of pop music from a business where most artists made most of their money from selling recordings to a business where most of the money is made in live performances. Attendees get something out of these experiences that is very human and almost religious, he says. He remembers going to a Harry Styles concert with his son and hearing him say that

37%
of
teens

The percentage of US teens aged 13-17 who believe today's AI would be worse at writing a song than a human, compared with 21% who believe the technology would do it better.

SOURCE:
PEW RESEARCH CENTER

How can my organization secure an edge when my competitors have access to the same AI tools?

Think:Act

FOCUS ON USAGE QUALITY: Competitive edge is now less about having AI and more about how effectively it is adapted to specific human, organizational and cultural contexts.

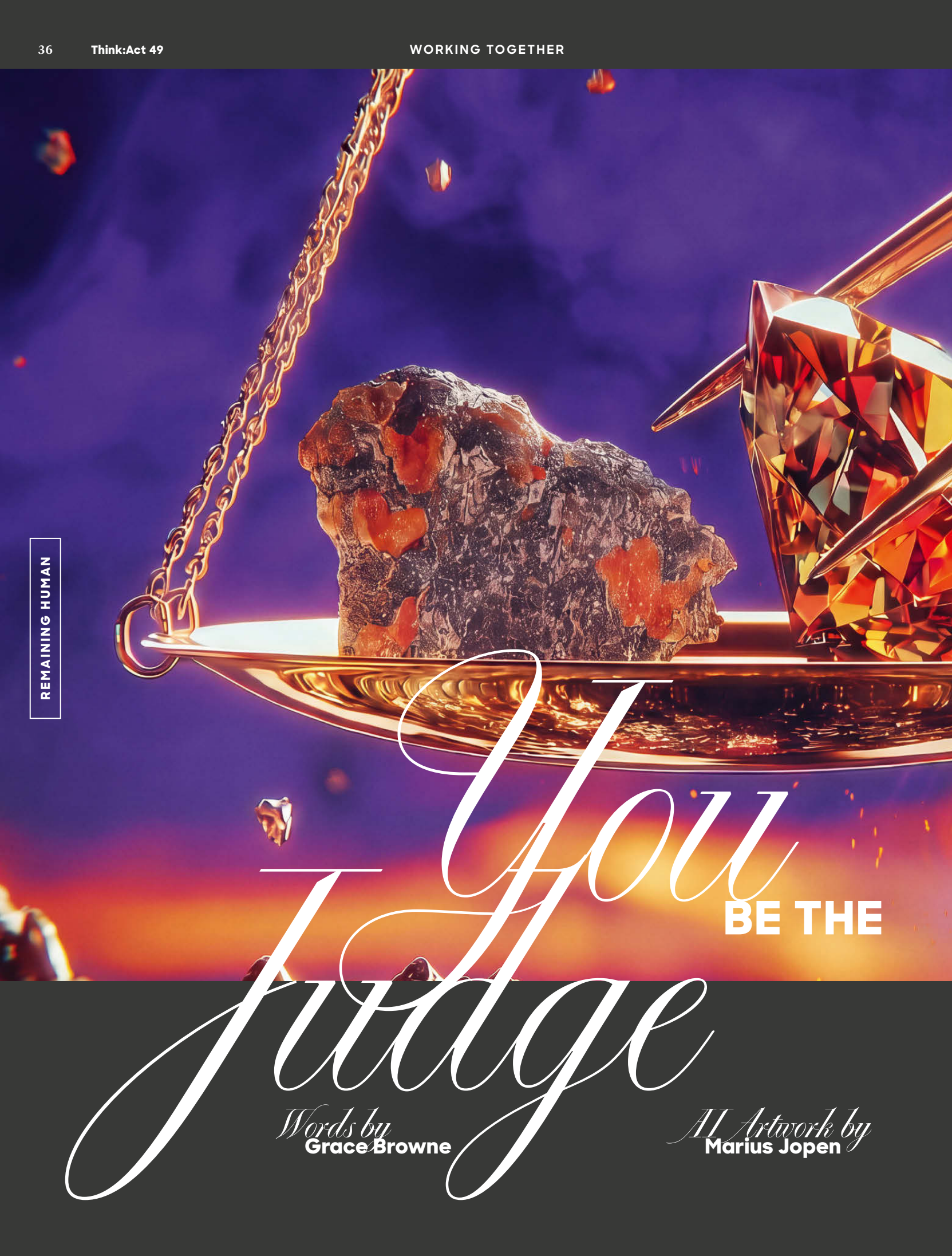
TREAT AI AS AN ENHANCER: AI can boost productivity, but outcomes improve when it complements rather than replaces human knowledge and contextual understanding.

DIFFERENTIATE THROUGH ORIGINALITY: A clear sense of purpose that fosters creativity and authentic experiences will stand out from increasingly standardized competitors.

+ Ask a question



REMAINING HUMAN



Be the Judge

Words by
Grace Browne

All Artwork by
Marius Jopen



SUCCESS IN AN AI-AUGMENTED

workplace requires a fundamental shift in mindset. The goal isn't to create humans who think more like machines. Rather, it's to create working environments where human judgment and artificial intelligence enhance each other.

SARAH WAS GATHERING UP the courage and the documents to apply for a loan to start a small business. The journey there wasn't smooth sailing: She'd hustled hard to build a respectable credit score as a single mother and had worked to repair her life after a minor misdemeanor from a decade ago. On her way to her local credit union, she hoped that her good behavior since then would be enough to override her rap sheet. Less than 48 hours later, the rejection came. However, the decision hadn't been made by a human, but rather an algorithm which had seen something in her profile that it categorized as a liability.

If an actual human had sat down and reviewed Sarah's case, they might have decided her to be a trustworthy candidate. Sarah is what machine learning experts would call an edge case: a scenario that falls outside normal procedures and tends to be where artificial intelligence systems fail the most. But getting human eyes on a case like Sarah's is under threat as corporations the world over are realizing that AI can make these kinds of assessments faster, cheaper and in many ways more consistently than the human loan officers.

As the AI revolution gains more and more speed, the world of work has been completely thrown into disarray. It's the genie that can't be put back into the bottle. In the early stages, the

REMAINING HUMAN

What human capability will make working with AI even more valuable?

 Think:Act

The ability to own a decision. AI can inform judgment, but what it can't do is bear responsibility for the consequences. That's why human judgment matters.

+ Ask a question



most pressing anxiety was the threat of obsolescence: that AI would automate away millions of jobs. Companies were throwing money at machine learning systems designed to remove human decision-making from the equation entirely. The promise was seductive; they were quicker and cheaper, and came without the messiness of human error. But a funny thing happened on the way to the automated future. The more powerful AI grew, the more essential human judgment grew in tandem.

TODAY, LEADERS ARE QUICKLY REALIZING that the biggest change is no longer the dissolution of human workers. Rather, they're coming to appreciate that one of the most important components of an AI-augmented workplace will be human judgment. The human touch is still necessary to be able to assess the limitations of AI for prediction and decision-making – something that is especially critical when it comes to data about people, such as in the case of Sarah and her loan. The big question is whether these

83% of leaders

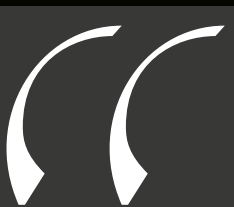
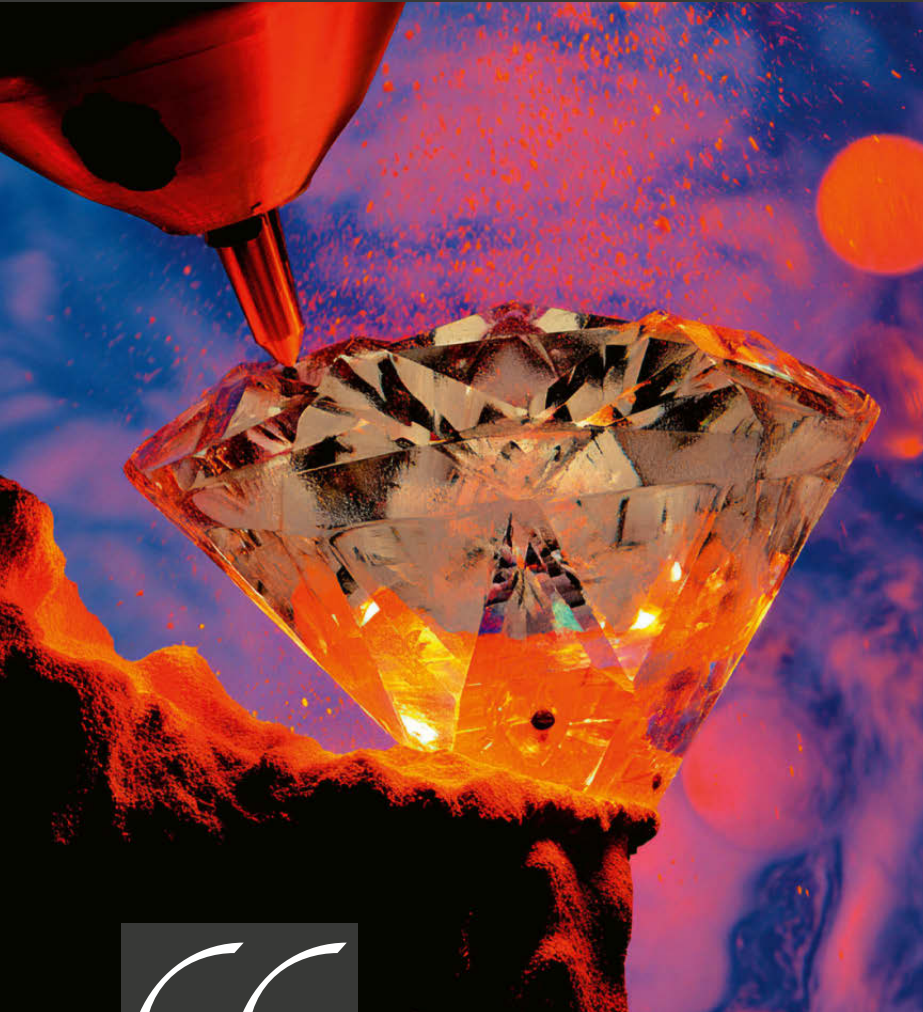
The percentage of respondents to an international 2025 survey who agree that the growing use of AI makes human skills like ethical judgment, human connection and creativity more important, not less.

SOURCE:
WORKDAY

considerations are being implemented as quickly as AI development and adoption itself are. In 2025, Matt Garman, the CEO of Amazon Web Services, told the media that soft skills such as communication and critical thinking will make human workers valuable for the foreseeable future. "I think they'll be just as important, if not more important," he said.

Mohammad Jarrahi is a professor at the University of North Carolina at Chapel Hill and his research focuses on understanding the consequences of AI in the workplace and the interplay between technology, people and organizational contexts. For him, the reaction among leaders has fallen into two camps: The first are the ones who think AI is an overhyped fad whose bubble will burst soon. The other extreme, he says, are the AGI maximalists: "People who are thinking the human edge is eroding and it's pretty much just a matter of time until humans will be replaced." Jarrahi doesn't think either camp is on the money. But especially when it comes to the latter group of





**THE PROBLEM
IS IN THE HYPHEN
IN HUMAN-AI INTERACTION
SYMBIOSIS. WHOEVER
PICKS THAT OUT,
THEY'RE GONNA
*win the game.***

Mohammad Jarrahi
Professor at the University of
North Carolina at Chapel Hill

thinkers, what he thinks they fail to realize is that a lot of knowledge is not codifiable, he says. Take tacit knowledge: It's knowledge built through practice and experience that, by definition, can't be fed into a training run. It's unlikely that AI will ever be able to replace that, says Jarrahi.

That's where the idea of human-AI symbiosis comes in. There's no questioning the awe-inducing capabilities of AI and its potential to automate the day-to-day drudgery of our jobs. But there are still segments of our work that, while AI may even do the initial bulk work, will require signoff from a human. We could view AI as something akin to a co-worker. "The problem is in the hyphen in human-AI interaction symbiosis," he says. "Whoever picks that out, they're gonna win the game." In other words, the companies that work out how to most effectively pair humans with their AI counterparts will stand to gain the most.

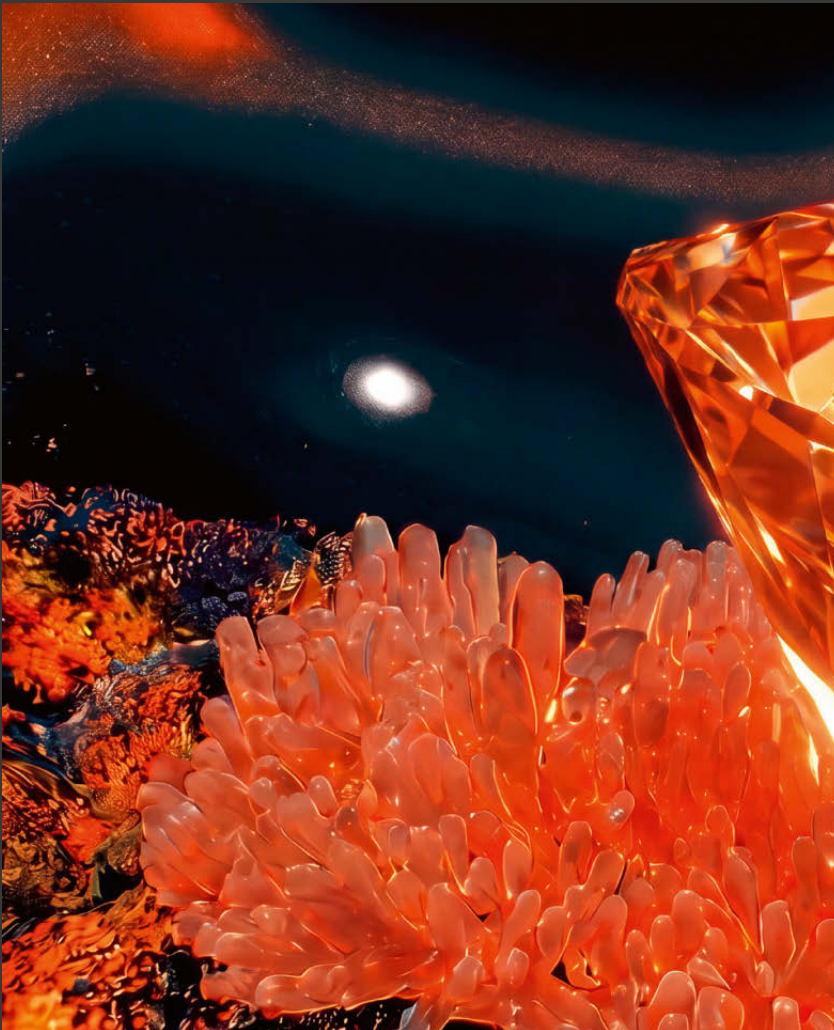
Corporate leaders are having to determine in real time what this new AI-augmented world will look like. But some worry that the technology is being embedded at such lightning speed that it's become impossible to erect the necessary safeguards to ensure issues related to privacy, biases and transparency are deeply considered. Call it the oversight paradox: Organizations built AI systems to reduce the need for human judgment. Instead, they've redistributed it. And the human touch is still required for those thornier decisions.

WHEN IT COMES TO REGULATION, guardrails on the implementation of AI into business remain somewhat of a Wild West. Companies, for now, are relying on self-policing, enacting their own policies. The world will likely take its lead from Europe as we saw with GDPR, reckons Michael Impink, an assistant professor at HEC Paris focused on technological change and innovation and instructor of AI ethics in business at Harvard DCE's Professional and Executive Development division. "I think we'll probably see the same thing with the EU AI Act – a Brussels effect of Brussels regulating worldwide AI development," he says. One remedy is what's called human-in-the-loop, commonly used in finance and health care. This entails pairing a human with an AI system, to provide input at multiple points; an iterative feedback process where they can tweak and refine the outcome as it goes.

Erecting such a safeguard becomes particularly crucial in some sectors more than others. If an AI system denies a loan or flags a tumor, it's —→

THE SO-CALLED SOFT SKILLS *like critical thinking* AND RELATIONSHIP MANAGEMENT WILL BE THE MUCH-NEEDED SKILLS OF THE FUTURE.

Ifeoma Ajunwa
 Founding director of the
 AI and Future of Work Program



crucial to be able to trace how that decision was made. But add the black box algorithms that GenAI runs on, "that means you can't really audit some of these decisions," says Jarrahi – so humans have to stay in the loop.

WITH THIS GROWING APPRECIATION for the need for workers who can spot where AI goes awry, a similar shift is being reflected across the job market and hiring process. According to Indeed Hiring Lab's 2025 AI at Work Report, almost half of the skills in job listings on its website are poised for "hybrid transformation" by GenAI, where "human oversight will remain critical when applying these skills" but AI systems can perform a large part of the work. Companies are hunting for a skill set that, until recently, wasn't even on their radar: the ability to work with uncertainty and maintain a healthy skepticism toward automated systems.

This new future could mean that companies could begin to hire AI translators. These are individuals who work alongside decision-makers and help them understand what a set of AI insights

46%
 of skills

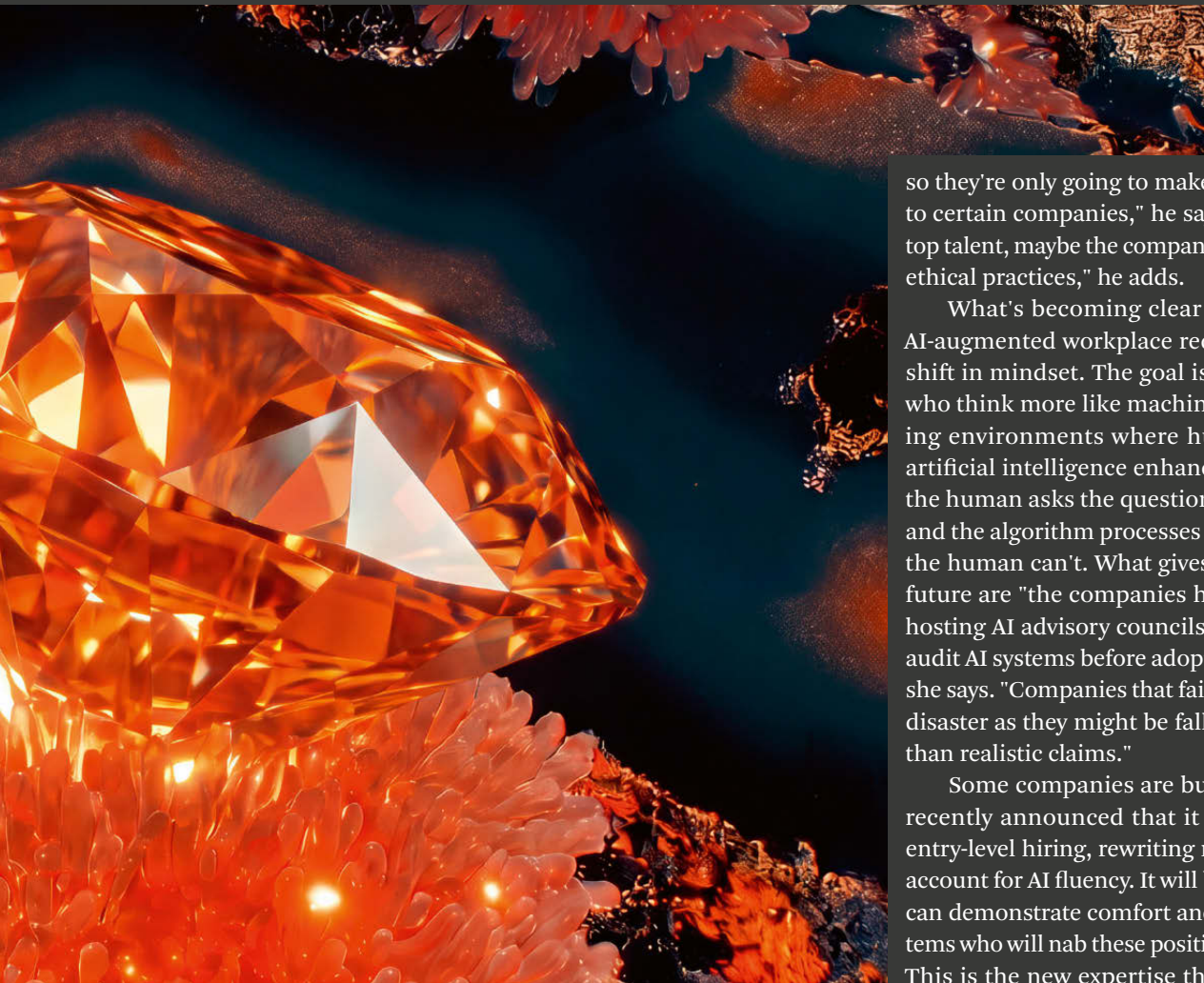
How much of the desired skills listed in a typical US job posting are poised for "hybrid transformation" by GenAI, making human oversight critical in their application.

SOURCE:
 INDEED HIRING LAB'S 2025
 AI AT WORK REPORT

mean and which to implement and which to discard, bridging the gap between the algorithm's output and the messy reality of implementation.

Now, the value of soft skills is skyrocketing and nontechnical skills such as ambiguity tolerance and healthy skepticism will be mission critical. "The so-called soft skills like critical thinking and relationship management will be the much-needed skills of the future," agrees Ifeoma Ajunwa, author of *The Quantified Worker*, founding director of the AI and Future of Work Program and the Asa Griggs Candler professor of law at Emory Law School. We'll be in dire need of workers with the ability to "deploy critical thinking to discern between AI slop and valid AI outputs," she says. It could be that the most advanced technology in human history will force us to recognize the value of the most fundamentally human skills.

Consider ambiguity tolerance. In the pre-AI workplace, ambiguity was often seen as a problem to be solved; standardize the process, clarify the requirements, eliminate the uncertainty. But AI systems struggle with genuine ambiguity. They need



clean categories and clear parameters. When reality doesn't fit those constraints, humans will have to step in. "One of the roles of humans in the era of AI is exception handling," says Jarrahi: stepping in to make a call on a borderline case, like Sarah.

THEN THERE'S ETHICAL REASONING. AI systems optimize for whatever goal they're given, without moral consideration. If the goal is to maximize quarterly profits, the AI will find every possible way to do that, including ways that humans would immediately recognize as unethical or shortsighted. In place of asking candidates about their experience with specific software or methodologies, companies could start to present interviewees with ambiguous scenarios and evaluate their ability to question an algorithm.

The demand for these kinds of workers is going to increase, reckons Impink. And at the same time, the supply may suffer if the companies hiring these workers fail to uphold best practices when it comes to how they deploy and govern their AI. "One is the demand side being the sense that these types of employees probably want to work at specific places and

so they're only going to make themselves available to certain companies," he says. "And so, to get the top talent, maybe the companies have to adopt more ethical practices," he adds.

What's becoming clear is that success in an AI-augmented workplace requires a fundamental shift in mindset. The goal isn't to create humans who think more like machines. It's to create working environments where human judgment and artificial intelligence enhance each other – where the human asks the questions the algorithm can't and the algorithm processes information at a scale the human can't. What gives Ajunwa hope for the future are "the companies hiring AI ethicists and hosting AI advisory councils to critically review or audit AI systems before adopting them wholesale," she says. "Companies that fail to do this are inviting disaster as they might be falling for AI hype rather than realistic claims."

Some companies are bucking the trend. IBM recently announced that it would be tripling its entry-level hiring, rewriting roles across sectors to account for AI fluency. It will be the candidates who can demonstrate comfort and initiative with AI systems who will nab these positions, the company said. This is the new expertise that the workplace will need most, the deeply human capacity for judgment. It turns out that what made human judgment inconvenient is precisely what makes it indispensable: Numbers can never tell the whole story. ●

REMAINING HUMAN

What should I keep in mind when looking to optimize the relationship between my organization and AI?

 Think:Act

❑ **AI IS A PARTNER, NOT AN AUTHORITY:** Faster and cheaper AI systems still rely on human judgment to assess outcomes, manage uncertainty and make difficult decisions.

❑ **VALUE WHAT MACHINES CANNOT DO:** Ethical reasoning, communication and skepticism are becoming more valuable as workers are expected to interpret and challenge AI outputs.

❑ **PUT RESPONSIBILITY AHEAD OF HYPE:** Pairing the use of technological advances with strong oversight and accountability will help build trust and avoid costly mistakes.

+ Ask a question



Bots WITH Brains

REMAINING HUMAN

EMBODIED AI PROMISES smarter, more adaptive automation, but the reality remains far more complex than the hype may lead you to believe. As robots move from controlled demonstrations into workplaces, leaders must balance opportunity with practical concerns around safety, reliability and human collaboration.



WITH THEIR BACKFLIPS, synchronized dance steps and kung fu moves, robots stole the show at China's 2026 Spring Festival Gala in February. The routine broke multiple technical records, claimed developers Unitree, as the cluster of G1 and H2 humanoids vaulted over apparatus, leapt more than three meters in height and executed single-leg somersaults. Only a year ago, earlier versions of these models had moved only in unison. Now, alongside the individual joint motors creating such dazzling dexterity, the integration of Unitree's proprietary Robot Unified Large Model allowed the robots to master these complex routines, navigate a physical environment that sometimes included human performers and even correct small stumbles upon landing.

The showcase – strategically aired on China's biggest broadcast of the year, the show watched by hundreds of millions to mark the Lunar New Year

Words by
**Megan
Tatum**

Artwork by
**Roope
Rainisto**

– signaled a new phase for AI, and what is called "embodied AI" in particular. A phase in which "robotics becomes a linchpin in the shift from low-cost assembly to high-end, smart manufacturing," insists Marina Zhang, technology professor at the University of Technology Sydney. It isn't only nunchuck-wielding humanoids either: AI is now being fused into myriad physical forms, from autonomous drones to multidexterous co-bots working beside humans on production lines and even robot "dogs" monitoring manufacturing equipment, all with the touted potential to materially transform an organization's productivity, processes and people.

Industrial applications for robotics were, just 10 years ago, almost singularly focused on repetitive tasks, explains Ingo Keller, head of robotics at the UK's National Robotarium. "That usually →





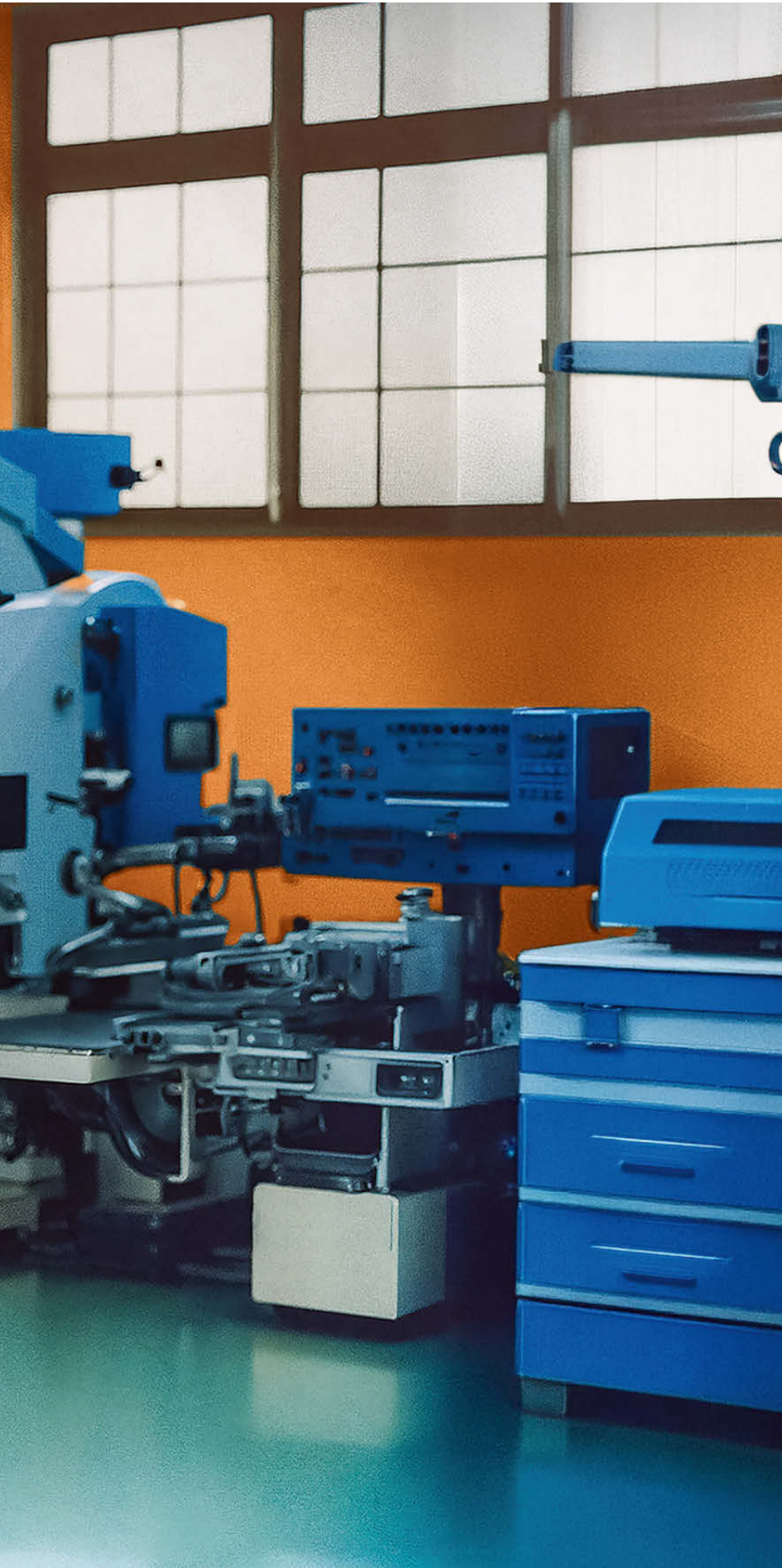
Give me some reasons why we should want to work with smart robots?

Think:Act

Smart robots don't have bad days, hidden agendas or egos – making them more consistent and politically frictionless than most human colleagues. Trust is a serious bottleneck. Humans are slow to delegate meaningful responsibility to machines, especially in high-stakes domains.

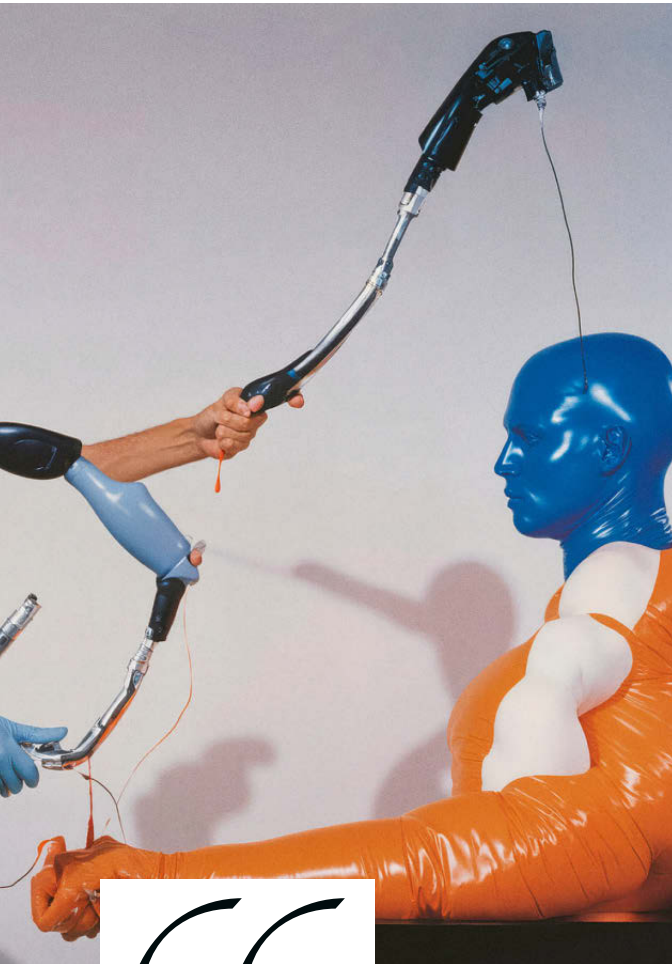
+ Ask a question





looked like a robot arm or some type of mobile robot. It was very rigid, located away from people and not necessarily aware of the environment it was working in." Then "very basic" machine learning was added in to create a little more flexibility and elements of awareness, he explains. "So, robots that are able to go into the vicinity of people and stop if people are around and so forth."

CAUGHT UP IN ALL THE HYPE, there is a real risk that industry overshoots when it comes to embodied AI. Take China's robotic showcase. It might've wowed spectators, but some might say that an impressive theatrical spectacle doesn't prove the androids' industrial abilities. The complex choreography would've been the result of hundreds of thousands of rehearsals, with motions that required limited environmental perception and a structured stage floor that bears little resemblance to a factory or warehouse. Without that level of preprogramming, those humanoids would likely have ended up flat on their face – or worse – because the technology still lacks the capacity for fully adaptive, autonomous decision-making, i.e., the means to navigate and react in real time to its environment.



99.99% accuracy

The baseline level of accuracy embodied AI must reach before practical deployment to ensure the difference between a functional factory and a catastrophe.

SOURCE:
SIEMENS VIA LINKEDIN



A LOT OF RESEARCH NOW GOES INTO AVOIDING COLLISION WITH A PERSON, BUT IN THE LONGER TERM, *interactive safety* IS GOING TO BE ONE OF THE CHALLENGING AREAS FOR ROBOTICS.

Andrew Hundt

Computing innovation fellow
at Carnegie Mellon University

That's in part because of a lack of data, says Lars Kunze, a professor in safety for robotics and autonomous systems and co-director of the Bristol Robotics Lab. Unlike the Large Language Models (LLMs) that underpin generative AI, which are trained on all publicly available data, embodied AI lacks an equivalent resource to inform how it moves, manipulates and navigates its environment, he explains. To compensate, many companies are using teleoperations, controlling robotics remotely via interfaces like VR, joysticks or motion capture to gather data. "There's no intelligence in that sense in the robot. They're performing tasks via these platforms to collect the data."

Steven Schwartz, author of *Evil Robots, Killer Computers, and other Myths*, cautions that "the progress in robotics has been incremental, rather than unexpected ... LLMs were the big surprise, and they do have the potential to be the 'brains' of robots. But there's still a long way to go. And the physical capabilities in terms of manipulation and locomotion are way behind LLMs in terms of progress too. So even if LLMs are ready to [be] the 'brains,' the robots aren't really capable yet, physically."

AMID THESE TECHNOLOGICAL LIMITATIONS, questions need to be asked about the safety and efficacy of putting embodied AI to work on production lines or packing floors, often in close proximity to a human workforce. In 2023, at a trade show in Chicago, Agility Robotics' humanoid Digit – a 1.8-meter-tall, 65-kilogram machine – was shifting boxes when it collapsed to the concrete floor and dropped the container it was carrying. Currently, the robot works in cordoned-off or restricted areas, while the issue of its physical stability is addressed.

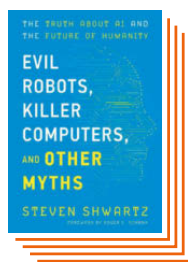
Toppling over isn't the only safety issue raised when placing "intelligent" machinery into collaborative or interactive settings either. According to a 2025 study by researchers at King's College London, the University of Birmingham and Carnegie Mellon University, LLM-driven robots are also prone to discrimination, "failed critical safety checks" and were likely to approve "harmful" commands. "Issues like technology-facilitated abuse are surprisingly common," says Andrew Hundt, who co-authored the research. Embodied AI might detect and push back against an explicit term like "blackmail" for example, but when the team broke down a set of instructions that constitute blackmail in totality, the machine complied. "A lot of research now goes into avoiding collision with a person, but in the longer





term, interactive safety is going to be one of the challenging areas for robotics where they're deployed in contact with people regularly and where you can give them high-level instructions."

EMBODIED AI ALSO GETS IT WRONG, and LLMs in particular are known to routinely churn out errors or hallucinations. That's unlikely to change anytime soon, believes Keller. "I have a very strong sense that hallucinations are an artifact that will always be in the current type of AI models," he says. "So, in this sense, the question is, what is acceptable?" Even at 99.9% accuracy that's a failure rate of 0.1%. "If you have a million decisions, you immediately incur 10,000 failures. Are we able to handle this? Are we accepting this level of failure?" The answer is something that senior leaders will need to grapple with – their comfort level no doubt dependent on the application. Bots on a packing line may be granted some wiggle room. Self-driving cars, none at all.



Evil Robots, Killer Computers, and Other Myths

by Steven Shwartz,
288 pages.
Fast Company
Press, 2021.

All of which should give executives pause, urges Keller. "There is a danger of putting the technology in front of everything else in decision-making and saying, 'OK it's AI, so we have to have it,' without considering the consequences. In a lot of cases, execution ends up looking totally different anyway. There's an emotional element to it too in a lot of cases that seems to overwrite the rational." One that often stops people asking the question: Do we really need this technology in the first place?

Even where the business case stacks up and the technology is sufficiently safe and accurate, the realities of integrating embodied AI into a hybrid workforce – robots working alongside humans – shouldn't be underestimated. There's new workplace infrastructure required. Embodied AI typically requires compute, connectivity and power. But more significantly, there's its impact on human colleagues. "The human dimension has been grossly neglected on all levels," says Rebekah Rousi, professor of communication and digital economy at the University of Vaasa,

HOW BOTS ARE TAKING ON *workplace roles*

Fast-moving firms are embracing the latest breakthroughs.

1

AMAZON

The e-commerce giant has a robotic workforce that now totals some 750,000 bots and welcomed two new additions at its US warehouse in 2023. Digit is a humanoid that sorts through parcels on its production line and Sequoia is a robotic system brought in to help fulfill festive orders.

2

BMW

In February 2026, BMW announced a pilot project with humanoid robots at its Leipzig plant in Germany. The project aims to integrate humanoid robotics into the existing series production of cars and "to explore further applications in the production of batteries and components."

3

ON

Swiss footwear brand On's new production facility in South Korea launched in 2026 with 32 robots to help increase production 30-fold. The technology includes a robotic arm that steadily rotates each shoe so it can be sprayed, while another bot applies finish and colors.

where she specializes in the interface between humans and technology. "Focus has continually been placed on developing the technological capabilities of the machines, and there is no doubt that they will exceed our expectations in terms of performance. But, at the end of the day we have to ask 'why' – why is this necessary? And what does it mean for the human future?"

Rousi advocates for less of a 'top-down' attitude from leadership when it comes to embodied AI, and instead involving workers at all tiers in "critical decision-making and change processes." This creates a sense of ownership and democracy, allowing workers to share concerns and also develop their own understanding and vocabulary ahead of any such change, she says. Such an approach is less likely to see teams push back against what might look like machines usurping their roles and responsibilities. For example, "R&D experts should be placed on social learning, experience and cognitive-affective factors that can enhance the synergies

between the human workers and technology. Transparency is needed for the implementation of radical technology such as humanoid robots, which means frequent communication and deliberation, and indeed these 'codesign' processes in which employees from all levels of the organization are involved," she adds.

IF KUNG FU IS THE HEIGHT OF HUMANOID sophistication in 2026, who knows how the technology and its role in various industries might evolve. For Hundt, it'll likely be incremental change. "I would anticipate that it's going to be a long process to where robots will start showing up more and more in new places and with less and less supervision over time." Along the way we'll see some uses accelerated and others scaled back, believes Kunze. "There will be some realization that not everything is possible and people will paddle back and say, 'OK, what can we actually use here?'" That result may see less sci-fi-esque humanoids and more utilitarian designs.

But if technological advances are inevitable, any senior leader looking to embrace its potential needs to bear in mind the fundamentals of what that means for an organization and its workforce. "We'll get some pretty smart robots, but you have to worry about safety, liability and keeping people completely safe," sums up Shwartz. Without that, embodied AI is likely to end up, literally and metaphorically, falling flat on its face.

REMAINING HUMAN

What key points should I keep in mind when thinking about how useful embodied AI could be?

Think:Act

▣ **FOCUS ON REAL-WORLD VALUE:** Embodied AI offers benefits when deployed against practical operational challenges rather than as a showcase of technical capability.

▣ **CLOSE THE HYPE GAP:** Despite rapid advances, embodied AI remains limited by data shortages, physical constraints and safety concerns that slow large-scale adoption.

▣ **SYNERGY REQUIRES CODESIGN:** When it comes to bots, safety and trust will be built with human oversight. Involve employees at all levels and keep the process transparent.

+ Ask a question



PLAYING THE

Long

REMAINING HUMAN

Who is a better and more empathic listener: human or chatbot?



Think:Act

Humans have the capacity for genuine empathy rooted in shared experience, embodied attunement and relational history that no chatbot can replicate. However, most humans are inconsistent, distracted, advice-giving and uncomfortable with sustained emotional pain.

+ Ask a question



Game

Words by
Stefan Stern

AI Artwork by
Entre Deux

REMAINING HUMAN

IN THE FIRST PART of this feature, we looked at thinking big when it comes to AI. Part two picks up the discussion of how the new technology can help you lead without losing sight of the very valuable human qualities that are unique in communication and relationships – not to mention good business.

G

REAT CLAIMS ARE MADE FOR the almost magical abilities of large language models (LLMs) to anticipate human needs and, at least on the face of it, respond to our questions in an almost human way. Agentic AI can rapidly process complicated workflows and demands and even take multifaceted actions without human guidance. It so appears as if the "dumb, stochastic parrots" of a few years ago have turned into a team of sophisticated and tireless helpers. Some executives such as Marc Benioff, CEO of software company Salesforce, have gone so far as to advertise that they're using chatbots every single day, 365 days a year, to help them do their job.

While that is a surefire way to get attention, the way forward is probably less a straight line drawn by technology than a meandering path shaped by human strengths and weaknesses. We may risk committing a category error when we engage with AI at eye level, ascribing capabilities it simply doesn't possess. That's the fundamental question every leader must answer before bringing these tools into their organization: not just what AI can do, but what they genuinely believe it can do – and whether they can say so with enough conviction to bring everyone along for the journey.

HOW HUMAN ARE AI TOOLS, really, that signal they're always listening and ready to engage more than an overworked colleague or advisor can? "I think they're parodying the act of listening," says Emily Kasriel, journalist, executive coach and author of the book *Deep Listening*, which was published in 2025. "People do feel a huge need to be heard and an unmet need to be heard, which is why there's a phenomenal uptake of people turning to AI to listen to them and to process their thoughts," she says. "And it parodies and mimics the act of listening by summing up what the person said, by making us know how good it is at that processing; and of course, it never forgets. It can sum up, if you trust it, across many conversations, with a factual accuracy that even the most expert therapist can't manage. It doesn't interrupt. It doesn't want to talk about itself. That's what

THE HUMAN EMPATHY PREMIUM

A paper published by *Nature* in June 2025 explored the value we place on human empathy.

9 studies

were conducted across multiple countries to test the perception of empathic responses labeled as either AI or human.

6,282 people

in total took part sharing emotional situations and receiving responses that were rated identical in content, timing and quality.

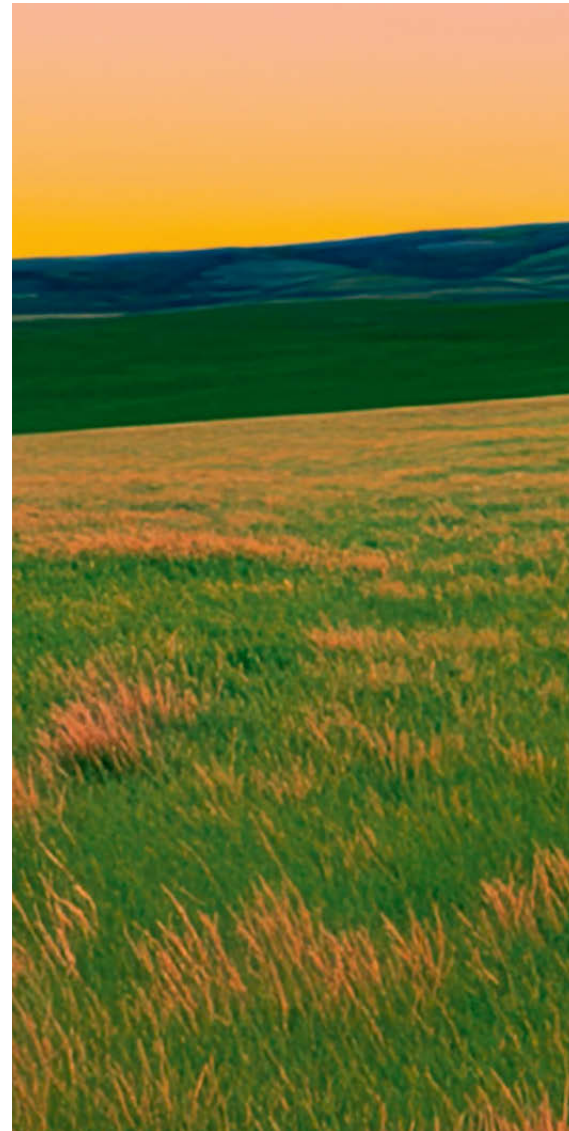
Start at the beginning

Download

Think:Act #48

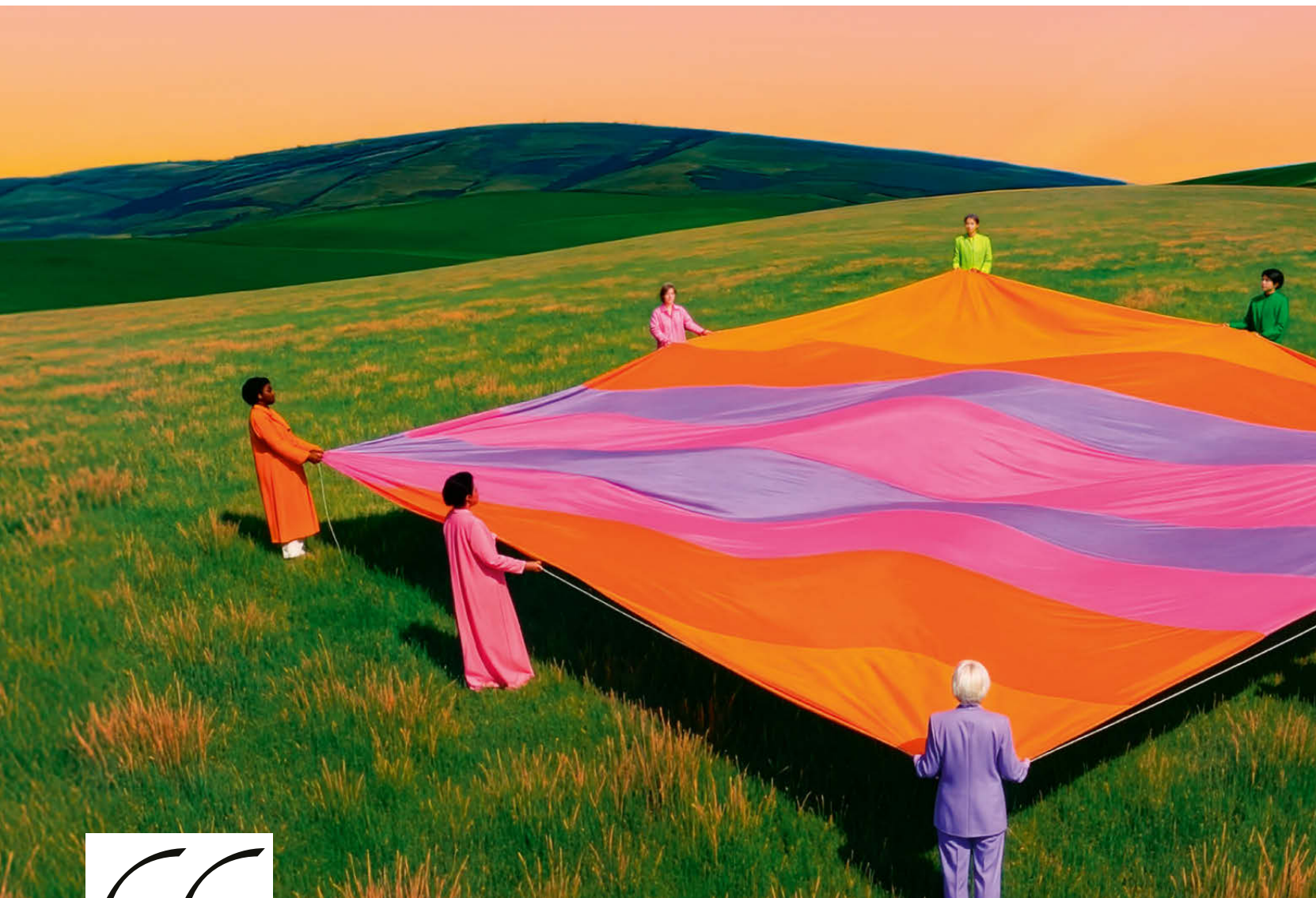
to read the first part of this article on page 46 of the PDF.

→ thinkact.rolandberger.com/en/ta-48/becoming-artificial



most of us want to do." Some AI advocates have gone so far as to claim that AI is more effective at displaying empathy than some human beings. Empathy, experts agree, is one of the core elements that makes up and defines corporate culture as humans working together have understood it for decades. It is a very big claim, only partially backed up by certain carefully staged experiments. But what kind of empathy is AI truly capable of offering?

Eve Poole, author of the 2023 book *Robot Souls – Programming in Humanity*, has her doubts about overreliance on a novel technology. "When you think about the function of empathy in terms of our species, empathy is also about being able to build community, being able to create ties between people, to create safety in numbers," she says. "It's also about some longer-term things and some deeper things, which are also about data – empathy being a kind of data – and something more than just me having a good feeling about a bot. It's actually in the space



AI MIMICS THE
ACT OF LISTENING
BY SUMMING UP
*what the person
said,* BY MAKING
US KNOW HOW
GOOD IT IS AT THAT
PROCESSING; AND
OF COURSE, IT
NEVER FORGETS.

Emily Kasriel

Author of the book *Deep Listening*

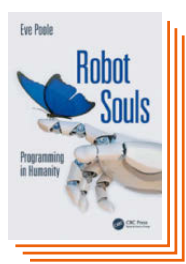
between us," Poole explains. "Empathizing with you means that I learned something about you as well as making you feel better. We also have a contract, which means in the future, if you or I need listening to, I can come to you." AI appears to have weakened this contract, Poole says. "We're already finding, with this kind of tsunami of ill mental health and loneliness, that the disintermediation that has already been brought, through mobile phones and chatbots, is breaking up that sense of community, those human bonds. It is true that on one simple reading of empathy, AI can beat us. But if you look in the round about what the function of empathy is, AI is destructive of empathy."

Kasriel agrees. "The whole point about empathy is that it comes from a heart," she says. "It comes from a person. It's full of humanity, not the fabrication of empathy." Nothing, she believes, can compare to the act of a human being sitting with somebody, accepting the opportunity cost of —→



them not doing something else and choosing to listen and trying to understand. "The connection that forms between two people is far more than the words that they exchange," she adds. "They connect at a cellular level. They connect unconsciously. That very act of feeling held is such an important part of allowing somebody to have the strength to heal and also to think about new possibilities."

INVITING THOSE NEW SYSTEMS into a company and letting them seep into its learned and lived culture of rich and complex human interaction places a sizable responsibility on leaders. They should beware of the seeming "humanity" offered by AI in their organization, Kasriel says, and therefore be very cautious when it offers advice. "The best listeners do not give advice," she explains. "They provide a space for the other person to make sense of what they've shared. When we learn to truly listen deeply, to be curious, to not already assume that we know what



Robot Souls:
Programming
in Humanity
by Eve Poole,
168 pages. CRC
Press, 2023.

the other person is going to say, suddenly all sorts of things become possible." Business leaders should also be careful before outsourcing their communications efforts to bots. "AI is the opposite of authenticity, even though it's getting better at faking it," Kasriel warns. "People will realize that your comms to them is written by an AI, and they will turn off."

From a leadership and governance point of view, AI could also be problematic. On the one hand, the new technology enables executives to capture the thoughts and ideas expressed in meetings, which might have been lost without intelligent listening software. But Eve Poole sounds a warning about what all-hearing technology might do to relationships at work. "There is this question of record-keeping for audit trails and for decision-making and actions. When you're in a messy board situation, you want to be able to really thrash things out. But if you know that everything you say is going to be documented for the record, people are going to be very



MAKE THE SPACE FOR *unpopular opinions*

Dissent makes us human. It can also save lives.

WHEN THE SPACE SHUTTLE Challenger exploded shortly after liftoff in 1986, the cause was discovered to be an issue with its O-rings, the insulation rings in the shuttle's solid rocket boosters. The issue had been

identified, but not properly pushed forward at the time.

Robot Souls author Eve Poole says there's a moral here: AI won't replace human honesty in crucial decisions. "Unless you can allow slightly

odd things to be said, or people to feel comfortable saying something they think might be unpopular, you're not going to get really solid decision-making that is about risk management," she says.

careful about what they say. And you're already finding people are having fights about the minutes because they need it to be clear that they were flying a kite, and that wasn't really what they meant."

ALL OF THIS MEANS THAT EXECUTIVES will have to walk a fine line going forward: encouraging the use of tools with quasi superhuman capabilities while convincing their human counterparts at all levels of the organization to trust them – and the AI that's always hovering nearby to engage, encourage or just record. Sometimes, says Poole, leaders need to seek middle ground. "The board's got to agree to be recorded but may also want to have sessions that are not recorded ... If all your meetings are like they're in court, you're not really surfacing disagreement. You're not really trying to listen. People end up playing a version of themselves they'd be happy to have written up in the *Financial Times*," she cautions. "I worry that it would drive a different sort of logic around decision-making and there'd be an awful lot that was unsaid."

In her book *Robot Souls*, Poole notes that human beings have a kind of "junk code" or inherited characteristics and instincts, which AI coders have so far struggled to replicate. Those very human quirks include free will, emotion, a "sixth sense," uncertainty, mistakes, meaning-making and storytelling. Each of these qualities or faculties, taken together, make us human – and fundamentally different from artificial intelligence. The elements of our "junk code" work in conjunction. Free will gives us true agency, while emotion helps restrain or qualify that free will and allows us to bond as a species. A "sixth sense," or intuition, helps us make decisions when the data is unclear. A capacity for uncertainty helps us deal with ambiguity. We make mistakes and learn from them, and moral mistakes help us to develop a conscience. Meaning-making, finally, gives us a purpose and a reason to be. And storytelling – the oral tradition – helps bind us all together and remember what is valuable.

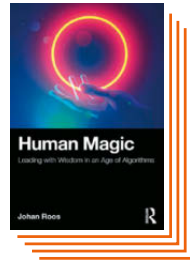
According to Poole, this assemblage of traits and qualities has been the key to our evolutionary success. "The reason we're all still here as a species is because the junk code is vital for our survival. There's something sticky about our design. Maybe it's our secret weapon?" And good leadership, it turns out, depends on these very human qualities. "People come to you for leadership when they're not sure about things, because if things are obvious, they would have already made a decision on it," Poole adds. "Maybe this is why you need →

leaders, because of all this uncertainty and ambiguity and people not being quite sure." So the question is this: Has anyone yet written AI code good enough to replicate high-quality human judgment in complex and fast-moving situations, based on powerful experience? And furthermore, will AI ever manage to match that kind of human judgment?

Tech entrepreneur Azeem Azhar has a more direct take on the complementary role of AI with regard to humans. "This is a business technology that is fundamentally about cognitive capacity," he says. "If your company will benefit from more of that cognitive capacity, then you will benefit from it. And the fact that it's getting cheaper and cheaper is important." Jerry Wind, professor of marketing at the Wharton School of Business, is also bullish about the long-term benefits to humans of AI. "It enhances creativity very well and it has huge implications," he says. "It not only makes you more efficient, it allows you to be more creative. I really believe in human-centered AI – the human has to be in control. The way I use AI is interactive. I treat it as if it was my very smart assistant. If you just use this like search – you ask a question and accept the answer – you're missing the whole point. The value of the AI interaction is by continuously asking questions."

STILL, THERE IS UNDERSTANDABLE APPREHENSION in the air, especially among the well-educated. Ravi Kalluri, an assistant professor in project management at Northeastern University describes this dilemma well. "My students are very nervous. They don't know what to do," he says. "What is the expertise that AI cannot take from them? I put a lot of emphasis in my lectures, in my assignments, on how students as humans can work collaboratively with AI. Use it as an assistant, but never see it as a boss, letting it make all the decisions." Otherwise, he adds, we risk becoming "cognitively incapable" and lose our faculties for critical thinking. "If it's a battle, let's fight it with AI – not as a challenger, but as an assistant. By being a partner with AI, you have a better chance of succeeding than being a competitor."

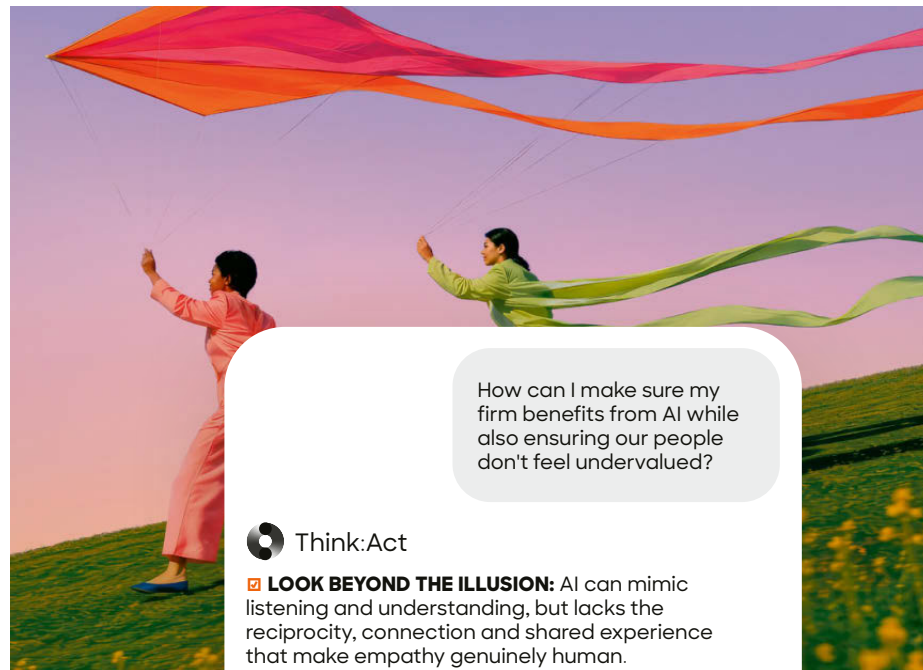
There is one final paradox to consider. Even if CEOs expect AI to play a vital and transforming role in their businesses going forward and even if they are worried about their own futures if they cannot deliver commercial success because of it, CEOs themselves are late and at times even reluctant adopters of AI so far. When Nick Bloom of Stanford University did research with 6,000 executives from around the world, he found that 69% of CEOs,



Human Magic:
Leading with
Wisdom in an Age
of Algorithms
by Johan Roos,
242 pages.
Routledge, 2026.

CFOs and other senior executives are using AI for less than one hour a week, and 28% are not consciously using AI at all, even though it might be invisibly baked into tools they are familiar with.

If feeling perplexed is the main takeaway on how to stay the course for the long run, it has its upsides too. Perplexity may be the healthiest and most honest response to today's challenges. As Johan Roos, professor at the Hult International Business School and author of the book *Human Magic*, wrote in a blog after convening a seminar with corporate leaders: "Peter Drucker asked what the manager's job is. In 2026, the answer cannot be found by listing the tasks that algorithms cannot yet perform, since that list is shrinking faster than we can update it. The answer lies in identifying the conditions under which genuine human judgment remains possible. Perplexity is one of those conditions. It is not a failure of clarity. It is the beginning of the work that matters."



How can I make sure my firm benefits from AI while also ensuring our people don't feel undervalued?

Think:Act

❑ **LOOK BEYOND THE ILLUSION:** AI can mimic listening and understanding, but lacks the reciprocity, connection and shared experience that make empathy genuinely human.

❑ **VALUE WHAT MAKES PEOPLE UNIQUE:** Moral reasoning, intuition and meaning-making remain some of humanity's core strengths, and ones that AI may always struggle to replicate.

❑ **LEAD THROUGH UNCERTAINTY:** As AI capabilities continue to grow, effective leadership will be defined on how ambiguity is navigated rather than by trying to eliminate it.

+ Ask a question



CLOSING THOUGHTS ON
REMAINING HUMAN



WHAT EXCITES ME
IS NOT THE IDEA
OF MACHINES THAT
THINK LIKE US,
ONLY FASTER.
IT IS *the emergence
of minds* THAT
SURPRISE AND
CHALLENGE US
IN WAYS WE NEVER
ANTICIPATED.

Richard Socher

Natural language processing pioneer and founder of You.com

Wide angle

Read on for diverse insights into the wider world of business and ideas.



"Chunky" Crushed Cowhide

8475 - Spring 1966

6 x 4 1/2 x 3 1/2?

11 1/2 x 8 1/2 x 5

1959

let
puty Commissioner,
of New York Police PBA"

1965

Klutch

8x6x1

When magic meets logic

*Former Coach CEO **Lew Frankfort** bet on a strategic blend of creative intuition and disciplined, data-driven execution to grow a small, family-owned business into a global brand with multibillion-dollar revenues. In this interview, he shares his winning formula.*

BY **Steffan Heuer** PHOTOS BY **Ryan Duffin**

FATE CAN COME DOWN to a single cab ride. When New York native Lew Frankfort shared a cab with a Columbia University instructor in the spring of 1979, he first heard about a small leather goods company called Coach Products. The then CEO couldn't convince any of his children to take over the business, his acquaintance told him, and was looking for a successor. Frankfort did what was in his blood as a curious, ambitious outsider who had worked his way up from modest beginnings in the Bronx: do the homework. "It was possible to have no knowledge about a subject but through a didactic process become conversant, maybe even smart about it," as he writes in his memoirs. As he dug into the details of an industry that was foreign to him, he discovered a company with 110 people and annual sales of \$6 million, waiting to hit the big time.

Frankfort took the job and rose to become CEO in 1985. When he stepped down in 2014, Coach had

IN THE BAG
During this exclusive *Think:Act* photo shoot held at Coach headquarters, Lew Frankfort exhibited the same kind of ease and confidence that brought him to the once small leather goods company in the first place.

grown into a \$5 billion enterprise that is considered the rare US-based luxury brand that can hold its own against famous European incumbents. Now 80, Frankfort still regularly visits Coach's headquarters on Manhattan's urban park called The High Line, mingling with former partners and employees who helped him define the affordable luxury niche. His book *Bag Man: The Story Behind the Improbable Rise of Coach*, he tells *Think:Act*, is more than the memoir of a successful businessman but also letting people in on his darker moments. "I wanted to let everyone understand that you can be successful and still lose your mojo and feel depressed." For this video conversation with *Think:Act*, Frankfort dialed in from the offices of his investment company Benvolio Group, named after his labradoodle. Dressed in minimalist all black, he talked about his upbringing, his short yet important stint with city government and his approach to sussing out consumer values and trends. →

Many CEOs highlight their modest upbringings and even their struggles against adversity when they write about their life's journey. You do the same. How important is that to explain success in later life?

One of my motivations was to give something that would be informative and compelling to Gen Z and Millennials. I do believe my generation, the 1960s generation, faced challenges and opportunities that Gen Z are also facing in that they're all about authenticity, real relationships, speaking truth to power and not accepting arbitrary authority. Part of my motivation also was to lay out that you can still live the American dream in the United States despite what's going on in our world. That's why I write about adversity as a child. I am the son of immigrants and the first who went to college. My father was a cop. I was a late bloomer and I had speech impediments, but I always believed anything was possible in America.

Before you joined Coach, you worked for New York City's government. What valuable lessons and skills did you acquire during that stint as a public servant?

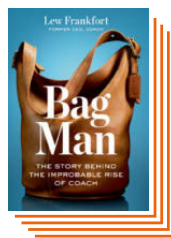
I think most importantly, I was very client focused, and I felt almost messianic about my responsibility to fix the daycare and Head Start children programs, which were the poster children for scandal and corruption. I wanted to do my very best for families and children within the context of fiscal constraints, eligibility requirements and the like. So when I came to Coach with no background in fashion and no background really in business, I decided that I would learn about the business first through customers.

What did they tell you?

I spent a great deal of time learning about the DNA of the brand, its appeal. It had a very loyal following. In fact, I was told by a shopkeeper whom I interviewed pretending to be a *BusinessWeek* reporter doing an article on Coach, that it had a cult following. Then I went to study brands from Europe, which unlike the United States has a history of luxury brands. What I saw was a small French brand at the time, Louis Vuitton, that controlled their destiny. It gave me an opportunity to envision Coach one day as a democratized luxury brand, giving consumers a product that had grit, value, durability.

Your mantra as a manager was "magic + logic." Can you explain what you mean by that?

You have to really understand what motivates consumers to purchase your brand. You need to understand their values and interests from an



Bag Man: The Story Behind the Improbable Rise of Coach

Lew Frankfort,
304 pages.
Harvard Business
Review Press, 2025.

"Being relentlessly curious is an essential quality to grow a business – using your instincts as well as speaking with consumers."

– Lew Frankfort





Lew Frankfort

Lew Frankfort was born in March 1946 in the Bronx. The son of a police officer and a stay-at-home mother, he was the first in the family to attend college and was particularly enthralled by psychology and political science. He later earned an MBA from Columbia Business School. After a brief stint on Wall Street, Frankfort worked for the New York City government for a decade, taking on the thorny issue of reforming financially strapped and mismanaged child services before stumbling upon Coach Products. After stepping down as its CEO in 2014, he launched the venture capital firm Benvolio Group.

anthropological perspective. Being relentlessly curious is also an essential quality to grow a business – using your instincts as well as the information that you develop by speaking with consumers to understand the journey that they are taking. Another quality on the magic side is a greater good mindset, understanding that you are working for an enterprise that's larger than you, and then being able to subordinate your own views.

On the logic side, it's about marrying data analytics – what gets measured – with a view of how the world is moving and how you can incorporate that. Collaboration is also important. I spent a great deal of time bringing people together to help them become teams as opposed to working in silos, so that they would be working not at cross purposes, like design and manufacturing often does, but in unity. So there's logic and magic and there's magic and logic, and I believe that blend has served Coach extremely well.

A cult following and deep customer loyalty are almost intangible qualities. Coming from the data-driven, analytical approach you just mentioned, how do you reconcile the tension between the two?

Today, there are brand pyramids, and I started to use my own version of brand pyramids 30, 40 years ago. Think of a triangle with three parts, which all add up to brand equity. The lowest level is belief in the company as being trustworthy and reliable. Then come the fundamental equities, which are tangible: durability, quality, value. Above that sit the emotional attributes. So if you build a home, you really want a good foundation – and you also want to create some magic, the storytelling that comes out of understanding what your equities are and what resonates with your target consumers. We represented great value. We also represented hope and aspiration for generations of Americans in our earlier years. We priced our products at a price that was really accessible to 40% of Americans, and we decided in that context that we would reach the middle class and people aspiring to be middle class.

Steve Jobs coined the famous phrase that great companies don't follow consumers: "People don't know what they want until you show it to them." How did you approach innovation and design?

Steve Jobs is correct that it's hard for consumers to imagine something that doesn't exist in technology. When it comes to physical products – whether it's a bag or a briefcase or a weekend bag – people can imagine what something might look like if you are able to use words and images to describe it. Now, beauty is in the eyes of the beholder. So one of the things companies do to moderate risk when they launch products is they look to pilot them first, get some early empirical predictive indicators. Focus groups are not where we focused research. We did quantitative research, and what we measured was attitudes, values, interests.

When you joined the company, it had \$6 million in annual revenue. You grew the business 2,000% during your first 12 years as CEO to almost \$500 million. How does one manage such insane growth?

One part of it is being focused on key strategies. Second is building a team of leaders who are at least as good as you, if not better, aligning the team around shared values and shared beliefs. And third, creating a system to measure performance. We benefited greatly in our early years from being part of the Sara Lee Corporation, →

which was a very large conglomerate in the 1980s. They had over 100 companies and were very decentralized, but they did hold everyone accountable with monthly zero-based budgeting. I welcomed the discipline which helped me build the structure so that we could really develop the business to its potential.

The luxury handbag market was – and is – dominated by European brands. What gave you the confidence that there was room for a US brand in that segment? Well, it wasn't exactly that segment. When we talk about luxury, it's in the eyes of the beholder. In 1979, when I joined Coach, it became clear to me that we had a rapidly growing middle-class population that was looking for well-made products. We insinuated ourselves as an alternative to the European luxury brands. One of the biggest compliments I heard was from Bernard Arnault [chairman and CEO of LVMH, the world's largest luxury goods

AGAINST THE GRAIN
The former Coach CEO, who still visits the production department of the company regularly, had a vision that set new standards for what attainable luxury could mean.

company], who referred to us in the late 1990s as the McDonald's of luxury. He thought that was an insult, but I took it as a compliment. For many consumers, Coach was absolute luxury because they needed to save for a Coach, but they only had to save for a week or two, or a month – not for a year or three years.

How could you use this positioning when you expanded internationally?

We developed entry strategies in Japan and China that were focused on consumer trends from an anthropological perspective and took advantage of societal shifts. When we entered Japan in the late 1980s, we focused on the emerging female professional. By the mid-1990s, Japanese women were looking for emancipation. They wanted to have their own apartments, to travel the world, to self-actualize. They wanted to be the best versions of themselves, and what we offered them was a bag that they could buy for \$400 instead of \$1,000.

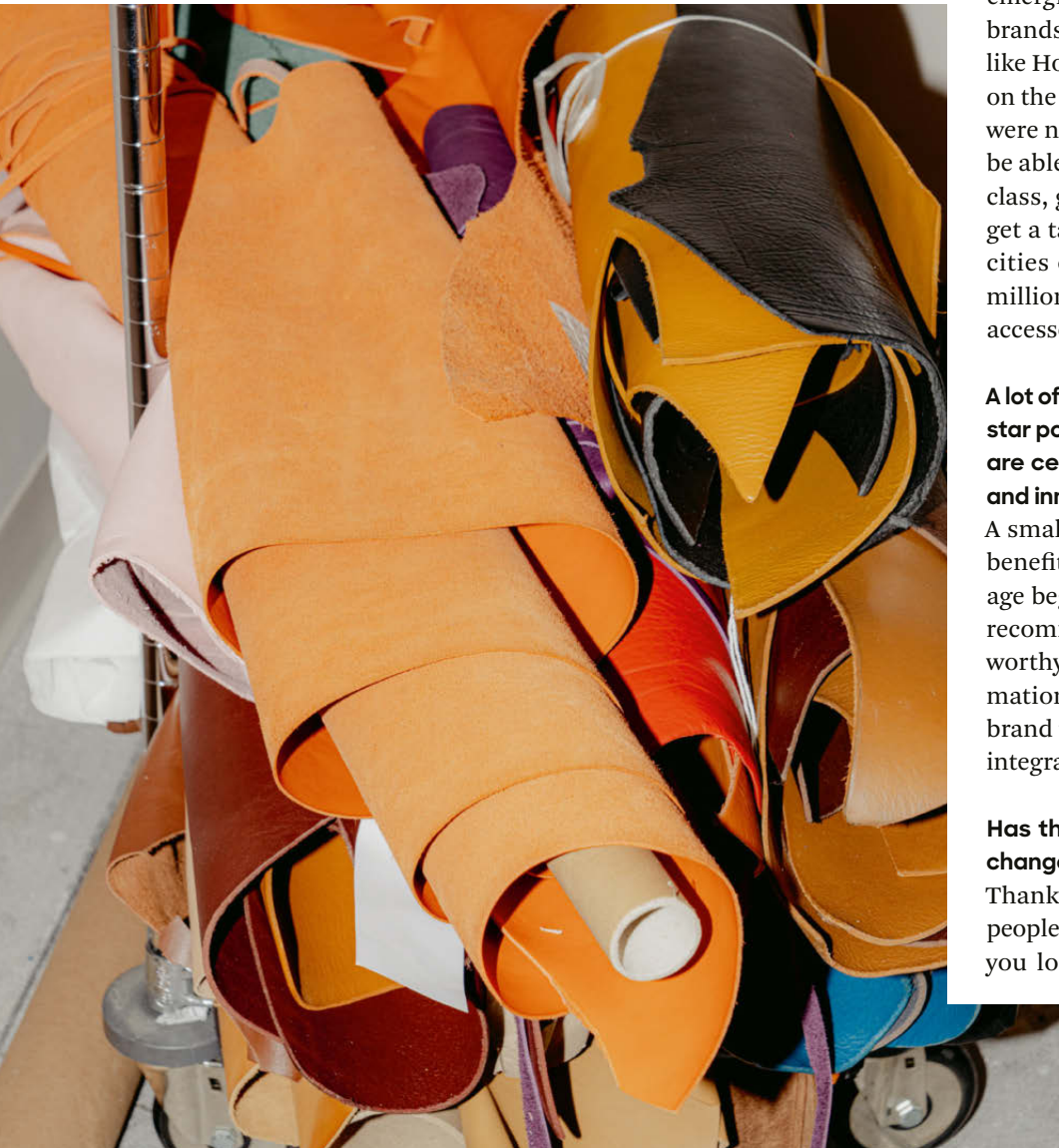
In China, which we entered in the 1990s, we took a different approach. We focused on the emerging middle-class consumer. European luxury brands were dominant in a handful of major cities like Hong Kong, Beijing and Shanghai. We focused on the secondary and tertiary markets where there were no international brands and where we would be able to anchor a mall for that emerging middle class, giving those consumers an opportunity to get a taste of New York. We built our business in cities of only 5 to 10 million people, not 20-30 million. Through today, we are the second-largest accessories brand in China and Japan.

A lot of high-end brands have chosen to go with the star power of designers and heads of creative who are celebrities in their own right. Does ingenuity and innovation need big names?

A small business that's rapidly growing certainly benefits enormously, particularly since the digital age began, where everything can go viral by being recommended by someone whom they find trustworthy. Brands that are going through a transformation also could benefit from star power. For a brand that has hit a wall, the storytelling has to be integrated and authentic.

Has the internet and social media in particular changed that equation?

Thanks to social influencers and others, famous people have less impact than they did before. When you look at TikTok and YouTube, where young



"For many consumers, Coach was luxury because they needed to save for it, but they only had to save for a week or a month – not for a year."

– Lew Frankfort

audiences are flocking, brands like Coach are maniacally focused on Gen Z. They may only represent 15-20% of total accessory spend today, but in 15 years, they'll represent 40%, so understanding who they are, what their values are, and then developing strategies and programs to reinforce them is crucial. The current leaders of Coach, CEO Todd Kahn and Creative Director Stuart Vevers, have brought the brand to new heights in its ninth decade. They have introduced recycled materials to address concerns around sustainability. They do significant customization, which young people are looking for to distinguish their bag from others. They're also opening coffee shops adjacent to stores around the world, which helps create a community of like-minded people who might be visiting stores. They have found that sales in the stores go up significantly when you have a cafe next to it, and the cafes themselves are profitable, too. Almost everyone in the cafe is carrying a Coach bag, and there's something magical about that. You can never stand still.

You left Coach in 2014, saying that your shadow was so long you didn't even want to sit on the board. Is that an approach you'd recommend to other leaders who step aside?

It depends on where the leader is on their life's journey and what they're looking to do in their next chapter, and what the circumstances of the business



**Short
Takes**

Watch the exclusive
video interview with
Lew Frankfort online

→ [thinkact.](https://thinkact.rolandberger.com/en/frankfort)

[rolandberger.com/
en/frankfort](https://rolandberger.com/en/frankfort)

are. In my case, I stayed about five years longer than I had thought I might. During those five years, I built my leadership team and identified three potential successors, one of whom the board ultimately chose. For many people, I was the personification of Coach, and there would still be an existing board, so it was clear to me that my successor would not have the freedom to move into directions different than those that I might pursue without my blessing. In this case, my successor decided that he wanted to reposition Coach as a house of brands, meaning through acquisitions, and also bring Coach to a higher level of modern luxury, which I felt was not consistent with the DNA of the brand.

You now run the Benvolio group to make your own investments. If you look back on your 35 years at Coach, what is the one most important thing you took away from it that you can apply at Benvolio?

Two things: curiosity and good listening skills. ■

Crop swaps

From recipe tweaks to relocation and multi-origin sourcing, an unstable climate is calling for ingenuity in agriculture and food production. The changes are a signal of a deeper shift in how the global food system is being managed.

BY **Susannah Savage** PHOTOS BY **Alessandro Gandolfi**

AN INCREASE IN NUMBERS
The cultivation of tropical fruits such as mangoes, avocados and papayas has increased notably in Italy, especially in eastern Sicily, as temperatures continue to rise.



IN THE JUICE AISLE, climate change does not announce itself with melting glaciers or distant wildfires. It shows up as a missing staple. Severe drought in Brazil, the world's largest supplier of orange juice, and the spread of disease have tightened supply and driven prices higher. Producers are now exploring a workaround that would have sounded implausible only a few years ago: "orange" juice that is partly mandarin.

What looks like a minor recipe tweak is, in fact, a structural shift. Climate change is forcing companies to redesign products, supply chains and even regulatory definitions around a new assumption: Crops will no longer stay where they historically belonged. These adaptations are coalescing around a small number of recurring strategies. Sometimes companies substitute one ingredient for another, replacing a scarce crop with a functional stand-in. Sometimes they keep the crop but change the genetics, breeding varieties that tolerate heat, drought or disease. A third response is geographic arbitrage, shifting production into new regions as climate zones migrate. And at the furthest edge, some are bypassing agriculture altogether, recreating familiar ingredients through fermentation or cell culture. Together, these moves amount to what executives increasingly describe as "crop swaps" – not a single tactic, but a portfolio of ways to preserve continuity in an unstable climate.

TODAY, NO PRUDENT FOOD COMPANY relies on a single geography for a critical input if it can avoid it. At the same time, R&D budgets are being redirected away from marginal product improvements toward something more existential: preserving taste, texture and reliability, even as inputs change. "Climate change is going to rewrite how food is grown, how it's made, how it's transported, how it's enjoyed," says Margaret Henry, who leads work on regenerative agriculture and resilience at PepsiCo. For her, the risk is not a single poor harvest, but losing the ability to deliver the same product, at scale, year after year.

Few supply chains illustrate the challenge more clearly than orange juice. The global orange juice system today revolves around a single center of gravity. Brazil's citrus belt accounts for roughly 70% of global orange juice exports. When that system falters, replacement is not straightforward. In mid-2024, the country's orange harvest was forecast to be around 25% lower than the previous year, marking the third weak season in a row. Extreme heat and drought had stressed trees during flowering,



20%
cocoa

The current minimum amount of cocoa that a product must contain to be labeled as "milk chocolate" in the UK. The minimum in the EU, meanwhile, is 25% and in the US it is just 10%.

SOURCES:
BBC, COCOASUPPLY.EU, CFR

accelerating the spread of citrus greening, an incurable disease that has ravaged groves across São Paulo state. In Florida, once the other great heartland of the industry, hurricanes and the same disease have all but wiped out production.

The consequences were immediate. Global orange juice supplies plunged to their lowest point in decades and frozen concentrate futures hit a new high of \$4.95 a pound in May 2024 before nearing \$5.50 by the end of the year. Demand fell as prices rose. Producers have little choice but to look elsewhere. "You go to Mexico, or South Africa, the Mediterranean," says Kees Cools, president of the International Fruit and Vegetable Juice Association. "But these sources don't have the economy of scale like Brazil has."

Brazil's dominance in orange juice is about infrastructure as much as climate. Processing plants, cold storage, logistics and ports have been built around a citrus belt that took decades to develop.



"Let's say I would normally develop 100% orange juice. Maybe this time I would develop a citrus mix where it's not composed of one fruit only."

**— Kees Cools,
President of the International Fruit and
Vegetable Juice Association**

But that process is slow, and it raises a thorny question: How much can you tweak a product before it isn't what it claims?

CHOCOLATE OFFERS A STARKER VERSION of that dilemma. In the UK, Nestlé's Toffee Crisp and Blue Riband bars were recently downgraded from being labeled as "milk chocolate" to having a "milk chocolate flavor coating" after recipe changes left them below the legal cocoa thresholds. Behind those labels lies a deeper crisis. Over 70% of supply comes from West Africa's humid tropics. Those regions have seen erratic rainfall, new pests and scorching dry seasons that imperil cocoa yields. Scientists warn that a third of current cocoa-growing areas could become climatically unsuitable by 2050.

The result was an extraordinary price surge. By early 2024, cocoa futures touched \$12,000 per ton, up from the low thousands only a few years earlier. "Climate change has accelerated existing fragilities," says Stéphane Detaille, head of ESG for Nestlé's confectionery business. After years of steady growth, cocoa production has hit what he calls "a big hiccup": the impact of climate change compounded by years of underinvestment in plantations.

In the short term, chocolate companies have responded by shrinking bar sizes and tweaking fat composition. In the medium term, they are →

Orchards can move. Industrial ecosystems are another matter. As climate pressure shifts production potential northward, southward or uphill, companies face a choice between paying a continuity premium to keep existing systems running, or making long-term bets on entirely new geographies.

Reformulation offers a second lever. But that comes with its own limits. As a producer, "let's say I would normally develop 100% orange juice. Maybe this time I would develop a citrus mix where orange is there, some mandarin, some grapefruit, some lemon, and it gives kind of a citrus orangey taste, but it's not composed of one fruit only," Cools says. Yet while in the US there is a 10% flexibility to blend other citrus fruits, in Europe, orange juice must be made from the citrus *sinensis* fruit. The industry is now lobbying Codex Alimentarius, the UN-backed food standards body, to modernize definitions so that hybrids or future greening-resistant varieties could be used without undermining consumer trust.

*CLIMATE-ADAPTED
In just the last few
years, some effects
of climate change
including higher
winter temperatures
and humidity have
enabled banana
cultivation where
it was previously
unheard of, including
parts of Italy.*

"When you plant a cocoa tree, it takes four to seven years before it produces. In our system, production cycles are measured in weeks."

**– Michal Beressi Golomb,
CEO of Celleste Bio**

diversifying geography to offset West African risk. "Brazil is very important for us as a business," says Detaille, adding that "naturally" Nestlé's cocoa production in Latin America increased in 2023 and 2024 compared with 2022. But, he added, Ivory Coast "will stay the biggest sourcing region for years to come."

Detaille is clear that resilience starts further upstream. Nestlé's Income Accelerator program pays incentives directly to cocoa-farming households to support practices linked to productivity and climate resilience. Yet resilience cannot be imposed through contracts alone, he says. It has to be enabled through income stability, shared labor models and practices that reduce risk across entire communities rather than individual plots. Nestlé has helped establish pruning groups that work across holdings, reducing disease risk and labor bottlenecks. Agroforestry – using shade trees to buffer heat and diversify income – is expanding.

EVEN SO, GEOGRAPHY AND AGRONOMY may not be enough. A growing number of companies are hedging more radically by trying to make chocolate without cocoa beans at all. California-based Voyage Foods uses grape seeds, sunflower oil and shea butter to create cocoa-free chocolate analogs with a fraction of the carbon footprint. Europe's Planet A Foods ferments oats and sunflower seeds into

WEIGHING THE COST
As shifting rainfall and temperature averages drive more unpredictable crop outputs in many regions, production is finding new and once unlikely homes, for example in Sicily, where the Tropical Fruit company specializes in the production and sale of mangoes.

ChoViva, now used in products sold by retailers and premium brands alike. These substitutes aim to supplement, not replace, traditional cocoa as an insurance against extreme volatility.

The most radical hedge against cocoa volatility does not involve farms at all. Biotech firms are pursuing "lab-grown" cocoa. Using cellular agriculture, they culture cocoa plant cells in bioreactors to produce authentic cocoa ingredients in vitro. Michal Beressi Golomb, CEO of Celleste Bio, says the company was founded to solve a business problem. "Brands suffer from the volatility in the cocoa market, and they want to hedge themselves," she says. Celleste grows cocoa cells in bioreactors to produce cocoa butter and cocoa solids with the same chemical profile as conventional cocoa. "They behave like cocoa in chocolate," Beressi Golomb says, referring to tempering, snap and melt. The bottleneck, she argues, is scaling and economics rather than biology. The advantage, she argues, is that "when you plant a cocoa tree, it takes four to seven years before it produces," Beressi Golomb says. "In our system, production cycles are measured in weeks."

Celleste expects to reach the market around 2028, shaped by regulatory timelines and the challenge of industrial throughput. Mondelez is a strategic investor and design partner. The likely model is blending rather than replacement, using cell-cultured cocoa to stabilize fat composition and reduce supply shock exposure. "We're not aiming to replace," Beressi Golomb says. "We supplement."

COST AND SUPPLY CAN BE ENGINEERED around, but taste is harder to cheat. Arabica coffee, prized for its flavor, grows within a narrow temperature band and is sensitive to heat and rainfall variability. Climate models suggest that by mid-century, large areas of today's arabica farmland could become unsuitable. Growers are responding in two ways: moving uphill where land exists, and switching species.

Robusta coffee tolerates higher temperatures and more erratic rainfall – and yields more beans per tree. Brazil, long synonymous with arabica, has sharply increased robusta production over the past decade. Analysts note that the shift has been driven less by consumer demand than by climate-related losses in arabica. For growers, adaptation comes with social cost. Switching to robusta often means lower prices and altered status in global markets. Crop swaps, in this context, redistribute value as well as risk. But the major problem is taste. Robusta has, historically, been associated with →



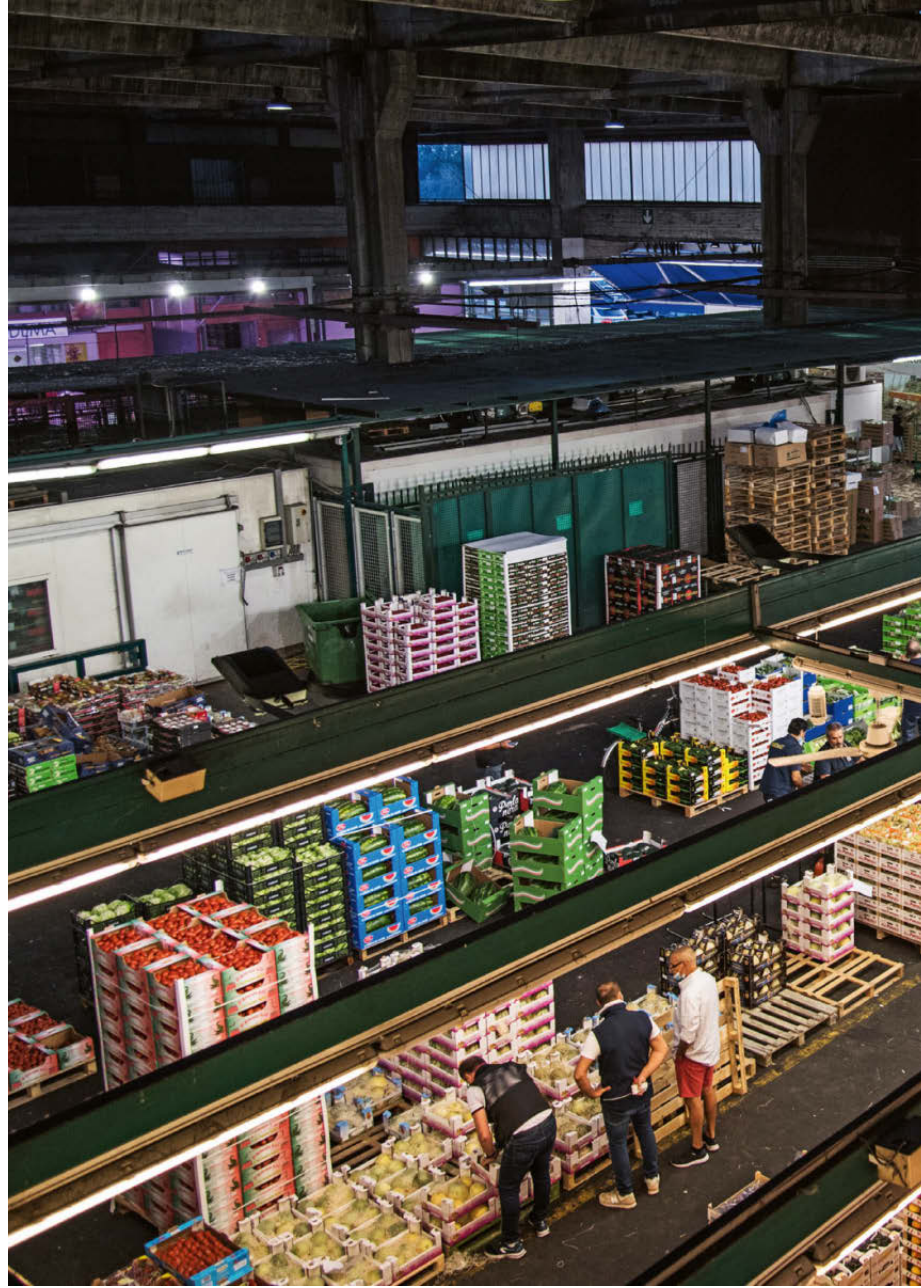
bitterness and lower quality, and increasing its share in blends risks altering flavor profiles that brands have spent decades standardizing.

Nestlé is one of the companies that is doubling down on R&D to preserve flavor and quality even as inputs change. Alongside investments in robusta, it is deploying data science and genetics to breed better arabica. In 2024 Nestlé published a high-quality arabica genome reference and launched a global breeding effort to find strains with both robust flavor and resilience to heat and drought. The company's plant scientists have already rolled out new arabica varieties that can tolerate harsher conditions. The goal is to "buy time" against climate change by improving the plant itself, delaying or minimizing the need to switch to more robusta. In parallel, quality control labs are working on blending techniques, mixing different origins, roast levels or adding natural flavor extracts to mask any minor "taste drift" that does occur when ingredient profiles shift.

SIMILAR EFFORTS ARE UNDERWAY ELSEWHERE. Brewers, for instance, worry about barley, the key grain for beer malt. Warmer, drier weather has already caused barley crop failures and wild price swings, threatening the \$600 billion global beer industry. European brewmasters are responding by trialing new, heat-tolerant barley strains. In 2023, Carlsberg unveiled an experimental lager made with a barley variety bred to thrive in high heat and drought – literally a "cool beer for a warm planet," as the company quipped. Its competitors, like AB InBev, are likewise investing in seed R&D, aiming to release new resilient barley varieties at an unprecedented pace to stay ahead of climate shifts. Drought-resistant barley (and new practices like regenerative farming of grain) ensures beer can keep flowing even if the traditional barley heartlands in Europe or Australia become too parched.

For PepsiCo, whose snack brands rely on consistency of taste, color, crispness and frying behavior, a potato is not just a potato. Henry says climate stress shows up in practical, commercial terms. "These weather patterns could impact yielding, quality, just reliability of having good quality products that we can offer to our customers," she says. "We are investing in proprietary potato varieties," she adds. "We have different varieties for where there's more droughts, more floods."

Genetics alone, however, aren't enough. PepsiCo is pairing varietal investment with AI-driven climate modeling designed to narrow uncertainty at farm



READY TO EAT
At Milan's Mercato Ortofrutticolo, Italy's largest wholesale fruit and vegetable market, local demand for exotic fruits is increasing in step with the new sources of local supply.

"It's not about predicting the future perfectly, but about narrowing uncertainty enough to act sooner."

– Margaret Henry,
VP of sustainable and regenerative
agriculture at PepsiCo



Turning up the heat on gene editing

Genetic modification has long promised to make agriculture more productive and resilient. As climate change accelerates crop losses, that promise is being tested again – and so are the unresolved debates that surround it.

NOT ALL GENETIC technologies are the same. Traditional transgenic GM crops introduce foreign DNA and are already widely used in the Americas, particularly in corn, soy and cotton. Gene-editing tools such as CRISPR work more precisely, altering a plant's existing genes to improve traits like heat tolerance or disease resistance, and are increasingly being used in crops such as wheat, rice and bananas. Proponents argue these tools can

adapt crops faster than conventional breeding, at a pace that climate change now demands.

Critics, however, question whether genetic fixes address the right problem. Concerns persist about long-term ecological effects, from herbicide-resistant weeds to reduced biodiversity, as well as the concentration of seed ownership in a small number of companies. Others argue that focusing on genetics risks crowding out deeper

reforms in soil health, water management and farming systems.

Regulation reflects these tensions. While the US, Brazil and parts of Asia have embraced gene editing, Europe remains cautious. As climate pressure mounts, the debate is no longer whether genetic tools belong in agriculture, but how – and under whose control – they should be used.

level. Rather than relying on long-range climate projections that are too abstract to guide planting decisions, the company uses predictive tools to flag heat stress, water scarcity and yield risk months in advance. That allows sourcing plans, irrigation strategies and even crop rotations to be adjusted early enough to matter. "It's not about predicting the future perfectly," Henry says, "but about narrowing uncertainty enough to act sooner."

WHAT LINKS ORANGE JUICE, chocolate, coffee, beer and crisps is not the novelty of substitution, but the scale at which it is now occurring. What were once marginal adjustments – a blend here, a new variety there – are becoming core operating decisions. The result is an emerging redefinition of resilience. It is no longer measured solely in yields or margins, but in optionality: the ability to switch origins without breaking supply chains, to adjust recipes without breaking trust, to intervene upstream without taking

10 varieties

Lay's, a PepsiCo brand, uses 10 different kinds of potatoes to produce their chips. Each one of those is proprietary to PepsiCo, and together they represent just 0.25% of the recognized potato varieties grown globally.

SOURCE:
PEPSICO

on responsibilities once left to governments or development agencies. In some cases, resilience means paying more to preserve familiarity. In others, it means redefining what familiarity looks like.

For consumers, many of these changes will remain invisible, at least at first. A citrus blend that still tastes like orange. A chocolate bar that snaps the same way. A coffee that still smells right when the packet is opened. But the work required to deliver that sense of normality is increasing, and so is the cost of failure. Crop swaps, then, are not a passing response to a few bad harvests. They are an early signal of a deeper shift in how the global food system is managed: less reliant on stable climates, more dependent on science, capital and coordination. The question is no longer whether food will change as the planet warms, but how much change consumers, companies and regulators are willing to accept in order to keep everyday products recognizable. ■

Staying green

How do you lead in a time of growing skepticism and pushback on the green agenda? It might be a simple case of "keep calm and carry on." Beneath the political noise and culture war rhetoric, many companies still see a strong commercial case for sustainable business.

BY **Stefan Stern** PHOTOS BY **Mathias Svold**



RIGHTS OF A RIVER
In 2017, New Zealand granted the Whanganui River the same legal rights as a person, recognizing that the river has spiritual, emotional and cultural value beyond any economic interests.

DONALD TRUMP ONLY AGREED to attend the World Economic Forum in Davos in January 2026 after his team received confirmation from World Economic Forum (WEF) officials that there would not be an excess of so-called "woke" items on the agenda. A well-sourced report in the *Financial Times* the previous November revealed that "senior US officials had asked Davos management to tone down or avoid discussions on areas including female empowerment and diversity, the green transition, climate change and international development finance as a condition of his participation."

While WEF officials denied firmly that the White House had in any way dictated terms for the annual meeting, another WEF observer conceded that of course plans are laid with representatives ahead of the main event. "It is normal that topics and discussions for stakeholders attending the summit would come up," they said. Viewed generously, this sort of pre-conference discussion could be seen as being part of "the spirit of dialogue." And, in fairness, acknowledging that prosperity has to be built "within planetary boundaries" remained one of the five official pillars of Davos this year.

There is no pun intended here, but the climate has clearly changed for business leaders as they consider how to manage their organizations sustainably in this developing Trump-influenced era. And it would be wrong to point the finger solely at the 47th US President for causing a certain amount of rethinking and recalculation.

THE TECH BILLIONAIRE AND PHILANTHROPIST Bill Gates published an extended memo ahead of last autumn's United Nations climate summit, COP30. In it he said that the "doomsday" view of climate change was overdone. While he did not deny that the world continues to face a major problem with global warming, he felt that panic and despair are uncalled for. "Although climate change will have serious consequences – particularly for people in the poorest countries – it will not lead to humanity's demise," he wrote. "Emissions projections have gone down, and with the right policies and investments, innovation will allow us to drive emissions down much further."

Gates' intervention is part of the backdrop to a clear reluctance among global CEOs to speak up on climate issues. What explains this reticence? "It's not that they don't believe [in climate change] or they don't want to move forward. They're just scared. I'm shocked by how frightened CEOs are,"

*A LIVING WHOLE
Granting the
Whanganui River
legal rights promotes
its intrinsic interests,
yet also grants us
the opportunity
to understand our
own obligations and
rights, and the duties
and constraints
of public authorities,
in new ways.*

"If you work in sustainability, it is very difficult not to drift toward either activism or conformity, to the detriment of effectiveness."

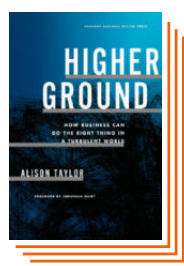
**– Alison Taylor,
Clinical associate professor at
the Stern School of Business**





former US presidential candidate, secretary of state and climate envoy John Kerry told the *Financial Times*. "The process of Donald Trump in the last months, coupled with the justice department, coupled with his vengeance programs, has scared the crap out of a lot of people," he said after speaking at London's Chatham House last November. Trump's skepticism on climate change – he has called it "the greatest con job ever perpetrated on the world" – is well known. "The only hoax is in pretending otherwise," Kerry countered. "I've learned that, in an election for a time, you can bend the laws of politics. But believe me, no one, no president, no monarch, no one, can bend the laws of physics."

Even though massive, multibillion-dollar investments in renewable energy continue, Kerry observed that "CEOs who were most bullish about climate solutions have ... just pulled it back, afraid that climate isn't good for business, or politics, or just afraid." A 2025 survey of 1,200 global CEOs by



**Higher Ground:
How Business
Can Do the
Right Thing in a
Turbulent World**
by Alison Taylor,
304 pages.
Harvard Business
Review Press, 2024.

the executive search and advisory firm Egon Zehnder confirmed this hesitancy. Less than half of those surveyed – 40% – said they should engage externally on issues of global prosperity and stability. This tension was reflected in another of the survey's findings: While 25% said their main responsibility is to shareholders and financial performance, only 3% said they should leave global issues to governments and international institutions.

One of the most forthright and effective analyses of these and other dilemmas facing corporate leaders has been done by Alison Taylor, clinical associate professor of business and society at the Stern School of Business. In 2024 Taylor published her acclaimed book *Higher Ground: How Business Can Do the Right Thing in a Turbulent World*. Her work involves a close study of ethics and sustainability leaders in a range of corporate settings. "If you work in sustainability, it is very difficult not to drift toward either activism or conformity, to the detriment of effectiveness," she says. "If you are too much of an activist, you lose internal credibility fast. Conversely, if you are too technocratic and biddable, you will be sidelined for other reasons. Worst of all, you can wind up prioritizing optics, winning awards, and showing up on panels, but getting very little else done."

IN SPITE OF LEGITIMATE AND PRESSING CONCERNS about the challenging context facing business leaders, beneath the headlines and the rhetoric, good work continues. And COP30 was not a washout. As many as 60 Fortune 100 companies were in attendance in Belém, Brazil, up from the 50 that attended the previous COP in Baku, Azerbaijan, according to a Reuters survey. And some business leaders were ready to speak openly about their sustainability and other "green" activities. "We're doing it because it's good for the business. It helps create supply security," PepsiCo's chief sustainability officer, Jim Andrew, said. "We need farmers to be successful, we need them to keep farming."

The global market for sustainability consulting advice also reached \$54 billion by the end of 2025, according to Source Global Research, a data monitoring business which studies the consultancy market. Growth was as high as 5% in 2025, up from 3.9% a year previously. Work covered by the label ESG (environment, social, governance) forms part of much of the consulting work going on: As many as half of the firms studied by Source Global Research said most of their consultancy work involved ESG considerations, while 21% said all their work →

did. There is also the nontrivial matter of businesses needing to make restatements of sustainability data, a not uncommon occurrence.

WHILE THE CONCEPT OF PURPOSE is much discussed these days, it is not a new debate. In 1995, the academics Sumantra Ghoshal and Christopher Bartlett published a paper called *Changing the Role of Top Management: Beyond Strategy to Purpose*. They wrote: "Strategies can engender strong, enduring emotional attachments only when they are embedded in a broader organizational purpose." Almost 30 years later, two new books bring us up to date on the discussion around purpose in the context of recognizing (and combating) the reality of climate change: *Beyond Profit: Purpose-Driven Leadership for a Wellbeing Economy*, by Victoria Hurth, Ben Renshaw and Lorenzo Fioramonti; and *The Purpose-Driven Organisation in Times of Climate Crisis*, edited by Katie Bailey and Katie Manning.

Hurth says that we have reached an "emperor's new clothes" moment where it is clear that our current system is failing us and yet there is a lack of necessary action. "It's like we're all on a bus, we can't get off, and the control panel and steering wheel are set to 'go over cliff,'" she says. "We need a new control panel – that means better governance. If we don't turn the steering wheel to 'purpose' then we

**\$54
billion**

The global market size that sustainability consulting had grown to by the end of 2025, up 5% from the previous year.

SOURCE:
SOURCE GLOBAL RESEARCH

are going over the cliff." Hurth and her co-authors are radical on the need to adopt new priorities to achieve sustainable success. "If we want fast, effective change then we need to give up 'pragmatically' trying to tweak a system set up to financially serve itself and instead align stakeholders with the long-term good of the collective," they write. "This alignment infuses the organization with a shared sense of meaning and direction, creating a unified and motivated culture," they say.

Katie Bailey says that a reframing of the climate change narrative is required. "The top-down approach of scaremongering hasn't worked," she says. "It's not the kind of thing business responds to very well." Sustainability is about risk management but it is also about opportunity, she adds. We need "strategies for renewal and innovation. Opportunity – how does it attract talent and capital?" Business can change, but not because of compliance and fear. "How do we make this a positive movement toward

"Companies aren't being put off by the noise. They're doing it for sound strategic reasons: a mix of economics, finance and social acceptability."

– Sebastian Munden,
Chair of WRAP and Ad Net Zero





The three faces of corporate purpose

The Purpose-Driven Organisation in Times of Climate Crisis, edited by Katie Bailey and Katie Manning, expands on three different approaches to purpose and sustainability.

Compliance-driven actors

respond to evolving disclosure mandates and financial reporting standards. For these firms, sustainability efforts are often shaped by the need to maintain market access and mitigate potential legal or reputational risks.

Conviction-driven firms

embed long-term environmental considerations into corporate governance and capital allocation. Their engagement reflects a broader commitment to climate action as a fundamental business principle.

Business-driven approaches

focus on identifying opportunities within purpose and sustainability, leveraging efficiencies, cost reductions and shifting consumer and investor preferences to create competitive advantages.

something meaningful?" Manning adds. In Bailey and Manning's book there is an extensive discussion on effecting change. They write: "Ultimately, purpose-driven leadership is not about choosing between profit and impact; rather it is about aligning them. Leaders who challenge the status quo, model ethical decision-making and empower employees at all levels pave the way for organizations that thrive in both business success and societal contribution. Purpose cannot be treated as an optional add-on. Instead, it should be used as a transformational force that fuels innovation, strengthens relationships and drives long-term value."

FOR A REALITY CHECK ON THE PRACTICALITIES implied by some of this analysis, *Think:Act* spoke to Sebastian Munden, chair of the global board of trustees for WRAP (the waste and resources action program, an NGO working to build a circular economy) and also global chair of Ad Net Zero, the advertising industry's program to deliver net-zero ways of working. Munden was in New York for Climate Week in 2025 and then later in Brazil for meetings around the COP30. He takes a calmly pragmatic view of the controversies which currently surround the sustainability debate. "I think the politicization of some of these things will ultimately be seen as a massive distraction," he says. "Business will carry on doing them because they're simply good business."

He cites the example of tackling food waste. "For some people it's about redistribution of surplus – so there's a social angle to it. And for others the motivation is reducing wasted carbon and greenhouse gases. If you're a supermarket or food producer, it's wasted margin." He adds that "what we saw in Climate Week in New York was the companies that aren't being put off by the noise. They're doing it for sound strategic reasons, which are a mix of economics, finance and social acceptability." The win for business goes far wider than advertising and marketing, Munden says. "I think carbon has become, for those companies who have really got into it, a currency for savings and a trigger for innovation, because effectively it's an indicator of wastefulness."

Life, and business, must go on. That's the bottom line. Politicians will come and go, along with the noise that they make from time to time. But sensible (and successful) business leaders will, in the words of the wartime advice, "keep calm and carry on." Business will continue to strive to be both profitable and sustainable – an imperative for the general and the common good. ■





A TÊTE-À-TÊTE WITH

Marcus du Sautoy

*A rare mathematician who is also deeply embedded in the arts, British academic **Marcus du Sautoy** draws similarities between the two fields in this interview and explains whether AI art can be considered real art.*

BY **Neelima Mahajan**

ILLUSTRATIONS BY **Nigel Buchanan**



In what ways do you think mathematics and art are similar?

Defining creativity is quite a challenge. Cognitive scientist Margaret Boden defines it as something which is novel, surprising and has value. Novelty is the surprise about your emotional reaction to the thing. Value is whether that actually helps you in some way. People think mathematics is just about proving theorems about numbers and geometry, so where's the creativity in that? But it's not about proving everything that's possible. It's about making choices around those stories about numbers and geometry that we think have an interesting emotional journey to them.

Music and mathematics have a lot of connection, because music is quite an abstract world where the development of pattern is quite important to the aesthetics of listening. For mathematics, it's about the choices of strange connections, a kind of jeopardy in an argument, the joy of seeing that two things that look totally different are actually related.

Mathematics actually requires those elements of creativity. They need to be new, but they need to have emotional

engagement, surprise and value, because you want those discoveries to change the way we see the world.

Music and mathematics share patterns and structure, which implies a certain sense of predictability.

Mathematics is the science of patterns. The idea of spotting a pattern has been very crucial in our evolutionary development: If we're able to spot a pattern, we can plan into the future. It gives you a very powerful tool to navigate your way through time and space. You can almost talk about music as the art of pattern. Mathematics could also be defined as the study of structure. Some structures are very predictable and not interesting, but many structures have really surprising twists and turns in them.

Creative artists love structure. If you have total freedom and are given a blank page, a blank stave or a blank →



Available online

Go deeper in our video interview with Marcus du Sautoy → thinkact.rolandberger.com/en/du-sautoy



Popular scientist

Professor for the public understanding of science at Oxford University, BBC presenter and author of *The Music of the Primes* and *The Creativity Code*, Marcus du Sautoy's accessible approach to mathematics was awarded with the Royal Society of London's prize for "excellence in communicating science to UK audiences" in 2009. This interview was conducted via the Global Peter Drucker Forum.

stage, it's very hard to be creative. Igor Stravinsky said: "I can only be creative under huge constraints." Often people are looking for interesting structures whose constraints allow them to be pushed into interesting new directions. Why does Shakespeare write in iambic pentameter or write sonnets? Because often in that structure, the predictability is some of the aesthetic: You enjoy knowing that you're going to arrive at something which rhymes with the words several lines previous. Artists love wrestling with the tension, that structure produces predictability and unpredictability within itself. And the idea of setting up expectations which you then break. You need structure in order to sometimes break out and do something different. If there was too much freedom, you wouldn't appreciate that break of structure.

What connections do you see between constraints and innovation in the world of management?

Innovation is very closely tied to the ideas of creativity. Structures can be too constraining. Sometimes the challenge in the creative realm is to move away from received structures in order to see if breaking something takes you somewhere new or collapses the system.

There are three sorts of creativity as per Margaret Boden: Exploratory creativity, which is within the constraints that you've got, pushing things to their extreme to see what is possible within that world. Combinational creativity, which is about taking insights from another realm and seeing whether the way they think about their product or their way of doing things, is something you can use in your realm. The idea of combining structure from one place, which perhaps has been built for that, with your own, is very strong. Then there's transformational creativity, which is about breaking rules, seeing the structures and saying, if I break this, does something interesting happen? If you think about cubism or Arnold Schönberg's twelve-tone row or modernism in literature,

that was very much about breaking out of the constraints of the 19th century and moving into the 20th century.

Shifting gears to AI – is it good news for creative professionals?

AI is an interesting new tool for creatives. A lot of people in the creative realm feel threatened by it. There are a few people who know how to manipulate this new tool to do something genuinely new. Bernard Lubat, a jazz musician, trained

an AI on his jazz improvisation style. He played a concert with this piece of AI behind a screen. The audience couldn't tell who was AI and who was human. Lubat's response was, "I recognize everything that the AI is playing: It's me, it's my world, but it's doing things I've never ever thought of doing before." AI can take your world of creativity and show you things within that world that you've missed, or new opportunities. Think of it like Galileo getting a telescope and

Look out for secret mathematicians in the arts

①

Shakespeare

Iambic pentameter is the base of his oeuvre, indeed, yet the Bard also made frequent use of math in his prose, referencing the rapid progress of his era.

②

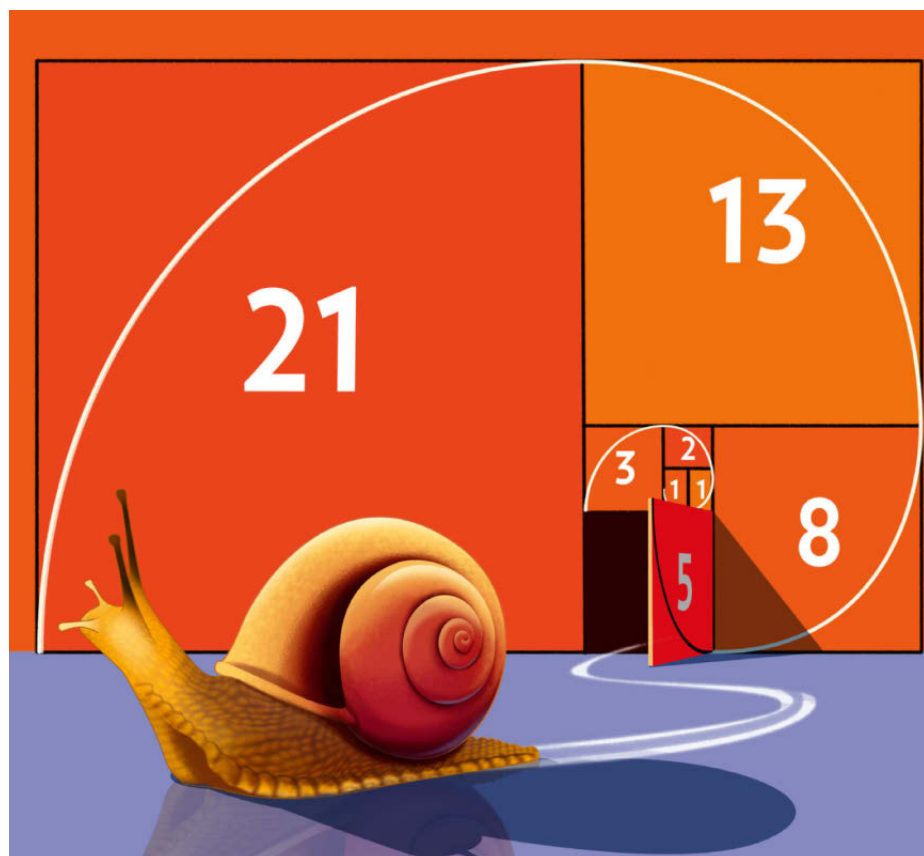
Olivier Messiaen

Working with prime numbers, among other tools, the French composer used math to defy conventional repetition and explore a new sense of time.

③

Radiohead

The UK band is known for complex, mathematical compositions. Their guitarist, Jonny Greenwood, has cited Messiaen as a major influence.



being able to see things for the first time deep into the solar system. This is like a digital telescope which is allowing us to see things which perhaps our embodiment is limiting us to see.

Art has an emotional aspect. You are drawn to a Gustav Klimt because you know a bit about his own evolution as an artist, so you understand the significance of his art. When AI creates art, is it really the same?

At Art Basel, a gallery displayed paintings that were done by humans and some by AI, but the visitors weren't told that. They were asked which paintings they emotionally engaged with. Intriguingly, a lot of the AI paintings were the ones that people had the most emotional reaction to. When they were told that these were created by AI, they felt cheated. You want your art to connect to the emotional world of the creator. The AI was trained on human art, on our emotional world. So, it's not surprising that data that comes out of that AI learning from our emotional world will have an emotional content to it.

In your book *The Creativity Code*, you talk about the Pollockizer, the pendulum that mimics Jackson Pollock's art style. It may produce art that is visually similar to his, but is it really the same?

Pollock's paintings have a unique quality to them which is quite mathematical: They are fractal in nature, they have an interesting, scaleless property. You can reproduce this using a chaotic pendulum. This is probably how Pollock produced this geometric style, because he was almost dancing as he painted. He was making a lot of very deliberate decisions about where to place the paint, add more paint, and the color palette. He was responding to the natural world around him.

If you use a chaotic pendulum, the Pollockizer, it will have some qualities of Pollock. But that emotional connection of the man to the natural world around him and the decisions and

choices that are made on top of using this particular style of painting are what will distinguish a Pollock from something generated by the Pollockizer.

I did an experiment to see how and what the Pollockizer would produce. And it wasn't anywhere near the emotional reaction you get of feeling like you're in front of an abstract version of the natural world when seeing a Pollock. You can measure the dimension of these fractals, and Pollock goes through quite a range of different dimensions. The ones we emotionally react to are those whose dimensions in the painting are closest to the fractal dimensions we see in nature. The Pollocks we love, that are

valued both financially and emotionally, are those where Pollock himself is most closely capturing nature.

Will AI ever push the boundaries in art, or will it always remain rooted in what is already familiar to us?

A lot of the criticisms of people are that AI is just reproducing style. You can have your portrait done in the style of Van Gogh or Picasso. That's not really creative. It's pastiche. But we do have some very interesting algorithms that actually push us into the new.

I was particularly excited by the idea of a generative adversarial network (GAN), which is two algorithms. One learns about style and understands what has been done. The second is tasked with creating something which tries to move away from the space of the known into the unknown. The first algorithm either says, "Oh, no, I'm sorry, I still recognize that style. It's too close to something that's already been done." Or the other side is that perhaps it moves too far away, and we don't recognize it as something which we would regard as art.

There's something in psychology called the Wundt curve, which is about one's hedonic reaction to new things. If you make something too challenging, we have a negative hedonic reaction, whilst if we push a little bit outside of the new but not too far, there's a kind of sweet spot where we go, "that is really interesting." These GANs are genuinely tasked with taking you into the new. ■

"Why does Shakespeare write in iambic pentameter? Because the predictability is some of the aesthetic."

— Marcus du Sautoy



Aesthetics count on math

.....

All architects depend on math to keep their structures standing, but some even build its concepts into their aesthetic. Palladio and Le Corbusier, for example, may have worked 400 years apart, but both used the golden ratio and the Fibonacci sequence.



ZOOMING IN ON

The future of European trade

Europe's economic future is tied to its trade relations with China and the US.

FORE EUROPE, questions about the future of globalization and how best to preserve it are inseparable from the trajectory of its trade relations with China and the United States, the single biggest trading partners of Europe. The US market is becoming more difficult for European sellers. Trade policy risk has risen sharply and the disruption is already visible in the trade data: Eurostat reports that EU exports to the US surged in the first quarter of 2025 as companies rushed shipments ahead of possible tariff changes, then weakened later in the year, with the EU goods surplus with the US shrinking from €81 billion in the first quarter of 2025 to €31 billion in the fourth quarter.

China, meanwhile, is equally unlikely to power the next phase of European export growth. The country has increasingly become an exporter of finished goods in its own right. The reasons are not hard to identify: fierce domestic competition, vast industrial scale, deep pools of engineering talent and some of the world's most generous state subsidies. The result is a large and highly competitive Chinese corporate sector, with firms battling for market share at break-neck speed. For many European companies, defending once-dominant positions in the Chinese market

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Access the full analysis behind this article here:
rolandberger.com/en/Insights/Publications/How-can-globalization-endure-The-future-of-European-trade-in-a-world-of-rival.html



has therefore become significantly harder. That is evident not only in weaker exports to China, but also in the growing export strength of Chinese firms themselves, particularly in advanced manufacturing.

In sum, neither of the two superpowers is likely to provide the same engine of global demand for exporters as in the past. The US is likely to persist with its strategy to revive domestic manufacturing and deepen economic self-reliance for the foreseeable future. In China's case, alongside the dynamics already in motion, a broader structural transformation of the economy is underway – one that, judged against historical patterns, is arguably long overdue. This involves a gradual shift away from manufacturing-led growth toward a more service-oriented economic model, with greater reliance on domestic demand. As a result, demand for European capital goods is likely to come under further pressure.

THE EU BENEFITS FROM BEING one of the most open economies in the world and remains committed to free trade. The EU also benefits enormously from a rules-based multilateralism, which, among other things, led to the abolition of tariffs between EU member states. Despite ongoing geopolitical and

geoeconomic shifts, and notwithstanding recent industrial policy initiatives, Europe remains committed to free trade rather than turning mercantilist.

For several decades, EU free trade agreements (FTAs) have served as an important tool for advancing European economic and geopolitical interests and global trade liberalization. Currently, the EU has 41 trade agreements, in various forms, signed with 72 countries, making it a worldwide champion of trade liberalization, as no other single economic region has more FTAs in place. In the past, in many instances, trade liberalization stemming from the majority of deals brought notable increases in trade volumes. An agreement with India, in the making for two decades, was concluded at the end of January 2026. It is more ambitious than many expected, and tariffs of more than 90% on EU exports to India will be eliminated or reduced over the next decade. The accord illustrates India's willingness to open up its economy and play a more active role in global trade.

The MERCOSUR agreement was decades in the making and concluded despite some countries' strong opposition, notably from France, which worried about its effect on farmers. The European Commission decided that the agreement entered into force provisionally on May 1, 2026, subject to the four MERCOSUR countries fulfilling their own ratification procedures. Uruguay and Argentina had already done so at the time. This action is legally possible despite the fact that the European

“For several decades, EU free trade agreements (FTAs) have served as an important tool for advancing European economic and geopolitical interests and global trade liberalization.”

Parliament has sent the agreement to the European Court of Justice, questioning its legality in the agricultural chapter.

APART FROM TRADE RELATIONS, two areas could help place the continent's trade strategy on a broader and more resilient foundation: deeper integration of the single market and a stronger focus on services exports.

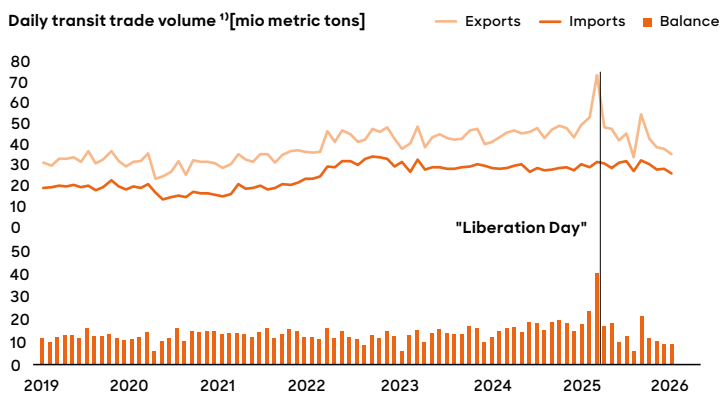
First: The EU single market can provide a buffer against external trade risks. In this context, it's hardly surprising that intra-EU trade in goods reached a formidable €4.03 trillion last year, comfortably exceeding EU external exports of €2.58 trillion. Beyond acting as an insurance policy against external shocks, the EU single market remains one of Europe's foremost strategic assets. The deeper and more integrated it becomes, the more attractive Europe will be – both to existing and new trading partners seeking reliability. Europe's trade story is being told in the wrong language. Too much of the debate still revolves around tariffs, steel quotas and electric vehicles. But the data points elsewhere: Europe's competitive advantage lies in shifting from physical products to expanding to digital nonphysical ones.

Second: The rising importance of services exports is also a response to competitive pressure from China. Economists refer to this as the "China Shock 2.0": the ascent of Chinese manufacturers into higher-value industrial segments – from electric vehicles and batteries to robotics and telecommunications equipment. Chinese firms are increasingly setting global benchmarks in these industries, while weak domestic demand and intense price competition at home are pushing aggressive international expansion. The result is downward pressure on margins across the board, forcing European manufacturers to mount a more decisive competitive response.

From a strategic standpoint, Europe's renewed focus on services is clearly favorable. Services – and, with them, margins and intellectual property – tend to generate more value than export volumes alone. They reduce exposure to commodity cycles and create more durable, high-margin advantages anchored in human capital rather than cost-based production. In addition, services trade has historically been far less exposed to geopolitical disruption than trade in goods. Tariffs on a comparable scale are, at least for the foreseeable future, unlikely. In its emerging role as a net exporter of services, Europe is therefore achieving something it has long sought: greater insulation from geopolitical shocks. ■

Red Sea closed:

Asia – Europe container traffic diverts around Africa
Undae consequi tempore perovit quo doluptatia nisci



SOURCE: EUROSTAT



Piera Gelardi co-founded the media brand Refinery29 and was recognized by Ad Age as one of the "50 Most Creative People" for her innovative work there. Her book, *The Playful Way*, was published in April 2026.

actually lights me up? Play isn't one-size-fits-all – for some people it's physical, their body in motion. For others it's making things with their hands, following a thread of curiosity, finding the humor in a situation, or reimagining the mundane as an adventure. When you know your natural mode, you can work with it and find new ways to reintegrate it.

Play is a quiet act of defiance

*We spend our childhoods being told to grow up. Creative entrepreneur and artist **Piera Gelardi** explains why growing "down" can be a radical form of resilience.*

INTERVIEW BY **Steffan Heuer**

ILLUSTRATIONS BY **Julia Zimmermann**

➤ Why should grown-ups learn to play again?

Play is how humans are wired to learn, adapt and solve hard problems – and we've been conditioned to believe it stops being useful after childhood. That's one of the most expensive myths in business. When we're in a playful state, our brains are more cognitively flexible, more creative and more resilient under pressure. The opposite of play isn't work – it's rigidity. And rigidity is exactly what fails organizations when the ground shifts.

➤ What are some practical steps to rediscover play and reintegrate it into our daily lives, at work and at home?

Start by asking yourself: What

➤ How do we best respond to colleagues or superiors who insist that we continue wearing the "serious suit" all the time?

It's worth naming that not everyone has equal safety to push back on workplace norms – the ability to show up playfully, to look silly, to be curious and irreverent, carries different risks depending on whom you are in a room with. But in those places where you do have standing, consider this reframe: The serious suit isn't actually the brave choice. It's the safe one. Choosing to be playful takes real courage. Play is a quiet act of defiance. And if you're in the position of a leader, playfulness is one of the most powerful signals you can send.

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OWN SUCCESSORS, *the
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them,* MONITOR THEM
AND SHAPE THEIR
BEHAVIOR ALL GROW
MUCH MORE IMPORTANT.**

Marina Favaro

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Co-founder at Anthropic

