Think:Act

Think:Act #28 06|2019 **MANAGE THE PRESENT – OWN THE FUTURE** PRICE $19.95

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Managing long-term success without losing short-term focus

+

Innovating new markets
Clayton Christensen on when to change course

Focus on the big picture
Quarterly capitalism has a growing number of critics

Roland Berger

"You have to go to the edges of your business, because the future is not going to present itself neatly at the corporate headquarters."

RITA GUNTHER McGRATH
Growth expert and author of *The End of Competitive Advantage*

→ PAGE 22

PHOTO: KYLE DOROSZ

PHOTO: DANA SMITH

"The only way we can identify the future is if we have theories. The second thing is we are looking for anomalies, anything the theory cannot explain."

CLAYTON CHRISTENSEN
Innovation guru and disruption theory pioneer

→ PAGE 72

PHOTO: KAYANA SZYMCZAK

"Gut instincts are fine for personal tastes, but for business and political policies, and for living a wise and satisfying life, reason is superior."

STEVEN PINKER
Experimental psychologist and author of *Enlightenment Now*

→ PAGE 84

"Organizations own the future only if they visualize it in detail – even as they harvest the present."

CHARLES-EDOUARD BOUÉE
CEO of Roland Berger

→ PAGE 32

PHOTO: ROLAND BERGER

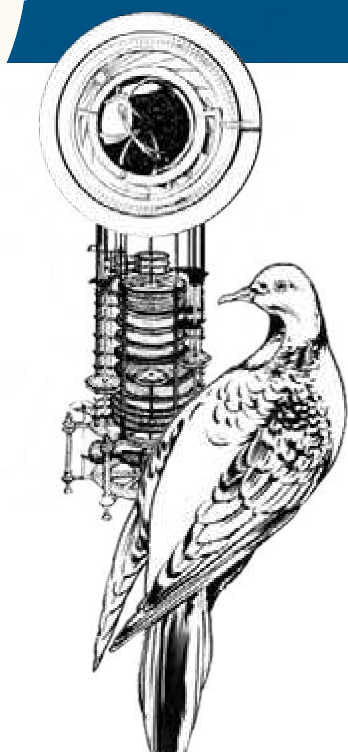
Think:Act 28

In focus

Manage the present – own the future

"The future is terra incognita."

"We have much work to do – and the risks of back-sliding are massive."



COVER + BACK COVER ARTWORK: FRANCESCO CICCOLELLA | PHOTOS: THE SEATTLE TIMES; FLORIAN VOGGENEDER; VOLOCOPTER | ILLUSTRATION: JÖRN KASPUHL; FRANCESCO CICCOLELLA

Wide angle

Think, act and stay informed

Think:Act online
In this online exclusive, Henry Mintzberg, noted management guru and author of classics such as *Strategy Safari*, busts a number of management fallacies.
www.rolandberger.com/tam

Manage the present – own the future

Think *in numbers*

PUTTING A FIGURE ON ...
personal firearms

40
THOUSAND
people died from firearm injuries in the US in 2017, the highest figure since records began in 1968. Two-thirds of those deaths were suicides.

857
MILLION
firearms are estimated to be held in civilian possession worldwide, compared with 133 million held by all the militaries in the world.

3
COUNTRIES
still retain gun ownership as a constitutional right: the US, Mexico and Guatemala. The US is the only one that places no restrictions on that right.

SOURCES: THE NEW YORK TIMES; SMALL ARMS SURVEY; BUSINESS INSIDER

Food for **thought**

WITH *Andrew Keen*

What can we learn from how humanity came to terms with the industrial age?

WE CAN LEARN two or three very big things. [One thing] that I think we can learn is that it takes a great deal of time. Our history as a species [shows] that we always break the future and then we fix it, but it takes a generation or two. It took 50-100 years to confront many of the major problems of industrial capitalism and we still haven't confronted some of them, like pollution and global warming. We could learn a lot but it should also make us humble. Digital technology has made us incredibly impatient. But these changes take time. And a single technology, a single company and a single solution is not going to fix everything. So we can learn a lot, but learning from history should make us humble. It should make us realize the complexity of time and make us realize that these big problems can't be solved overnight. They take a generation. That should make us roll our sleeves up – at least symbolically.

ANDREW KEEN is a key commentator on the digital world. His latest book is *How to Fix the Future: Staying Human in the Digital Age.*

PHOTOS: GETTY IMAGES / BETTMANN ARCHIVE; JENS PANDURO

Think:Act
AT A GLANCE

Thoughts to *live by*

"Success usually comes to those who are too busy to be looking for it."

— Henry David Thoreau

Author, philosopher and transcendentalist

Re- **thinking** *buzzwords*

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

"Surveillance capitalism"

It might be a buzzword now, but HBS Professor Shoshana Zuboff coined this term back in 2014 to describe how personal information was being used to make money. The collection of data – often unilaterally – can be used to predict customer behavior. Google was a pioneer, learning how to turn behavioral data into advertising bucks. But it is way more widespread now with others using hidden ways to win customer information, which subtly threatens freedom, democracy and privacy.

The redacted read

Forget everything you thought you knew about work

Too busy to read the hot new books? We've got it covered for you. Here's Marcus Buckingham and Ashley Goodall's latest offer cut down to the bare essentials.

MOST THINGS YOU THINK about work and organizational success aren't true, according to Buckingham, an educational speaker and writer, and Goodall, senior vice president of leadership and team intelligence at Cisco. The world of work is teeming with flawed systems, processes, tools and assumptions that make it harder for people to perform well. That's part of the reason fewer than 20% of workers worldwide say they are fully engaged at work.

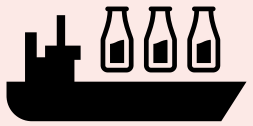
For instance, it's not true that the best people are well-rounded. In fact, excellence is always idiosyncratic. The best teams contain "spiky people" with distinct, complementary strengths. Nor do people need feedback – people need positive attention. Negative feedback is 40 times more effective at fostering engagement than no attention, but positive feedback is 30 times more effective than negative. Lastly, leadership is not actually "a thing." Research suggests that leaders share no consistent traits beyond having followers. All you can measure with any reliability about leaders is how they make their followers feel.

→ ***Nine Lies About Work: A Freethinking Leader's Guide to the Real World*** by Marcus Buckingham and Ashley Goodall. 256 pages. Harvard Business Review Press. $30.

Chain Reaction

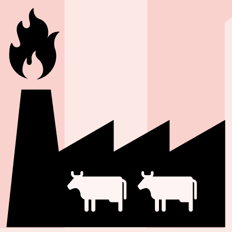
MILK CONSUMPTION IN CHINA has been growing and is projected to triple by 2050, the result of decades of pro-dairy government campaigns. Yet the country's domestically produced supply is just a drop in the bucket. Farmers in New Zealand, the US and the EU aimed to meet China's growing demand, dubbing the produce "white gold," but the new market raises questions about sustainability. Follow how a milk powder scandal was the catalyst for China's thirst for foreign milk – and how it has sparked a global discussion on the environmental cost of dairy.

2008 It emerges that raw milk from 22 Chinese companies was adulterated with melamine, an industrial chemical that boosted test readings. Many fell sick, six babies died.



2010 As suspicions over the safety of domestic dairy products linger, China becomes the world's largest importer of milk.

2017 A study reports on the environmental impact of China's dairy consumption. The rise in Chinese demand could come with a corresponding increase of 35% in dairy-related greenhouse gas (GHG) emissions by 2050. The biggest contributor, however, isn't related to shipping or imports.



2018/19 International news outlets pick up on the study, calling attention to a simple fact: Whether the cows are domestic or foreign, a higher global demand for dairy means more cows, and more cows means more GHG. What can be done?

2050 If China's domestic production increases and is brought in line with leading milk producing countries, GHG emissions levels will be 12% lower globally than if "business as usual" continues. However, this will still represent a 19% increase over 2010 levels.

Best practice

How to ... fit a fitness snack into your busy day

THERE'S A GREAT DEAL OF talk these days about mindfulness. But what about bodyfulness? Sure, there's yoga and the gym but what if you are just too busy to keep to your fitness plan? Step forward the "movement snack" as described by Dr. Rangan Chatterjee in his book, *The 4 Pillar Plan*. He says you need to design your day around movement, have regular fitness snacks and make the world your gym. The first trick is to move more: Try to walk 10,000 steps a day and you'll feel the benefits straight away. Whether you're in the office or the kitchen you can use your desk or workbench as a support to do some tricep dips, calf raises and even a couple of desk push-ups. Try just a few of them every day and you'll be surprised at the results.

PHOTOS: GETTY IMAGES / THE WASHINGTON POST / SARAH L. VOISIN; GETTY IMAGES / THE WASHINGTON POST / SERGIO FLORES

Economic impact

Two sides of the fence

THE US FEDERAL government shutdown in 2018/19 permanently drained $3 billion from the US economy during its 35-day duration – and without resolving the $ 5.7 billion in funds Trump wants allocated to the border wall. But it wasn't long before he renewed the campaign for his pet project, claiming during the 2019 State of the Union Address that the border city of El Paso, Texas had become one of the nation's safest after a barrier was erected at its border to Ciudad Juárez, Mexico, in 2008. Not only did local officials quickly refute the claim with clear statistics that El Paso had long been one of the US' safest cities, it didn't matter what side of the political fence they're on. Democrat or Republican, there's another fact on which the people of El Paso can agree: 10-15% of the city's retail trade comes from Mexican nationals who cross into the US side of the binational urban area. It won't be long, some fear, before the theatrical tension Trump is stirring at the border has very plain consequences for local business' bottom line.

Think:Act

AT A GLANCE

In focus

In this issue we take a close look at how long-term thinking can play into today's success.

Ride today's wave ... but focus on tomorrow's targets

The present – with all its complexities and problems – might seem to require all your attention, but you need to keep your eye on the horizon too. So how can you shore yourself up against the coming storms without losing sight of what is right in front of you today?

BY ***Detlef Gürtler***
ARTWORK BY ***Francesco Ciccolella***

Manage the present / Own the future

The promise of a better life tomorrow is a bad excuse for lousy performance today.

Neither an ox nor a donkey is able to stop the progress of socialism." When Erich Honecker, the leader of communist East Germany, made that bold statement in August 1989, he didn't know that just two months later he would be ousted from power. Or that a year later, in 1990, the entire country would cease to exist – let alone that the whole Communist Bloc, one of the most impressive power structures the world has ever seen, would disappear by 1991. Formed by the Soviet Union in the aftermath of World War II in Eastern Europe, the Bloc seemed like it was built to last: a number of heavily armed countries, all with a close to absolute domination over all sectors of the economy and the public (and even private) lives of those who lived in them. Then it all came crashing down, like a comedian slipping on a banana peel. And funnily enough, it was Communism's failure to provide its citizens with simple stuff of daily life – nylons, faucets and, yes, bananas – that was a key factor in its collapse at the end of the 20th century.

The promise of a better life tomorrow is a bad excuse for a lousy performance today. The same can be true for the opposite strategy: Being able to deliver short term can become disastrous if your long-term perspective is a mess. Two mid-sized German banks, IKB and Sachsen LB, learned that lesson in July 2007. Over the years, they had made steady and decent profits with investments in US mortgage-backed securities – until the music stopped with the global financial crisis. Within a weekend they transformed from being solid, somewhat boring banks into a financial avalanche that threatened to drag the whole German financial system into the abyss.

There is a void at both ends of the playing field: Short-termism can pay off nicely, until it doesn't; and long-termism may pay off in the end, but – how to put this politely? – in the end, we're all dead.

"Both sides exist – so deal with it," recommends Charles O'Reilly, professor of management at the Stanford Graduate School of Business and co-author of *The Ambidextrous Organization*. Settling somewhere in between "future-only" and "present-only" strategies may sound like a golden mean, but it can quite easily turn into a middle ground of mediocrity. For O'Reilly, "the essence is to be both: a good short-term manager and a good long-term manager." He calls this being ambidextrous. But even if you can manage companies with both hands as well as Cristiano Ronaldo can score goals with both feet, the two sides are still different things. You have to "host multiple contradictory structures, processes and cultures," admits O'Reilly.

There is a tension between exploiting the present and exploring the future, between building long-lasting structures and implementing an operative system that can be "fluid" and innovative. It's a necessary tension, like building a cathedral that is designed not only to be used for worship on Sundays, but also to serve as a trading bazaar each morning. One industry where that tension can be observed throughout history is in the bazaar industry itself: retail. The bazaar, or the market, was the default global shopping system throughout history. The Greek "agora," the Roman "forum" or the Arabic "medina" were all hemmed in by →

1. Open, yet organized

→ THE CONTRASTING juxtaposition of the cathedral and the bazaar was first coined by the software engineer Eric S. Raymond in 1997. He used it to emphasize the superiority of open-source software like Linux compared to closed-shop products like Windows. Raymond, however, like most of the open-source revolutionaries, underestimated the frictions that can occur in complex, but unmanaged innovation processes – a problem that Linux still struggles with.

→ MIT RESEARCH scientist Peter Gloor has proposed a solution. Using a biological analogy he sees the founders of open-source projects as "queen bees," leading a swarm without hierarchical power: "They lead by example and conviction, they constantly worry about the success of their innovations, they are evangelists and teachers, the flag bearers of their innovation." Gloor's "leading by example" is not limited to founders like Linux's Linus Torvalds or Wikipedia's Jimmy Wales, but can be assigned to swarm members as well – an open-source meritocracy.

Manage the present / Own the future

2.

Building for the decades

→ **FAMILY BUSINESSES** have a special relationship to longevity – to pass the baton to the next generation, the business model should be sustainable in the long term. This helps embrace disruptive changes, as the leaders of the next generation usually begin in new technologies. Ferdinand Piëch, for example, started his automotive career at the racing division of the family-owned Porsche KG, the most innovative division of the car manufacturer.

→ **ANOTHER RESULT** of the long-term scope of family business can be transformation. If the business model doesn't look sustainable for the next generation, it's better to change than stick to a legacy. This happens even at one of the most traditional business dynasties in Europe, the Brenninkmeijer family. In 1999, 158 years after founding textile retailer C&A, they diversified for the first time from pure fashion business to real estate. Today, the real estate division is about as valuable as the retail chain. In 2018, they even thought out loud about divesting from fashion completely.

impressive administrative and religious buildings – and then filled with any number of trading booths and small workshops.

It wasn't until the middle of the 19th century that the first retail cathedrals were built. Department stores like Au Bon Marché in Paris, Harrods in London or Macy's in New York became shopping temples, bringing goods from all over the world to the metropolitan upper class. The department stores shaped the image of shopping in the industrial age – and the model seemed unbeatable. Until the second half of the 20th century, that is, when a more adaptive structure emerged: the shopping mall. They were impressive buildings, and they brought the bazaar into the cathedral. A lot of small shops could come and go under the mall's roof, and that system outgunned the now cumbersome-looking department store dinosaurs. "The higher flexibility was a competitive advantage for the shopping mall," says Karin Frick, head of Think Tank, Gottlieb Duttweiler Institute, "but now the mall seems to be succumbing to an even more flexible competitor – the internet." The more customers get used to shopping wherever, whenever and for whatever they want, the less they need the brick and mortar malls that stipulate both the times and the place in which that shopping can occur. The "cathedrals" have become virtual.

In online retail, we're about to see this go full circle yet again. E-commerce took off in an almost anarchic fashion during the dotcom boom with any number of shops and tools and apps – a bit like the bazaar. Then the first cathedral emerged: Amazon. The online giant offers everything for everyone, just like Macy's, Harrods or Karstadt had started doing offline more than a century before. Amazon is less glossy than its predecessors – its solid structures are automated warehouses – but it is even more powerful. Amazon has become one of the world's most valuable companies and, once again, it is seemingly unbeatable.

IF HISTORY REPEATS ITSELF, then the next step is already on the way: a business model that combines the cathedral with the bazaar. And indeed, it's already here – Alibaba. The Chinese retail giant owns even less real-world assets such as warehouses or robots because it itself is not the seller of all the things people buy via its platform. It is, instead, just that: a huge and trustworthy platform for buyers from everywhere to connect with sellers of everything. Though still much smaller than Amazon, and with roughly a quarter of the revenue, Alibaba has sustained higher margins than its US-based counterpart for years. The more flexible approach with fewer fixed costs should give Alibaba a competitive edge, especially in the development of new markets and regions.

Those switches from bazaar to cathedral, to bazaar within real cathedral, to virtual cathedral within real bazaar, are always made by a new kid on the block. Incumbents seem to struggle to master the challenges and often vanish with their business model. "You have to decide whether you shall take away capabilities from known businesses to new businesses with lower margins, but higher long-term potential," O'Reilly says. And the decision often leads to short-term gain and →

The next step is already on the way: a business model that combines the cathedral with the bazaar.

long-term pain: "Companies like Blockbuster or Barnes & Noble saw what was coming, but they were not able to get into the new business lines." But Richard Kelly is convinced that traditional businesses can adapt to the speed and scope of technological change and market disruption. Kelly is the chief catalyst of the Hong Kong-based Fung Group. The trading conglomerate, founded as Li & Fung 113 years ago, employs more than 20,000 people worldwide and is best known as the supply chain manager for western brands and retailers. "My job is to reignite the cultural innovation across the organization," Kelly says, and he does it by "making really loud noises at the edge of the business and learning from it as fast as we can."

ONE OF THE MAIN INSTRUMENTS with which Kelly makes those noises is located near Shanghai and is called the "Exploratorium" – a kind of shopping mall for business clients. At the Exploratorium, Fung, its suppliers and its buyers can experiment with new sales approaches and business models while at the same time getting information about new ways of doing business that others are testing. For Kelly, doing lots of experiments and looking at even more of them is the best way to future-proof your company: "Even if you have been around for 100 years, you should know that the best way to optimize your old business model is to search for and experiment with new ones." Combining solidity and flexibility may sound a bit weird, but it is the obvious choice for those situations where hard and heavy impacts could strike any time. Building skyscrapers in earthquake-prone regions is one of those situations [see box p.19], and building large-scale enterprises in disruption-prone industries is another. And in the digital era, well, every industry is disruption-prone.

To apply the retail industry experience to organizational challenges, ask the following questions: Can you build a company like a shopping mall? Can you fill the cathedral (a big and solid external structure) with a bazaar (a multitude of approaches for maximized internal flexibility)? This hasn't been a very common organizational model to date, and that's to put it mildly. Karin Frick points out that size still matters – in a negative way. "Large-scale companies have an innate problem with too much bureaucracy and too little creativity. You can't simply decree that you keep the size, but skip the bureaucrats." The second-best option is to keep the flexibility, but at arm's length. "That's the way big pharma does it," explains Frick. Pharmaceutical giants like Novartis, Merck and GlaxoSmithKline need a large and well-oiled machine to turn new drugs into global blockbusters, so they developed a strong corporate culture of reliability. But drug research and development requires a culture of flexibility and creativity – and that's quite the opposite. The solution? "They leave a growing part of drug development and early-stage tests to small companies. It's easier to acquire the small ones, once proven successful, than to foster two opposite corporate cultures in one company."

The only major company that has combined solidity and flexibility rather successfully under one roof is Google. The search engine and its algorithms form one of the most impressive structures of the digital world. But from the very beginning, Google has encouraged its employees to do more than simply improve on the search cathedral – and in particular to do something completely different. Or better. And not something: anything. →

Combining **solidity and flexibility** may sound a bit weird, but it is the obvious choice.

3.

Stabilizing shaky skyscrapers

→ WHATEVER IS BUILT to last can be destroyed in seconds by an earthquake – one of the heaviest short-term challenges long-term structures will face. Especially in regions with high seismic activity, like Japan, Taiwan or California, buildings having earthquake resilience is important. And, as a lot of quakes have shown, even the highest skyscrapers can survive them – if built properly.

→ THE MOST COMMON construction technique for quake resilience is base isolation: The substructure of a building is separated from its superstructure by an isolation layer – the building is almost floating above the ground. Equally widespread is the use of tuned mass dampers that can absorb seismic energies. The Taipei 101, one of the highest buildings in the world, contains a 660-ton steel pendulum between the 87th and 92nd floor that serves as a damper for wind and seismic waves. Even though the skyscraper is located just some hundred meters away from a major seismic fault line, it should survive whatever earthquake might strike.

4.

Cathedrals offered as a service

→ IN HER BOOK *Peers Inc: How People and Platforms Are Inventing the Collaborative Economy*, US entrepreneur Robin Chase argues for a sharing of central functions by a multitude of small and micro enterprises. Patent lawyers or HR specialists for example, which no small business could afford on a permanent basis, could be shared as a service.

→ THE RISE OF THE INTERNET has made it simple to find, organize and access the small, the individualized and the local. The concept behind *Peers Inc* is the combination of the best of people power with the best of corporate power: The "Inc" delivers on industrial strengths that require significant scale and resources. The "Peers" deliver on their strengths – localization, specialization, customization. When Incs and Peers focus only on what they do best, each handling what is difficult, annoying, or just plain impossible for the other, the resulting collaboration is compelling and sometimes even miraculous.

This frame-plus-flexibility design can be found not just at the society level, but in business too.

The markets Google operates in change in huge and rapid and unforeseeable moves, and the people Google employs are so savvy, quick and independent that the best strategy to stay ahead of the competition is to trust their own people to do what's right – or at least fail trying. Jeff Jarvis, professor for journalism at City University New York and author of *What Would Google Do?*, explains it biologically: "It's so much in their DNA to see things differently" – in the DNA of the company and in the DNA of the people working there.

The 80:20 rule was a symbol for this deeply ingrained approach. Employees were encouraged to spend up to 20% of their time on projects that they themselves felt to be important. Shielded by the strength of the core product, search, Google's software engineers developed an abundance of ideas, projects and products like no other company on earth. The concept was effectively a victim of its own success and Google has quietly abolished the rule – because the results were too good. Lots and lots of promising products just couldn't get the resources for further development, because there were simply too many promising products around. But that's a different story, and it's a problem that every other company would love to have.

WE STARTED THIS STORY with German politics and its relatively recent and blatant example of failure. And German politics is a good place to end it, too – but this time, with a success story. Think about this: The recipe that made Google great in the first decades of the 21st century is very similar to the one that made the (West) German economy great in the second half of the 20th century. The Germans even coined a term that combines the solid external shield with the flexible interior design: *soziale Marktwirtschaft*, or the social market economy. It offers a trustworthy framework with the rule of law, political stability and social security for everybody, and within this framework it allows the maximum freedom for individuals and companies. Being freed from short-term hassle means being free for all-term performance.

This frame-plus-flexibility design can be found not just at the society level, but in business too. Take, for example, working hours in Germany. With the so-called "short time" or "reduced hours" instruments, the employee can work less and the employer can pay less, but the state takes up the slack and jumps in to pay part of the shortfall. This gives huge flexibility especially during an economic downturn. People don't lose their jobs, companies don't go bust and that's a win-win. Combine that with flexible working agreements (such as unpaid overtime when necessary, but paid time off when there is no work) and you have a very flexible tool – as shown during the financial crisis, when German manufacturing nosedived. Interventions such as these can build stronger relationships between workforce and management. After all, the less you have to talk about money (which, let's face it, is always a conflict) the more you can think about new ideas. And who wouldn't want that? ■

Manage the present Own the future

IN PLAIN SIGHT
McGrath argues that spotting market disruption isn't about making predictions, but knowing how to see what's ahead of you.

Competitive advantage is dead. Now what?

One of the world's top innovation experts, Rita Gunther McGrath has helped to define how to compete in a new world of transient advantages, how to spot inflection points and why you need to be able to adapt quickly – but not too quickly – to keep your company from being left behind.

BY ***Bennett Voyles***
PHOTOS BY ***Kyle Dorosz***

For the past four decades, the majority of business strategists have defined their fundamental challenge as finding and then maintaining a competitive advantage. By and large, this model pioneered by Michael Porter worked fairly well. Porter, a professor at Harvard Business School and arguably the dominant business strategy theorist of the 1980s and 1990s, believed that the task of a business was to find and keep a competitive advantage over its rivals in a way that limited either the bargaining power of suppliers, the threat of new entrants, the threat of product substitutes, the bargaining power of buyers or its rivalry within the industry.

According to Rita Gunther McGrath, however, that's all changed now. In her book, *The End of Competitive Advantage: How to Keep Your Strategy Moving as Fast as Your Business*, the Columbia Business School professor argues that in many industries, it's become much tougher to erect and then maintain barriers to entry. These days, McGrath writes, the entire corporate life cycle moves much more quickly. For the most part, you can only really achieve a transient advantage, and then you need to be ready to jump when you see what she calls an "inflection point" in your market that tells you it's time either to get in or to get out.

THAT ALL SOUNDS SMART, and it raised McGrath's reputation as one of the world's leading business thinkers even further. However, there was a glaring question at the center of it: How do you spot an inflection point? Cue her next book: *Seeing Around Corners: How to Spot Inflection Points in Business Before They Happen* gave McGrath the forum to explore how one goes about identifying that all-important inflection point. The book, which →

is scheduled to go on sale in September 2019, takes a closer look at the nuts and bolts of operating a business in an age where barriers to entry are in chronically short supply.

Perhaps McGrath's most important idea is that although market disruptions often seem to occur overnight, it's only because the company didn't notice the threat before. She clearly sets out her case: "One of the big ahas to me was that these things don't burst on your doorstep overnight. They take a long, long time and that gives you an opportunity ... to build the capability to act when the time is right," she says. "That can give you an advantage, even if it is a transient one."

She then enthusiastically explains how Ernest Hemingway gave her the inspiration for the working title of her book, *Seeing Around Corners – Gradually Then Suddenly*. In his novel *The Sun Also Rises*, she recalls with a smile how one of the characters answers the question of how he went bankrupt: "Two ways," she says, quoting the book; "Gradually, then suddenly." Typically, inflection points "bubble along for a long, long time before anybody bothers to pay attention, then they pick up steam, and then they are let loose in the world," McGrath explains.

THIS QUALITY OF INFLECTION POINTS creates two challenges for business leaders, according to McGrath. The first is figuring out how to monitor the weak signals that may indicate that something is about to change, which isn't always easy. If one looks at a traditional power generation company, for instance, every key performance indicator is about producing and distributing megawatts.

The structure seems solid, but McGrath asked herself a simple yet very revealing question: What happens when customers start installing solar panels and want to sell electricity back to the utility? "My point here is that the inflection point of a really radical change in the way in which we manage electricity would be easy to miss if your whole existence was focused on megawatt hours and how you generate them," she says. "That's why inflection points so often catch incumbents by surprise. It's not that they're bad people or that they're willfully ignorant. It's that they never had

"These things don't burst on your doorstep overnight. They take a long, long time and that gives you an opportunity."

Rita Gunther McGrath

→ A PROFESSOR at Columbia Business School and one of the world's most highly regarded experts on innovation and growth, Rita Gunther McGrath is a pioneer of discovery-driven planning, an integral theory for the foundation of the "lean startup" movement. She was listed in the Top 10 of the Thinkers50 for the last three bi-annual rankings.

to think about it before. All of a sudden, this thing comes out of seemingly nowhere and shows up on your doorstep."

For starters, McGrath advocates rethinking who your competitors are or might be. "I think for many years we boxed ourselves in with this whole notion of where we are competing in industries. Instead, I'm recommending that we introduce a concept which I call 'competing in arenas,' where an arena is a pot of addressable resources, customers and other stakeholders with, to use Clayton Christensen's phrase, 'jobs to be done,' and different ways that those jobs can get fulfilled by different kinds of players." [See article p.72]

ONCE THE THREAT OR OPPORTUNITY is identified, the second challenge is to decide how to react. And while Christensen's book *The Innovator's Dilemma* suggested that companies simply wouldn't take the risk of defending a disruption to their old business until it was too late, out of fear of cannibalizing themselves, McGrath argues that companies fail not only by responding with too little too late, but by doing too much too soon.

"They start throwing money at something that promises to be their salvation. But it's too early," McGrath says. One case in point: the overreaction of many traditional retailers to the internet in the mid-1990s, back when less than half the US was online. Many invested in expensive online stores before most consumers had managed to get online and before companies had built out the infrastructure needed to support online retail, such as the payment channels and bandwidth. Ultimately, those pioneers turned out to be right about the revolutionary nature of e-commerce, she says – "but only much later."

There is a much better way to handle it, she says, and that's through discovery-driven planning, a strategic method she first outlined with Ian C. MacMillan in a landmark 1995 *Harvard Business Review* article. "Set up some experiments, set up some options, test some hypotheses. Learn as you go. Don't throw all the money in the world at the thing. Build a very carefully constructed set of sensing mechanisms so that as the signals get stronger, you can have increased confidence that you're making the right decision without having spent the family jewels to do it."

It's not about predictions, McGrath says, but about looking for a factor that could change the constraints that you are accustomed to working in. "You have to go to the edges of your business, because the future is not going to present itself neatly at the corporate headquarters. These are things happening when some weird little entrepreneur in a garage somewhere says, 'Whoa, I got a breakthrough in solar energy conversion!' How do you know that 15 years later, this is going to be a massive issue for you? You don't. But if you have your sensors out and you're really looking, you have the chance to see it early."

When those signals eventually do get loud and close, the next challenge is handling the internal change management required to make a major shift in the business, McGrath explains. "It's going to be scary to a lot of people. They're not going to see a future for themselves in it. They're going to resist it," she says. Sometimes, too, the company will keep its incentives weighted toward building the old business, slowing down the process even more. "People may see [the inflection point] but it may not pay for them to go off and make the changes," she adds. In this floating world, companies with a culture that focuses on a fixed overarching goal rather than their industry tend to do best. Amazon, for example, focuses on customers; Stanford Research Institute on developing breakthrough technologies.

A NUMBER OF COMPANIES are already learning to adapt to this new paradigm, she explains. One that is managing just such a shift right now is Microsoft under the leadership of CEO Satya Nadella. The famously fractious, profit-focused company is now trying to put the customer first. Nadella's view, as McGrath puts it, is that revenue and profit are lagging indicators. What a company really should be focusing on instead is finding customers who love its products.

KEEP LOOKING TO THE EDGES
McGrath advises that the next disruption you face will start outside of your normal frame of reference.

This embrace of the customer is also in part a reflection of the more protean nature of competition today, in McGrath's view, in which the contest is often less between products than ecosystems. It's a radically different world than in traditional business where there were clear demarcations between buyers, suppliers and competitors, and industries usually maintained clear boundaries. "That's just not the way the world works anymore," says McGrath.

Microsoft again offered a good case in point regarding how competition is changing. Instead of insisting on loyalty to its own operating system, the company is now trumpeting its ability to accommodate multiple partners and customers. "[Former CEO] Steve Ballmer very famously said Linux was a cancer ... and Nadella has said, 'No, we can play with Linux. We can play with Apple ... We can play with anybody.' That's a real change in perspective," she says.

And the next inflection point for McGrath? "Increasingly, I'm seeing the innovation agenda being taken over by the digital agenda. There are very few places you can talk about innovation today without also talking about digital in some format. I think that's probably the next tranche of things I'll be working on." ■

Founded in 01996

The extra zero in front of 1996 isn't a typo: It's a whole new way of thinking about time. For the last 23 years, Kevin Kelly (1), Stewart Brand (2) and Danny Hillis (3) have been reaching out to like-minded futurists to join them under the umbrella of the Long Now Foundation to help redirect and refocus humanity's attention span.

Tuning into the Long Now

Imagine time as a stack of atmospheric layers that all move at their own speed – with nature as the slowest and commerce the fastest. Sounds crazy? Then take some lessons from the San Francisco-based think tank which is taking the very long view.

BY ***Steffan Heuer***

ILLUSTRATIONS BY ***Jörn Kaspuhl***

Tourists who find themselves wandering around historic Fort Mason, a former US Army base turned cultural site offering picture postcard views of San Francisco Bay, are invariably drawn into a narrow storefront that looks like a strange blend between a museum of oddities and a cool bar. They can gaze at the "Manual for Civilization," a crowd-curated, wall-to-ceiling library of essential books about science and the humanities, be mesmerized by the constantly changing "ambient painting" by musician and visual artist Brian Eno above the bar or sip a cocktail gathered around a large prototype for a mechanical clock designed to run for 10,000 years without human intervention.

The minds behind this gathering space called The Interval built this clash of indulgence and introspection on purpose. The idiosyncratic bar-cum-museum is the headquarters of the Long Now Foundation, a small but influential non-profit that for the past 23 years has been gathering curious minds to think about the long term – the really long term. So long term, in fact, that its members write years starting with a zero, as in 02019.

Launched by a small group of Silicon Valley thinkers and technologists concerned about the shortening attention span of the human species, Long Now has evolved into a unique organization which tries to look at progress and tech-infused civilization not in terms of centuries, but of millennia. With events, multimedia outreach and through a growing range of hands-on projects from biology to space travel, Long Now weaves together the most fascinating strands of historic perspectives, current research and often wild futuristic thinking, always trying to transcend disciplines across the sciences, arts and culture.

MORE THAN 10,000 MEMBERS from 63 countries pay between \$8 and \$2,500 per year to attend gatherings in San Francisco or just to belong to this techno-utopian salon. "It's amazing, but we have two objects in space right now," says Laura Welcher, Long Now's director of operations, as she walks a visitor through the many activities of her organization. A trained linguist, she has been with the foundation for 15 years, →

working on the Rosetta Project to catalog and archive human languages in a digital library accessible to the public.

What began as a miniature disk containing more than 1,500 languages has grown into a constantly expanded online tool called PanLex to translate 25,000,000 words across 5,700 languages – and two tiny payloads that have made their way beyond Earth. The first Rosetta disk was sent up on a mission by the European Space Agency in 2004 and made a hard landing on the comet 67P in September 2016. The second disk furnished by Long Now hitched a ride aboard the Israeli lunar lander Beresheet in February 2019 before a main engine failure during an attempted soft landing in April of the same year led to loss of contact with mission control and what is assumed to be another crash landing.

For Welcher, the Rosetta Project is a perfect example of the broad and ambitious goals of Long Now. "If I had stayed in academia, I would have done a deep dive into a particular language or theoretical issue, but we're tackling big problems and big questions that really don't have a home in any other institution." By that, she means thinking about how humans can curate the data and information that make up our cultural legacy for many generations to come – and even for other civilizations that may one day stumble upon our artifacts. All that is done by a core staff of 10 people working in Fort Mason who draw on collaborators and volunteers from around the Bay as well as from around the world.

THE STAR POWER OF ITS FOUNDERS and its board members makes up for what the small, San Francisco-based outfit lacks in funding and global reach. The organization got its start in the mid-90s when writer Stewart Brand, who gave the world the iconic counterculture magazine the *Whole Earth Catalog* and one of the first online communities, known as The WELL, joined intellectual forces with a couple of other forward thinkers: MIT computer scientist and AI pioneer Danny Hillis and Kevin Kelly, the founding executive editor of *Wired*, the monthly bible of the digerati. They were all concerned, recalls Kelly, with humanity's short attention span and toying with ideas to make people think in longer time frames. "It was a conjunction of several ideas and very Californian in its origin, namely Danny's idea to imagine and build a clock that would tick for a very long time and Stewart's idea of accumulating information you'd want to have for civilizations to work at scale for centuries." Kelly was immediately sold: "We took that very vague notion or sentiment we all shared and have spent the past decades to figure it out." Rounding out the core team are Brian Eno, who also gave the organization its name to describe the "longer here and now" as opposed to the fast-paced life he experienced in New York, and renowned Silicon Valley forecaster and Stanford professor Paul Saffo.

The team all subscribes to Brand's idea of pace layers to frame long-term thinking: Imagine time as a stack of atmospheric layers that all move at their own speed with the bottom layer of nature being the slowest and the higher layers of culture, governance, infrastructure, commerce and finally fashion moving ever faster. Get trapped in the ephemeral uppermost layer and you risk depriving humanity of a thorough and sustainable process to shape its long-term future. "Civilization is the most complicated machine we've built," says Kelly, "and we need to keep it going. We are trying to make more choices survive so future generations can later finish things."

IT'S A MESSAGE that the foundation has been broadcasting with both diligence and a dizzying array of speakers who hold "seminars about long-term thinking" in San Francisco, mostly hosted by 80-year-old Brand himself. If you took in the dozens of lectures and conversations held since 2003, you would learn about how long-time British Astronomer Royal Sir Martin Rees judges humanity's prospects, how urban growth follows a universal pattern, how Steven Pinker argues for a decline of violence and "what really happened on Easter Island."

The often sold-out seminars, followed online by thousands more around the world, don't have the pizzazz and large fanbase of a brief and well-rehearsed TED talk, but they are only one way the foundation wants to →

Changing the horizon

Silicon Valley forecaster and Long Now board member Paul Saffo weighs in on how we can define the "long term" in the present day.

→ **HOW WOULD YOU DEFINE LONG-TERM THINKING?** A good place to begin is with the German word *Erwartungshorizont*: Take one's customary horizon of expectation and double it. The specific length of "long term" really depends on who one is and what one is trying to forecast. For a company, 20 years might be long-term. At the Long Now Foundation, we consider anything less than 10,000 years short-termism!

→ **WHAT ARE PACE LAYERS AND WHY SHOULD WE USE THEM TO PARSE THE WORLD?** The essence of it is that everything existing in the present arose out of the interaction of fast and slow processes. The fastest processes, such as fashion and commerce are at the top, and the slowest, like nature and culture are at the bottom. Pace layer thinking is a powerful tool for considering how the present emerged – and how to forecast the future.

→ **CAN THE LONG NOW FOUNDATION FUTURE-PROOF ITSELF?** The ultimate future-proofing is to allow both organizations and artifacts to decay and disappear. If the [10,000 year] clock is lost and forgotten for tens of thousands of years, it would then become a powerful myth. The oldest, most long-lived things in human culture aren't buildings, artifacts or even civilizations. The longest-lived human artifacts are myths.

> "Civilization is the most complicated **machine** we've built and we need to keep it going."
>
> **Kevin Kelly**, Founding executive editor of *Wired*

LONG AND SHORT OF IT
Long Now's focus on cultural heritage ranges from preserving languages to bringing back extinct species.

"The idea of thinking in centuries and **millennia** can also be exciting for a third-grader."

Kim Polese, Silicon Valley entrepreneur and Long Now board member

Manage the present/Own the future

nudge fellow humans to think far ahead. Long Now is doing things for the long term as well. Its most ambitious undertaking is the 10,000 year clock that is finally being built in a remote mountain in Texas [see box p.31].

More recently, Brand's second wife Ryan Phelan has launched an endeavor to bring species back from the dead, what the entrepreneur calls "de-extinction." Revive & Restore relies on a network of nearly 200 scientists and conservationalists from around the world and targeted grants to develop a "21st century genetic rescue toolkit" for saving endangered species and even reversing extinction – from the lowly passenger pigeon to the woolly mammoth. What started out as a freewheeling workshop at Harvard in 2012 has matured into a non-profit tightly affiliated with Long Now and its core ideas. Donors have poured more than $4 million into its work so far to fund projects such as convincing the pharmaceutical industry to use a new synthetic product instead of draining 500,000 horseshoe crabs of their blood every year for the biomedical testing of batches of vaccines and IV fluids. Another experiment aims to genetically engineer inherited immunity in black-footed ferrets before they are entirely wiped out by a type of bubonic plague that primarily affects rodents. For Phelan, species loss is definitely not the final word since technological progress gives us new options. "If you have the DNA and you have a closely related species, you can keep them going, not just for today but for the next 10,000 years. This matters to conservation as the end game," she explains. 'As an entrepreneur, I'm opportunistic and look for passionate scientists and white space where nobody's doing anything."

THE EXCITEMENT about perhaps bringing back the mammoth and sending language libraries into space needs to spread, however, and that is one aspect where Long Now's founders admit they need more focus on the short term in order to engage with the next generation and future-proof their work. "We're a bunch of guys, some women too, who have been around each other so long we can complete each other's sentences," muses Kelly, who turns 67 this year. Besides drafting a manifesto to be released later this year as a kind of guiding document for the next board, the group has been working on an educational program to make its often abstract and unwieldy ideas palatable to schools.

Tech entrepreneur and board member Kim Polese is at the center of that task. It's a tall order, she admits, since the modern education system still emphasizes preparing for and scoring well on a test over slowly exploring and understanding dependencies. "The short-term thinking disease is everywhere you look." To counter that, Polese and education consultant Andrea Saveri developed a series of small workshops that have reached upwards of 50 California teachers, from kindergarten to high school, since 2016. They heard about the tenets of long-term thinking at Fort Mason, brainstormed with the likes of Brand and Saffo and developed curriculum activities to take back to their classrooms. In total, Saveri estimates, 750 to 1,000 students have been exposed to long-term thinking so far. "The idea of thinking in centuries and millennia, not just the next year, can also be exciting for a third-grader if you present it as sensory-based storytelling," she explains. "Ask them what an organism feels, sees or hears that lives on a different pace layer, like a thousand-year-old bristlecone pine. They get it and they love it."

The organization is currently trying to evolve those first insights on how to engage children and teenagers into a set of online resources that teachers everywhere can use. But it needs funding and partners to spread the idea in a constantly accelerating world. "We need generations who grow up believing in long-term thinking," says Polese about what's ahead for the quirky "do-tank" as it prepares to turn 25. "If the next generation doesn't care about it, then what we're doing here is pretty useless." ■

TIME, REIMAGINED
Long Now seeks to spark conversations in terms of generations rather than short-term goals.

The 10,000 year clock

"I want to build a clock that ticks once a year. The century hand advances once every 100 years, and the cuckoo comes out on the millennium. I want the cuckoo to come out every millennium for the next 10,000 years." That's how computer scientist Danny Hillis described a mechanical megaproject in an essay for the tech magazine *Wired* back in 1995.

→ **61 METERS** tall, the clock is now being installed inside a deserted mountain near Van Horn in western Texas, funded by the Long Now Foundation and a contribution from Amazon Founder and CEO Jeff Bezos.

→ **10,000 YEARS** is the rough age of human civilization so far, and "a 10K-year clock would measure out a future of civilization equal to its past," explains Long Now co-founder Kevin Kelly. Ultra long-term thinking fascinates Bezos. "Over the lifetime of this clock, the United States won't exist. Whole civilizations will rise and fall ... You can't imagine the world – no one can – that we're trying to get this clock to pass through." A completion date hasn't been set, but the clock will eventually be open to the public. Visitors will have to hike for a day to the hidden entrance, then pass through a jade door and a steel door that serve as airlocks and then descend toward a 152.4-meter vertical shaft drilled into the limestone. Even though guests will be able to wind the clock, it's still designed to keep time even if it's left unattended.

→ **THE GIANT** clock isn't planned to be a one-off. Back in 1999, the foundation bought mountain land next to Great Basin National Park in Nevada, which may be the site for the next timepiece for the ages.

→ **FOR DETAILS ON THE PREPARATION OF THE ROCK AND THE CONSTRUCTION OF THE CLOCK, IT'S WORTH WATCHING THIS VIDEO:** https://vimeo.com/256688359

Manage the present/Own the future

Manage the present / Own the future

Seeing the trends to shape tomorrow's world

As the world tilts on an axis of change, let us be your guide to help you visualize the future.

BY ***Charles-Edouard Bouée***

Hollywood movies have imagined it: a drowned world, civilization under water, a landscape changed forever. But we don't need films – or indeed, actual catastrophe – to be our wake-up call to action. The world is already undergoing profound change, almost before our very eyes. And we are going to need some kind of map to navigate the new lands of technology and automation, and the new continents of knowledge and productivity.

To help visualize how to prepare for (and perhaps influence) the future, we have created an augmented reality map which you can impose on your immediate surroundings and imagine for yourself how the sands of today might shift to form a possible tomorrow.

When you download the app and activate it, you will see how a sea of data encircles an enslaved North which sits in opposition to a free South, and how robots in the East could line up against humans in the West. This is not some kind of science fiction dystopia, though. And it isn't a real representation of the world, of course, either. It is simply a way for us to think about the radical shifts in power and productivity that lie ahead. Imposing it as a floating map on your surroundings suggests that the world of data, robots and new methods of governance lie latent in the world of today, but could be emerging soon to be right in front of you tomorrow.

The pictures on this page give you a snapshot idea of what lies within the landscape, but when you download the app you will see how our current world, a continent in transformation, is sinking, and with it the roles of government, work and technology which have to change to survive. The future is terra incognita, but like the ancient explorers we need to have a map for it – even if it's an imagined one. ■

Download the app to find out more

Own The Future is a new app from Roland Berger which sets out the new landscape for the world of work, productivity and technology. Making use of augmented reality, it maps out how political power, automation and human input might change and how you can adapt to make the best of the coming transformation.

Download the app here: ownthefuture-rolandberger.com

Hold the future in the palm of your hand

THE BILLIONAIRES' ROCK
This is a place for ultra-high net worth people that live on technological annuities and have decided to turn their backs on the rest of society. This is also the antechamber of a new, Prometheus-like religion, the so-called transhumanism, where immortality is achieved with the help of money.

THE 7TH CONTINENT
This is the cyberspace place, privatized and controlled by the US GAFAM (Google, Apple, Facebook, Amazon, Microsoft) and their Chinese equivalent BATX (Baidu, Alibaba, Tencent, Xiaomi). Governments are largely excluded. The question is how long these giants can dominate. The rise of AI will foster the arrival of new players and could lead to the end of the GAFAM and BATX lead.

THE ROBOTS' FROZEN LAND AND THE OPERATORS' MEGAPOLIS
The frozen land is the territory of robots, automated factories and server farms. They have become so abundant that their maintenance and cooling consume considerable amounts of energy. The "operators" who live in the megapolis next door create, program and develop the machines, among which are mathematicians, IT experts and programmers. They represent the working elite.

THE QUATERNARY LAND
This land will be the home to the majority of people. Especially those who, contrary to the operators, do not control the machines. The quaternary plain contains most new forms of pauperism. But it is also a place for services and leisure activities. The development of portable AI will allow anyone to create a new, paid activity from scratch. The quaternary plain puts an end to work as we know it.

A CONTINENT IN TRANSFORMATION
This is our world as of today. You can see our political institutions, traditional companies and salaried workers. This "continent in transformation" attempts to adapt to the current developments and defend its place in the center of the new world.

PHOTO: GETTYIMAGES; ROLAND BERGER

Manage the present / Own the future

How to make the best case against the quick win?

The pressure to report profits on a quarterly basis has driven some organizations to lose sight of the bigger picture. But as the long game's list of increasingly vocal supporters are quick to point out, defining the future of stable growth has never been more important.

BY *Dan Matthews*
ILLUSTRATION BY *Jim Stoten*

Quarterly capitalism, the term given to publicly traded businesses that have to publish performance data every three months, has become increasingly unpopular in recent years. The problem, its detractors say, is that it skews strategies in favor of quick wins and away from healthy, sustainable growth via projects that deliver strong ROI over time. At its worst, it encourages criminal behavior like that exhibited in Enron's collapse and the casino-economics that caused the financial crisis of 2008-09. During a 2015 speech while on the US presidential campaign trail, Hillary Clinton risked the ire of institutions: "Quarterly capitalism as developed over recent decades is neither legally required or economically sound. It's bad for business, bad for wages and bad for our economy," she said. Oddly, her rival, the cutthroat capitalist Donald Trump, broadly agreed with this assessment. A year after winning the race for the White House, he met with global CEOs to discuss reducing reporting requirements on US companies from four to two occasions each year.

There is nothing innately wrong with thinking short term. The problems arise when pressure from investors prejudices companies towards a fast buck. "If you're pressed to forgo longer-term investment then you might be fine for the next couple of years, but in five or 10 [years] you're gone. That's the downside of short-termism," explains Mike Useem, a management professor at the Wharton School of Business. "Long-term change is part and parcel of what it means to grow. Take ride-sharing: Uber and Lyft lose a lot of money, but you only have to look at their share price to see that short-term loss is what it took to become the dominant players." At the time of writing, Lyft has a market cap of nearly $21 billion, while Uber had just gone public at a valuation of $76.5 billion, this despite losing $911 million and $1.8 billion respectively in 2018.

Investors keep backing loss-making companies like these because the eventual prize is potentially enormous. Despite his serial success as an entrepreneur, Little Dish and the New Covent Garden Soup Co. founder John Stapleton's strategy has been to exit in trade sales pre-IPO. By not taking companies public, he enjoys more control over brands' long-term plans. He says short-termism robs businesses of the freedom to fail on a case-by-case basis. "When you make a mistake, it teaches you a lot about sector forces and the customer base," he says. "Success, on the other hand, is a lousy teacher. If you trip up a few times you get a very clear understanding of what success looks like as a conglomeration of different factors. To get a really big win, you need to establish a vision and develop opportunities, create an understanding of your consumer and generate traction. That's not going to happen in three or six months, or even a year," he adds.

Public vs. private

34% of public firm investment dollars are dedicated to long-term assets, on average, according to a 2018 study conducted by the US Federal Reserve Board. This compares with 25%, on average, in private firms.

7% of private firms' investment budgets are directed at R&D, on average, compared with 18% in public firms, according to the same study.

Perhaps the most famous champion of the long game is former Unilever boss Paul Polman. He ended quarterly reporting to FTSE shareholders on his first day as CEO in 2009, saying: "Unilever has been around for 100-plus years. We want to be around for several hundred more ... if you buy into this long-term value-creation model, which is equitable, which is shared, which is sustainable, then come and invest with us. If you don't buy into this ... don't put your money in our company." Along with anecdotal evidence like this, the numbers suggest the tide is slowly turning against quarterly capitalism: FTSE-listed businesses issuing quarterly reports dropped from 70 to 57 between October 2016 and August 2017. As for the wider FTSE 250, only about a third were taking part in the exercise.

BUT IS THERE ENOUGH EVIDENCE that short-termism truncates economies and robs enterprises of their potential? Two things need to be proven: that investors prefer quick wins over sustained growth and that this acts as a brake on investment. The evidence is inconclusive. In a paper for *Harvard Business Review* entitled *Investor "Short-Termism": Really A Shackle?*, professors Rebecca Henderson and Clayton Rose concluded: "The presence of most types of institutional investors among a company's shareholders appears to have encouraged a long-term perspective, rather than retarded it, and has sometimes provided managements with 'air-cover' to stay the longer-term course during difficult periods." Then there is a study by a group of US-based economists linked to the Federal Reserve, which found that listed companies invested nearly 50% more in research and development than private ones, according to their corporate tax receipts. It also found that companies upped their R&D game post-listing. On average, the ratio of their R&D spend compared with physical assets increased more than a third. So, given this, why is there such a strong association between quarterly reporting and short-termism? For one thing, the US study is quantitative, not qualitative, meaning it doesn't shed light on what companies are spending on. Plus, it doesn't account for non-R&D short-term plays that could hurt company fortunes, such as ill-thought-out acquisitions and environmental damage.

Another reason, according to Useem, is that big institutional investors including BlackRock, Fidelity and Vanguard have publicly backed the campaign against short-termism. At the end of 2018, BlackRock CEO Larry Fink wrote a letter to CEOs containing the line: "Commitment to a long-term approach is more important than ever – the global landscape is increasingly fragile and, as a result, susceptible to short-term behavior by corporations and governments alike." But the pressure for results remains, whether it's perceived or real, and it is responsible for corporate collapses from Enron to Lehman.

How then, can companies resist the pressures and aim for sustainable growth? John Stapleton believes there is no need for radical, structural change, but that with clear communication CEOs can shift investors to their vision. If you state your intentions and illustrate the benefits, regularly feeding back to investors to explain your actions, then bosses will discover most investors have patience. "A CEO who exhibits the courage of their convictions, who makes promises to shareholders which are kept, will get a warm reception the next time they make a statement. There will be greater belief in the business."

Technology could also have a role in changing perceptions. Chris Ganje, the CEO of tech company Amplyfi, says that plotting long term will be more powerful because artificial intelligence has increased opportunities for trend identification. His company has developed a business intelligence tool which analyzes data across academic papers, government reports, databases, journals and news items, giving decision-makers rich information and therefore enabling them to spot trends and communicate evidence to shareholders. "Recent innovations in AI and data harvesting mean businesses can plan not just in months and years, but in generations. The limits of human imagination have been overcome by machine learning, which is able to make connections and identify trends beyond the capabilities of human researchers and analysts," he says.

A last remedy to short-termism rests in the career arc of CEOs, whose average tenancy in the US is around eight years, according to Useem. At the start of this period R&D spend increases, but towards the end it cuts back "not hugely but perceptibly" as bosses try to carve out their legacy before they depart or retire. "It's no surprise that, unconsciously or not, CEOs at the end of their term consider that they won't be around forever, so they spend on things that have more immediate benefit to them," he says. "It's one of the curiosities of the corporate condition: We ought to be Adam Smithian rational calculators, but our own career often kind of gets in the way."

Whether caused by shareholders, by personal ambition or by something else, short-term strategies represent a missed opportunity for businesses to establish sustained growth and, potentially, bigger profits. And if Donald Trump, the king of the quick win, thinks so, then who would disagree? ■

HOW TO KEEP WEALTH GROWING
Investment in long-term assets is key for an organization to flourish.

ILLUSTRATION: JIM STOTEN/BERNSTEIN & ANDRIULLI

"There is nothing innately wrong with thinking short term. The problems arise when pressure from investors prejudices companies towards a fast buck."

Manage the present / Own the future

The dangerous cycle of rapid startups

Massive investment drives new ideas, but in Chinese entrepreneurial culture, it is also creating a dangerous dog-eat-dog world. The result? Short-sighted visions are highly prized, but their fast-paced strategies can fail to deliver long-term success – with painful results.

BY ***Henrik Bork***

A spectacularly fast rise to fame, followed by an even faster and more dramatic fall – that is the story of Ofo. The Chinese bike-sharing company grew from obscurity to a valuation of around \$3 billion at its highest point. Then, suddenly, its fortunes turned and it found itself close to bankruptcy. Even in the fast-paced world of Chinese startups, Ofo's rollercoaster ride on two wheels is turning heads and raising questions for a whole new industry, and not only in China. Briefly touted by China's national TV station CGTN as one of the country's first real inventions since paper or gunpowder, ⟶

PHOTO: DPA PICTURE ALLIANCE / REUTERS

The rise of bike-sharing

→ **BIKE-SHARING** was born in 1965 when a group of activists in Amsterdam left "Witte Fietsen," or white bikes, unlocked across the city. The program was shut down, however, after many of the bikes were stolen or damaged. Copenhagen tried a similar scheme in 1995, this time with coins and fixed locations, but their "Bycyklen," or City Bikes, were still plagued by vandalism. Later, urban areas in England, France and Spain introduced citywide programs that utilized magnetic strip cards and tracking systems. Washington, Montreal, Hangzhou, Guangzhou and many other cities followed. But the boom really took off in 2016 when Chinese private startup companies started to flood Beijing, Shanghai and other cities with fleets of bikes in every color.

THE COST OF BAD BUSINESS
People around the world are now shaking their heads at images of China's "bicycle graveyards," like this one in Anhui province.

THE BATTLE OF BIKE-SHARING
Ofo CEO Dai Wei likened his situation in 2018 to Winston Churchill's after the Dunkirk disaster.

Ofo: how buzz turned to bust

→ **NOW 28 YEARS OLD,** Dai Wei founded Ofo in 2014 with a few fellow students he knew from Peking University's cycling club. The group did not know much about running a business, but they were very good at luring investors with colorful presentations and catchy buzzwords and phrases like "sharing economy" and the "free deployment of assets." The craze of fundraising that followed was aided by media hype and self-declared "digital China ecosystem experts" that touted Ofo's bike rentals via smartphone as yet further proof of "that skillful Chinese micro-innovating game." The company is now almost bankrupt and is said to owe suppliers at least $28.6 million.

bike-sharing now seems likely to go down in history a bit differently: as the business model behind one of the biggest startup failures ever.

Every bike-sharing startup has a signature color to stand out on city streets, and Ofo branded its five-year existence with yellow – a lemon hue which can now be seen dotting the many bicycle graveyards where the company's fleet are now being dumped. "This is a Harvard business case in waiting," says Jeffrey Towson, professor of investment at Peking University's Guanghua School of Management. That school also happens to be where Ofo's story began. Dai Wei was a student at Towson's institute when he and four other members of the cycling club bought some bikes and placed them at the campus gates in the spring of 2014. Students could scan a QR code on the frame of the bike with their smartphones, download an app to pay a small deposit, and – click – the bike's lock snapped open. Welcome to your "shared" bike, which you could ride for around 15 cents for each hour. Inspired by "ride-sharing" taxi apps, people started to call this "bike-sharing."

WHAT HAPPENED NEXT evokes comparisons not so much with just gunpowder, but fireworks. A $1.4 million seed investment by Hongdao Capital and Will Hunting Capital was quickly followed by more and more big investors who wanted to place their bets. A series C round of $130 million was followed by a series D with $450 million, and then $700 million and $866 million from investors like DiDi Chuxing, the Chinese Uber, and others led by the Alibaba Group in July 2017 and March 2018. Before the fireworks came to an abrupt halt, Ofo had raised a whopping $2.2 billion.

But in the summer of 2018, four years after Ofo was founded, the company came close to bankruptcy. Even after raising its prices, Ofo couldn't seem to earn back that kind of money. After complaining about "immense" cash-flow pressure in an internal letter to employees, both investors and customers abandoned Ofo. Dai Wei compared his situation to Winston Churchill's after the Dunkirk disaster, inviting his core team to "fight until the end," the *South China Morning Post* reported. Employees who had once proudly bragged that their company had "too much money to spend" and could never fail were now looking down from their office windows at crowds of angry customers lining up to demand their deposit back. The company had to lay off most of its staff, and at the time of writing, the yellow bikes were quickly disappearing from the streets of Beijing, Shanghai, Singapore and Paris.

Explanations of what exactly went wrong are still evolving, but it seems likely that the mind-boggling amounts of cash pumped into what wasn't essentially a "bike-sharing" model, but rather a rental business pepped up by a smartphone app, had something to do with it. Yes, the company bought bikes and placed them in the streets without docks for anybody to use, and that was somewhat new. And yes, a smartphone app served as the key. But the company owned the bikes, just like any old-fashioned rental shop, and incurred huge maintenance costs. The word "bike-sharing," however, made investors as giddy as if they had been doped for the Tour de France.

"Ofo was hijacked by capital," says Zhang Yi, the founder of Chinese internet research company iiMedia. "A weak management team embarked on a too fast an expansion." Even the employees felt the money arrived a bit too easily. "We felt the investment we got →

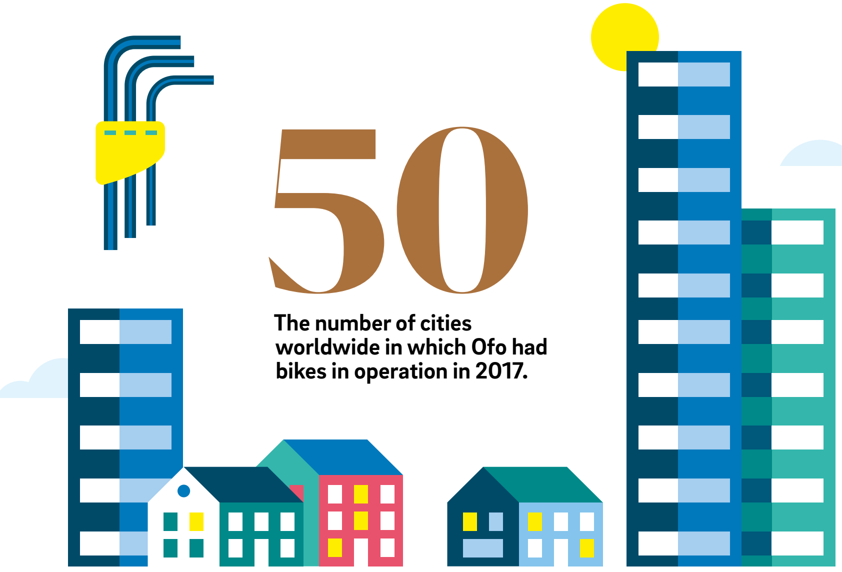
Even after raising prices, Ofo couldn't seem to earn back that kind of money.

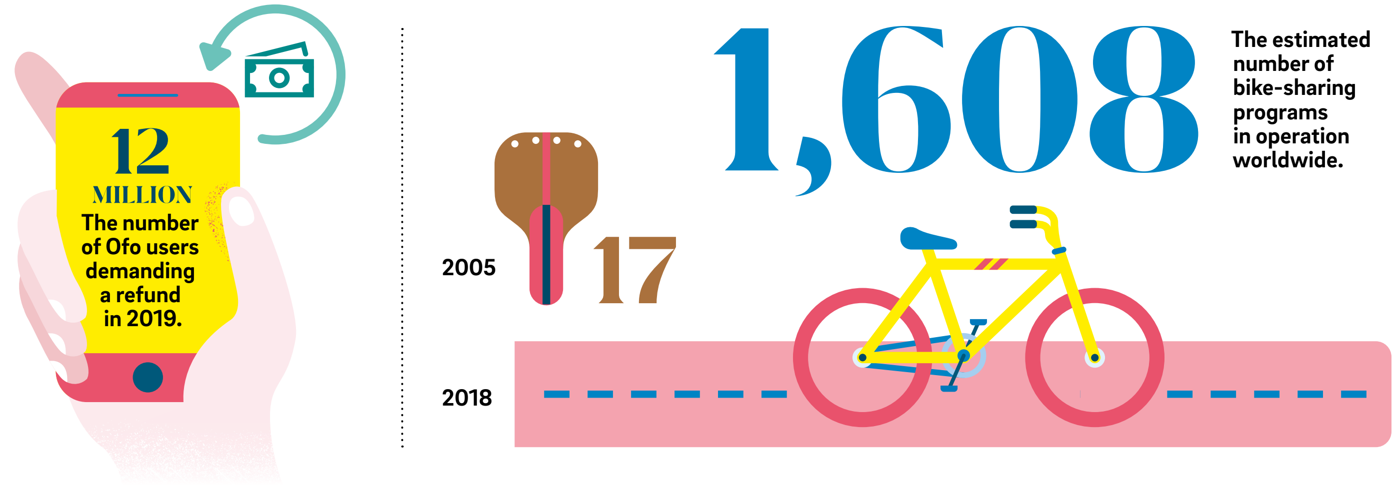
PHOTO: GETTY IMAGES / BLOOMBERG

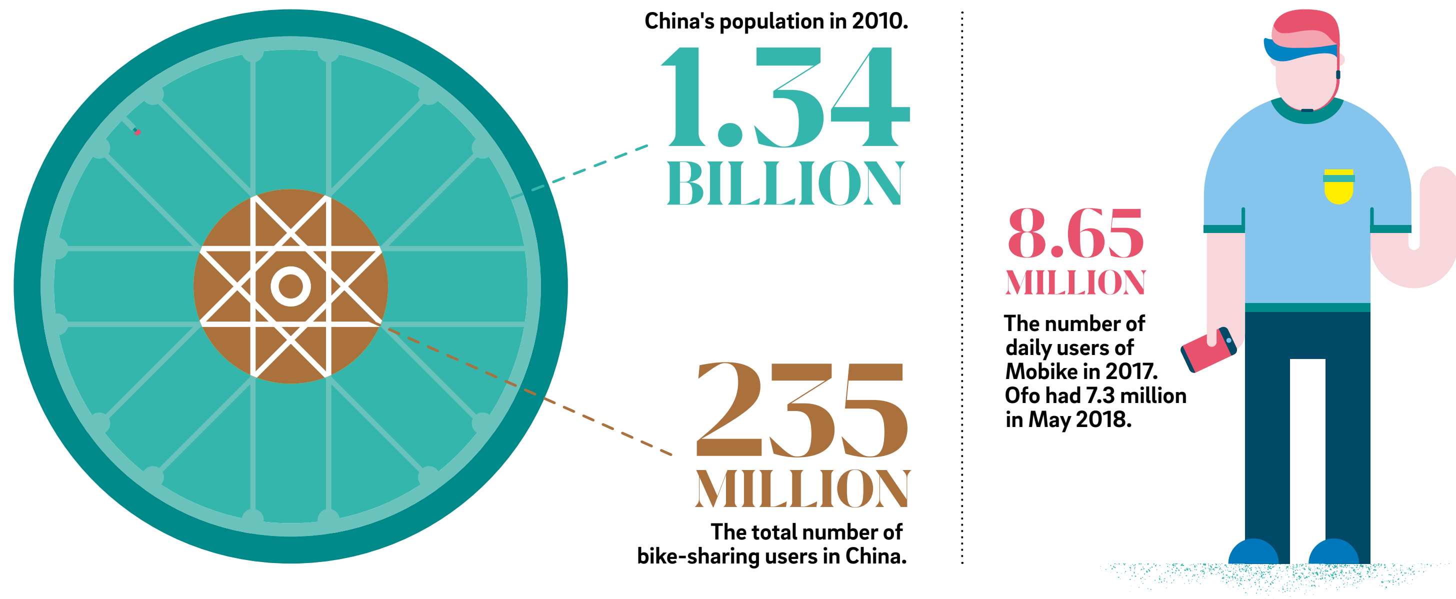
GRAPHIC: JENS AMENDE | DATA SOURCES: CNBC, THE ECONOMIST, STATISTA.COM, WIKIPEDIA (2010 CENSUS), IIMEDIA RESEARCH, TECHNODE

Peddling figures for the new cycle apps

→ **FOR SOME** the appeal may lie in never having to change a flat tire, for others it may be the flexibility to walk and ride at will or not needing to find a secure place to lock up – whatever the reason, there's no denying that bike-sharing has managed to catch the public mood. Here's a quick look at the rise and fall of the two-wheeled trend.







Manage the present/Own the future

was way more than the capital we needed," the business magazine *Caijing* quoted a former Ofo employee in December 2018.

Ofo ordered bikes from manufacturers by the millions and distributed its yellow bikes not just in China, but in cities around the world. While members of Ofo's founders team ordered Tesla luxury cars for themselves, many of the bike manufacturers are now going unpaid. "This was a typical liquidity bubble like we keep seeing periodically here in China," says Michael Pettis, a professor of finance at Peking University. "It is way too easy in China to raise money." Pettis lives in the center of Beijing. When leaving his home to walk to the subway, he was suddenly forced to "walk on the street, because the sidewalk had disappeared under heaps of bicycles." For a while it looked as if this Chinese "invention" had the potential to make cities around the world more environmentally friendly, a green mobility solution for the so-called "last mile" from subway stations to peoples' homes and offices. There was the promise of fewer cars on the roads, less pollution and a healthier consumer. In a relatively short time, more than 30 bike-sharing competitors to Ofo sprung up in China, aggravating the company's troubles. Each picked a different color, until every shade of the rainbow carried a trademark.

ALL OVER THE WORLD, people are now shaking their heads over photographs of yellow bikes dumped as waste metal. The Ofo disaster has threatened how attractive the "sharing economy" is for investors – and their appetite for the future of mobility. "In my opinion, Ofo can serve as a metaphor for the overall market here in China," says Pettis. "Investors are very speculative here. Every kind of crap can reach incredible valuations." The ingredients for rational investment patterns are still in short supply in China, says the finance professor, from "good corporate governance to a stable macroeconomic environment and transparency." It is, others say, a form of high-stakes gambling. "Ofo spent too much money too fast," concludes his colleague Jeffrey Towson.

> **What happened with Ofo is actually not unusual for Chinese startups.**

What happened with Ofo is actually not unusual for Chinese startups. Especially in the internet and business-to-consumer (B2C) space, investors zero in on two or three companies in emerging industries and then equip them with mind-boggling amounts of cash to quickly acquire customers and grab market share. Then the race is on. "If you are not the number one or number two in your space, you quickly die," says Towson. While this kind of "VC2C-investing" (venture capital to consumer) that subsidizes the customer acquisition of loss-making companies, is also seen in Silicon Valley or elsewhere, what makes China stand out is the "ferociousness" of competition, says Towson. "These Chinese companies are out to kill each other. Spending lots of money is necessary, and if your competitor gets a billion dollars and you don't, you fall behind."

Ofo's biggest competitor in bike-sharing was Mobike, which engaged Ofo in a fierce battle for market share. Just like in the ride-sharing industry for taxi rides, for example between Uber and DiDi Chuxing in China, consumers were lured with massively subsidized prices by both competitors, funded on each side with money from investors who had been told that profits would eventually follow. Suddenly, there were even more orange bikes on Beijing's streets than yellow ones. Uber finally gave up in China. And Mobike was acquired in April 2018 by Meituan-Dianping, a Chinese giant that has started to build a "super app" offering consumers everything from restaurant reviews to online retail and hotel bookings, taxi rides – and now bike rides.

FROM PROMISE TO RUIN Ofo's fleet of yellow bikes now litter Beijing's streets.

A TURNING TIDE Former Ofo customers show up at the company to demand their deposit back.

PHOTOS: GETTY IMAGES / VCG; DPA PICTURE ALLIANCE

VC2C: Chinese startups and the cash burn approach to gaining market share

→ **BURNING CASH** to acquire users and grab market share is a preferred business model in China, not only in the bike-sharing industry. Although not restricted only to China, it is such a prevailing business model, from fast-food delivery, ride-sharing (Meituan-Dianping, DiDi Chuxing, etc.) to other segments of e-commerce, that a new term has been coined for this investment-led growth model: VC2C or "venture capital to consumer," making a nod to the well-known B2C and B2B models.

→ **THIS STRATEGY** might carry asset-light companies delivering fast food or taxi rides all the way to their IPOs, but it has proven to be much more risky for companies that own and maintain considerable assets, like millions of bikes that need to be bought, repaired and moved around major urban areas.

→ **THE EXACT** cash burn rates of China's bike-sharing companies are hard to come by as none of them are disclosing meaningful figures, but industry insiders estimated Mobike's cash burn rate at $50 million per month, while Ofo's has been estimated at $25 million per month.

SOME ANALYSTS BELIEVE that Ofo's failure to look for a similar exit via M&A was the real reason for its demise. There have been reports that Ofo founder Dai Wei offended executives sent to his headquarters by the ride-sharing giant DiDi, who then walked away and also vetoed new investment rounds in Ofo. Only Mobike, now set to be rebranded as "Meituan Bikes," succeeded to transition from a standalone business to one of many products in a platform business before it ran out of investors' money. "Bike-sharing may not be a sustainable business model, but it is a great service," says Towson, who likes to use the bikes.

Following the logic of platform businesses like Meituan-Dianping, which is to get as many users as possible and then sell them whatever you can, the decision to acquire a loss-making bike-sharing company with a big database of users may make a certain amount of sense. It's too early to tell, however, just how much appetite for loss Meituan-Dianping has, and Mobike has continued to make losses. China's current winner of the bike-sharing race reported $22 million in revenue from the takeover date on April 4 until the end of the same month, but an overall loss of $75.1 million, according to the news portal Sina. And Meituan's latest financial report in March 2019 put Mobike's revenue since the acquisition at $223 million, which is contrasted by a loss of $680 million. "There are a lot of variables in this kind of business model, like the repair cost for the bikes, operational costs for moving them around and asset depreciation," says Rui Ma, co-host of the popular TechBuzz China podcast, who shuttles between Beijing and San Francisco.

Investors don't seem to care much about losses in such types of businesses – neither with bike-sharing companies in China nor with the now popular scooter rental companies in the US and Europe – as long as they can claim a successful exit at some point. It will be up to the shareholders of companies that acquire bike-sharing services to find out if the business model is sustainable in the long run. ■

Martian dreams on planet Earth

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It's the ultimate long-term project, but space exploration requires short-term planning too. How do you find out if you can live on another planet? Easy – recreate the conditions on Earth. In early 2018, a small crew of "analog" astronauts arrived at the place they would call home for the next four weeks: a simulated Martian base camp hidden in Oman's inhospitable Dhofar desert. Organized by the Austrian Space Forum, the mission was to address one question: Do we already have the tools we need to sustain life on the red planet?

PHOTOGRAPHY BY ***Florian Voggeneder***

IMITATION OUTER SPACE An analog astronaut looks back to the hub of the simulated Mars mission, Kepler Station.

LAYING THE GROUNDWORK Experiments in field spectrometry tested how resources might be evaluated 54.6 million kilometers from Earth.

BETWEEN FACT AND FICTION Gas flares from nearby crude oil processing plants illuminated Kepler Station's very earthly location, where team members' tasks included growing sprouts with experimental horticultural methods (inset).

A SELF-CONTAINED WORLD Since spare parts will be in short supply on Mars, 3D printing is being looked at as a viable production option.

Manage the present / **Own the future**

FAR FROM HOME Beyond logistical challenges, the mission also focused on how psychological obstacles, such as loneliness, can be overcome.

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Rising Son?

PHOTOS: SHOKO TAKAYASU

He may come from humble beginnings, but the Japanese self-made billionaire Masayoshi Son keeps surprising the world with his bold bets on emerging tech trends and an unusually long-term vision that keeps the SoftBank founder and CEO thinking 300 years ahead.

BY ***Henrik Bork / Steffan Heuer***

When it comes to big bets in the technology world, they hardly come any bigger – or any bolder – than those made by Masayoshi Son, the at times eccentric founder and CEO of SoftBank Group, a multinational holding based in Tokyo. From the consumer web and mobile networks to the internet of things and the rising gig economy, Son keeps making his mark on emerging tech trends with an investment strategy that's as much driven by his intuition as his unique vision for the future. The 61-year-old Japanese businessman has gone on record saying he thinks three centuries ahead. With that kind of ultralong-term perspective, it's perhaps not surprising that he named his investment operation Vision Fund. Launched in 2016, it has $100 billion under management, making it the largest fund ever raised.

While some people have declared him simply crazy, Son himself admitted something similar in an interview with Bloomberg TV. With a smile, he explained his vision as a single bet on the concept of "singularity," the moment when artificial intelligence becomes smarter than the human brain, something Son strongly believes will come to pass within the next three decades. All of his current investments, one might argue, are preparing for that future. So, whether you are a fan or a critic of this self-declared visionary, with capital thrown around at a scale dwarfing the budgets of many countries and with SoftBank driving the valuations of companies into uncharted territory, it is worth looking at what makes Son – and his long view – tick.

Masayoshi Son

→ FAMOUSLY having lost more money than anyone else in history during the 2000 dotcom crash – an estimated $70 billion – Japanese business magnate and investor Masayoshi Son is still ranked as one of the richest men in Japan with a net worth of $23 billion. He is the founder and current CEO of Japanese holding conglomerate SoftBank, the CEO of SoftBank Mobile, current chairman of US-based Sprint Corporation and chairman of UK-based Arm Holdings.

Masayoshi Son grew up in a Korean immigrant family on the Japanese island of Kyushu. "Son had a difficult childhood and youth, with Japanese kids throwing stones at him and discriminating against him," says Eurotechnology Japan CEO Gerhard Fasol, who has been interpreting Japan's tech landscape for outside investors for the past 35 years. He adds that traditional Japanese executives still cast a wary eye on Son's rise and, in private conversations, will add "but he's Korean" to detract from his success. Son was an avid reader and, at 16, he was fascinated by a book written by Den Fujita, the founder of McDonald's Japan. He wanted to meet him, so he called Fujita's assistant 60 times. When he was finally granted a 15-minute audience with the entrepreneur, he asked what line of business he should choose. Computers, he was told. So Son went off to the University of California, Berkeley, to study computer science and eventually major in economics.

BACK IN TOKYO, Son founded SoftBank in 1981 at the age of 24. Since the connected world was in its infancy, Son settled on the internet and the mobile internet as the trends of the future. Starting in the 1990s, SoftBank started to place bigger bets, investing in companies like Yahoo! Japan and Vodafone Japan, which eventually became SoftBank Mobile. His biggest and – to this day – most famous gamble came in 2000 when he invested $20 million into the fledgling Chinese e-commerce site Alibaba. The intuition paid off. When Alibaba went public in 2014, Son parlayed his stake into $60 billion.

When the dotcom crash struck in 2000, it wiped out some $70 billion of Son's wealth. "Somehow," he recalled in an interview, "I survived," and by 2019 he had fought his way back to rank number 43 on the *Forbes* list of the world's billionaires. His success, argues Fasol, is at its core an arbitrage game. "Son realized that the tech industry →

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"The **big game** today is about the internet of things and artificial intelligence."

Gerhard Fasol, CEO of Eurotechnology Japan

and its business models were more advanced in the US compared with Japan and China, and he invested in that time lag. Now that the knowledge has balanced out, he has changed his approach. The big game today is about the internet of things and artificial intelligence."

Paul X. McCarthy, an Australian innovation and digital strategy consultant, has devoted a chapter in his book *Online Gravity* to SoftBank as one of eight really global companies dominating the internet economy alongside Google, Facebook and Alibaba. He agrees that Son's vision has paid off. "What he has understood is that since the rise of the web, the new technology has changed economics," he says. Son grasped how competition had changed early on. "In the past, in each country or segment of the economy, you had a number of dominating companies, but also challenger companies like Coca-Cola and Pepsi." Nowadays, he adds, being number two is already a problem. "Just like in our solar system, in the world of business we are nowadays left with either planets like Facebook, Amazon or SoftBank, or with small satellites and niche operators. There is not much left in the middle, just like in outer space. Such are the forces of online gravity," says McCarthy.

IT'S ALL ABOUT SCALE and winners need to create platforms or ecosystems of businesses that help each other beat or swallow up more and more of the competition like the gravity of a new planet aggregates intergalactic dust. It's a useful metaphor to understand Son's biggest endeavor. His Vision Fund pulls together companies of seemingly unrelated expertise, among them the British chipmaker Arm Holdings (which SoftBank had acquired in 2016) and newer entrants with less proven business models such as co-working company WeWork and ride-sharing phenomenon Uber, complemented by dozens of startups in AI, robotics and automation. The fact that Son's gargantuan Vision Fund has cobbled together such a peculiar solar system and, so far, kept its parts together speaks to the charisma of its founder. When Son met Mohammed bin Salman, who is now the crown prince of Saudi Arabia, it took him 45 minutes to get him to commit $45 billion to the fund. Other investors, from Apple to Daimler to a government-owned investment fund in Abu Dhabi, were equally willing to accept mind-boggling valuations as the price to building this new planetary system. SoftBank's own contribution to the Vision Fund is reported to stand at $21.8 billion.

But size can slow you down and bring new risks. A fund this big can only make very large investments in a limited number of companies with a valuation of a billion or more, or "unicorns." "Given their size and the limited number of unicorns, an exit that yields two to three times their initial investment is good for them. But you can achieve that by investing in a public company as well," says Victor Orlovski, managing partner at Fort Ross Ventures. For him, Vision Fund is not a traditional venture play anymore, but a new breed of investment vehicle. Lars Leckie, managing director at Silicon Valley firm Hummer Winblad, agrees with this assessment. "They are certainly disrupting the venture space by anointing category winners early and have forced a lot of later-stage firms to react by raising larger funds," he says. "They seem to be in a race to build the biggest checkbook to compete, and with history as our guide I don't know if large funds have any chance of venture returns." Some academics go further, wondering if Vision Fund distorts the innovation game because it deters competitive entry and could slow down technological change, as a Harvard Business School case study recently examined. Orlovski also doubts that Son's Midas touch, largely based on his Alibaba gamble, can last. "Mr. Son is making very risky bets on companies whose business models aren't yet proven. The question is what will be their big failure, and how will markets react to it?"

Son himself is consumed by another question: Who will be the successor to his ambitious 300-year vision? While he initially wanted to retire at age 60 and had groomed former Google executive Nikesh Arora to take over the helm, he changed his mind in 2016 and decided to stay on another 5-10 years. "It's not good to hand over the company when I'm not emotionally ready," Son said. The entrepreneur instead appointed a trio of executive vice presidents – fueling speculation who will be the future star in SoftBank's outsized solar system. ■

Vision Fund

$100 billion has been raised by Vision Fund since it was founded in 2016.

$21.8 billion was contributed to the fund by SoftBank itself.

$45 billion was committed by Mohammed bin Salman, the crown prince of Saudi Arabia. Son has said it only took 45 minutes to convince him.

Masayoshi Son's cosmos of VIPs and companies all over the world

The tech entrepreneur's solar system of influence and investment includes mentors and businesses. Here's a view of just some of the leading figures and companies that SoftBank and Vision Fund have in their orbits.

PHOTOS: SHOKO TAKAYASU V. O GETTY IMAGES; LINTAO ZHANG, GETTY IMAGES; TOMOHIRO OHSUMI; GETTY IMAGES; GETTY IMAGES / AFP / YOSHIKAZU TSUNO; GETTY IMAGES; GETTY IMAGES; GETTY IMAGES / JB LACROIX; GETTY IMAGES / NYT/MICHAEL COHEN

Managing the crisis of the short-term view

Society is facing the consequences of rampant impatience and self-centeredness. But it's not too late to reverse the tide.

PHOTO: THE SEATTLE TIMES

BY ***Paul Roberts***

For those who dream of a society that plays the long game, with careful investments in long-term collective goals, these might seem like the very worst of times. Ten years after the Great Recession demonstrated the risks of short-term thinking, the impulse toward immediate gratification and narrow self-interest seem just as strong as ever in our economy, our politics and our private lives.

The epitome of instant gratification for business – share buybacks – leapt to a new record of $1 trillion in commitments for 2018 and is expected to rise further still in 2019. In the US, personal debt is back to its pre-crash levels – total household borrowing has already exceeded the previous record of $12.68 trillion set in 2008. In the political world, the most troubling manifestation is the ascendance of populism, where opportunists and authoritarians promise quick fixes for complex social and economic problems. Individual behavior also seems to be growing more impulsive and self-centered. Witness the rise in cellphone-related car accidents on the one hand and the practice of "ghosting," dismissing personal and professional relationships without so much as an adieu, on the other.

AND YET, AMID THIS RISING TIDE of impulsiveness, there are also more encouraging signs. Research and development spending, the key to long-term business health, is no longer on the decline. Alongside the populists are other political leaders who have begun mainstream crusades for large-scale responses to problems like climate change and inequality. We may not know how to address the crisis of short-termism, but we seem to finally recognize that it is, in fact, a crisis. And if we are indeed approaching some sort of tipping point, it wouldn't be the first time. The story of civilization is really the story of using the power of social institutions to mitigate the individual's inherent short-termism. From the first organized religions and agricultural economies to the rise of political systems and early capitalism, society has been able to incrementally tame individual impatience by offering a better alternative: Give up some of your self-centered, impatient behavior and society will give you a better shot at long-term, sustainable sustenance and security.

True, that agreement was never ironclad. Plagues, wars and other forms of social upheaval have periodically weakened institutional authority over individual behavior. More recently, capitalism itself, abetted by a string of technology breakthroughs, has given individuals steadily more power to satisfy their own needs and wants quickly, conveniently and cheaply. With that power has come the growing belief that the individual no longer needed social institutions, or their long-term thinking and collective action. This new power for individuals was, of course, partly an illusion. For that power flowed not from individuals themselves, but from the corporations that provided the consumer with these new empowering goods and services – everything from cars to credit cards to computers.

BY THE TURN OF THE 21ST CENTURY, this was an illusion that was becoming even more attractive – and harder to detect. Thanks to the revolution in digital technologies, consumers could satisfy their appetites in ways that would become increasingly tailored to personal preferences. This self-centered consumer economy had its parallels in the corporate world. New financial strategies and technologies allowed companies to generate returns faster. As important, a new ideology, shareholder value, transformed this "capital efficiency" into a near-sacred objective – which in turn became the goal of a political establishment that was being reconfigured around short-term victories and an increasingly impatient electorate that demanded quick fixes, no matter how implausible. Where society had once modeled itself on the very highest human ideals, it now increasingly reflected our worst impulses.

It was almost as if modern society was now guided by the "id," that collection of unconscious desires and fears that, according to psychologist Sigmund Freud, churn beneath the surface of every human. For Freud, the development of the individual was shaped by the conflict between the id and what he called superego, the collection of social norms and expectations that each human internalizes and which, in developed humans, keeps the id's impulses in check. But where Freud saw this struggle playing out as an individual dynamic, we might argue that it is now occurring at a much larger, institutional scale. Our institutions need to be restored to their traditional roles as moderators of individual impulsiveness, not accelerants of it. But the catalyst for that restoration must come ultimately from individual action.

This is not an unfamiliar dilemma. Throughout history, individuals weighed down by corrupt and impulsive institutions have risen up against them and begun the long process of restoration and reformation. And we are clearly seeing signs of another "uprising" against the current iteration of institutional corruption and impulsiveness. People are raising their voices against Donald Trump in the US and demonstrating against Brexit in the UK. Criticism of tech giants such as Facebook, Google and Amazon, some of the central enablers of the "impulse society," is more frequent. Consider too the growing mainstream acceptance of climate change and the rise of proposals for long-term action, such as the "Green New Deal."

> **"Our institutions need to be restored to their traditional roles as moderators of individual impulsiveness."**

Fixing an id-fixated culture centuries in the making will not be easy. We have much work to do – and the risks of backsliding are massive. But, to a degree, even talking about it would have been inconceivable just five years ago. We have now not only begun to come to grips with the problem, but have started to consider possible solutions. ■

Paul Roberts

Over his 35-year career, Paul Roberts has focused on the complex relationships between economics, technology and the natural world. His third and most recent book, *The Impulse Society* (2014), explores the mechanisms whereby quick fixes have become the norm while offering hope for a movement against an unchecked market. Roberts has also lectured at a variety of organizations, including the World Economic Forum (Davos) and the US Environmental Protection Agency.

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Setting goals for tomorrow

THE RIGHT DIRECTION
Agility off the field has helped Tottenham develop its assets, including player Harry Kane, now valued at $226.8 million.

PHOTOS: GETTY IMAGES / DAN MULLAN

Even the best football clubs can struggle in balancing uncertainty with a long-term vision, but other businesses have plenty to learn from their losses and wins – from quick reaction times to building the right team, the key to success is in setting up your next goal, all while keeping on scoring today.

BY ***Alistair Magowan***

Manage the present Own the future

When José Mourinho was sacked in December 2018, Manchester United's criticism of the formerly lauded Portuguese manager was damning. Despite winning two trophies in his first season, the club said he had failed to improve results after spending nearly $525 million on players and had ignored the club's philosophy of playing attacking football while developing young players. The club, built on solid foundations after Sir Alex Ferguson's 26 years in charge, was left looking for a fourth manager in five years since he retired in 2013. How could one of the richest football clubs in the world get it so wrong? The answer underlines how football clubs often struggle with the balance of short-term results and long-term vision – perhaps understandable when fans are demanding instant success and the financial rewards have never been greater. As Football Association Technical Director Les Reed says: "In football you report to your stakeholders every week when 30,000 fans come to judge you."

It also shows how getting the right structure in place can ensure a better equilibrium and how business can learn a lot from football. "Long-term planning is what everybody wants to do in football, but it can be nigh on impossible," says Mike Rigg, technical director at Premier League team Burnley and former head of player acquisition at →

The art of the picking the right team

Your team can make or break you – and when your business is football, that goes for the players off the pitch as well as on. In the years following Sir Alex Ferguson's retirement, Manchester United has learned just how many hats the legendary manager wore at the organization. The next lesson: how to fill his shoes.

→ MANCHESTER UNITED Executive Vice Chairman Ed Woodward said last year that the team didn't need to win trophies in order to be successful. And while plenty of philosophers might agree, the statement did not go down particularly well with the club's fans. This is a man who has led the club's commercial dealings to new heights, including contracts for official coffee, paint and noodle partners. But for all his success, he has been criticized for his inexperience in recruiting players, something that a director of football would normally take care of.

→ THE PROBLEM at United is that they don't have such a director. Sir Alex Ferguson was the most successful manager in the club's history and he was effectively a director of football as well, leaving the club struggling to replace him since his retirement in 2013. In the years since then, Manchester United has won three cups, including two under former manager José Mourinho, but the club lost its traditional attacking identity, failed to mount a serious Premier League title challenge and has now sacked three managers.

→ FINALLY, in admitting that they do need a director of football in addition to new manager Ole Gunnar Solskjaer, the club hopes to be able to provide much-needed stability and bring exciting football back to the pitch – and all while offering the likes of Woodward extra footballing expertise at the boardroom level.

1. MOURINHO Gone after a two-year tenure
2. FERGUSON Still the manager with the reputation to beat
3. SOLSKJAER The next to take on the challenge

HOME TURF Fans gather at Tottenham Hotspur Stadium, opened in April 2019 at a cost of $1.32 billion.

Manchester City. He says that results can change everything despite football's simple business model, where income via television deals, commercial revenue and ticket sales is balanced by player salaries and business development. "When I was at Manchester City, we missed out on reaching the Champions League in the penultimate game of the 2009-10 season because we lost to Tottenham. As a result, 50% of our player targets were wiped off the table. So there goes your long-term planning." Professor of Sports Enterprise at Salford Business School Simon Chadwick says that unlike other industries, "uncertainty is football's core product." He adds: "Amazon, HSBC and BMW don't face the prospect of getting promoted or relegated each year … That leads to a short-term culture because next season if you get relegated it will be disastrous. But over the last 10 years and arguably since the formation of the Premier League in 1992, the sport has been through a cultural transition where strategy and medium- to long-term thinking are considered as important as tactics and short-term thinking."

THE PITFALLS OF FALLING into a short-term culture were nowhere more apparent than at Manchester United post-Ferguson. The club tried to continue his legacy with Everton manager David Moyes, who proved to be too inexperienced, former Barcelona and Netherlands boss Louis van Gaal, who added authority but did not fit the club's philosophy, and Mourinho, who ended up being a quick fix. What the club lacked was the long-term vision that the Scotsman Ferguson supplied. Reed, appointed at the FA in December, is among those who think Ferguson evolved to be more like a director of football rather than a manager during his later years at the club. Directors of football or technical directors are "crucial," says Reed, because they offer a link between the boardroom and the pitch, much in the way a North American sports team might have a vice president for sport and a vice president for business. This allows them to take overall responsibility for football operations and they can cover recruitment, contract negotiation, player and team development, plus being responsible for the head coach or manager. In Ferguson's case, this allowed him to focus on the big picture while his coaches took more control of the day-to-day operations. Reed adds: "Somebody has to have the ability to manage everything that comes under the football part of the business because that's where the investment is going. It requires having enough understanding of the finances, but also what might be required from a technical point of view to build a team and a club capable of sustaining success."

Swedish club Östersunds has competed with some of Europe's top teams despite being on a fraction of their budget. David Webb, a technical director with the club, previously worked with Reed while at Southampton. He has also been involved at UK Premier League clubs Tottenham Hotspur and Bournemouth. "European clubs have had technical directors for a long time now and it probably wasn't accepted in England for a number of years," he says. "If you remain in the Premier League, it can be financially rewarding, but in the race to get there, it can lead to a high turnover of managers and players, which means you are going to suffer financially. "If you have a long-term vision and someone in a technical director role, the identity of the club can stay the same and you can build something more sustainable."

$151 million **was Tottenham's profit after taxes in 2018, a world record for a football club.**

THERE HAS NEVER BEEN MORE money in England's Premier League: The top 20 teams are set to receive $6 billion over the next three seasons. But chasing that money can lead to ruin. Webb cites Aston Villa as a team that tried to spend its way back to the Premier League since being relegated in 2016, with pre-tax losses of $48.2 million last season. Norwich City, who were relegated the same season, have used a longer-term approach and investment in younger players to help them climb towards the Premier League. He also credits Tottenham, who posted a world-record profit of $151 million after tax last season. Webb says part of that is down to manager Mauricio Pochettino, who develops talent within the club rather than spending huge sums on recruiting new players. Captain Harry →

Manage the present, own the future

PHOTOS: GETTY IMAGES / ROBBIE JAY BARRATT – AMA; LAURENCE GRIFFITHS / GETTY IMAGES; GETTY IMAGES / HANNES MAGERSTAEDT

PHOTOS: GETTY IMAGES / AFB / DANIEL LEAL-OLIVAS

Kane is an obvious example, and he is now valued at about $226.8 million. Chadwick says clubs need the "strategic discipline" which other businesses apply. "Whether it's a high-end company like Gucci or Chanel or another that sells discount toys, you need to create products, position them in the market, give them an identity, charge an appropriate price and engage with a value-adding key target audience." Former Manchester City CEO Garry Cook goes further, saying clubs can build sustainable success by focusing on what the club means to people: "The truth is that your brand is so much more important today ... Over the last 100 years, you've developed that brand, and it would have evoked thought and commentary, so for long-term sustainability, you need to invest in it."

Football clubs are still rising to the long-term thinking challenge, but Chadwick thinks business can learn from how football manages in the short term. "There is something that football could tell other industries about managing uncertainty, how they respond to fluctuations in performance and challenging operating conditions, how to establish winning cultures and re-establishing performance levels after a big loss." He goes on to argue that every aspect of an elite footballer's performance is analyzed and that the expectation is to deliver consistently strong service. "In business, that level of performance is something which many companies aspire to but never achieve," he concludes. Reed adds to the argument by citing the context for assessment. Playing in front of fans each and every week means that you have to assess what you're doing, adapt it and apply solutions quickly. "The classic example, " he says, "is the personal development review when your line manager sits down with employees and discusses the whole year. Really? You're going to wait a whole year to assess what might be going wrong? There are a lot of protocols in business which are based on annual reviews or accounts but in football there is a continuous assessment."

4

managers in five years is one indicator of Manchester United's struggle to rebalance after Ferguson's 2013 retirement.

THERE ARE MANY CLUBS which successfully combine both short- and long-term goals, but even then, they still need to provide what every fan craves: cups and trophies, which are in limited supply. In addition to their record profits, Tottenham have reached the Champions League final for the first time in their third successive season in the competition. They have, though, suffered the taunts of rival supporters for failing to win trophies.

At Manchester United, the struggle to find the right balance between the two is ongoing. Former striker Ole Gunnar Solskjaer is their new manager and, initially, he brought the good times back to Old Trafford with a swashbuckling style and a reliance on youth previously seen under Ferguson. But poor results since then have led to further questions about the club's direction. The Norwegian is seen as the right man to ensure the club's DNA remains, but for a relative novice in the Premier League, several observers believe that Manchester United must appoint a director of football as soon as possible to help him succeed and to ensure that the club's long- and short-term vision never become so disjointed again. ■

HOMEGROWN TALENT Tottenham manager Mauricio Pochettino is known for cultivating top players rather than spending on recruits.

PHOTOS: GETTY IMAGES / MIKE HEWITT

CLOSING THOUGHTS ON ...

MANAGE THE PRESENT – OWN THE FUTURE

"The short-term thinking disease is everywhere you look ... We need generations who grow up believing in long-term thinking."

KIM POLESE

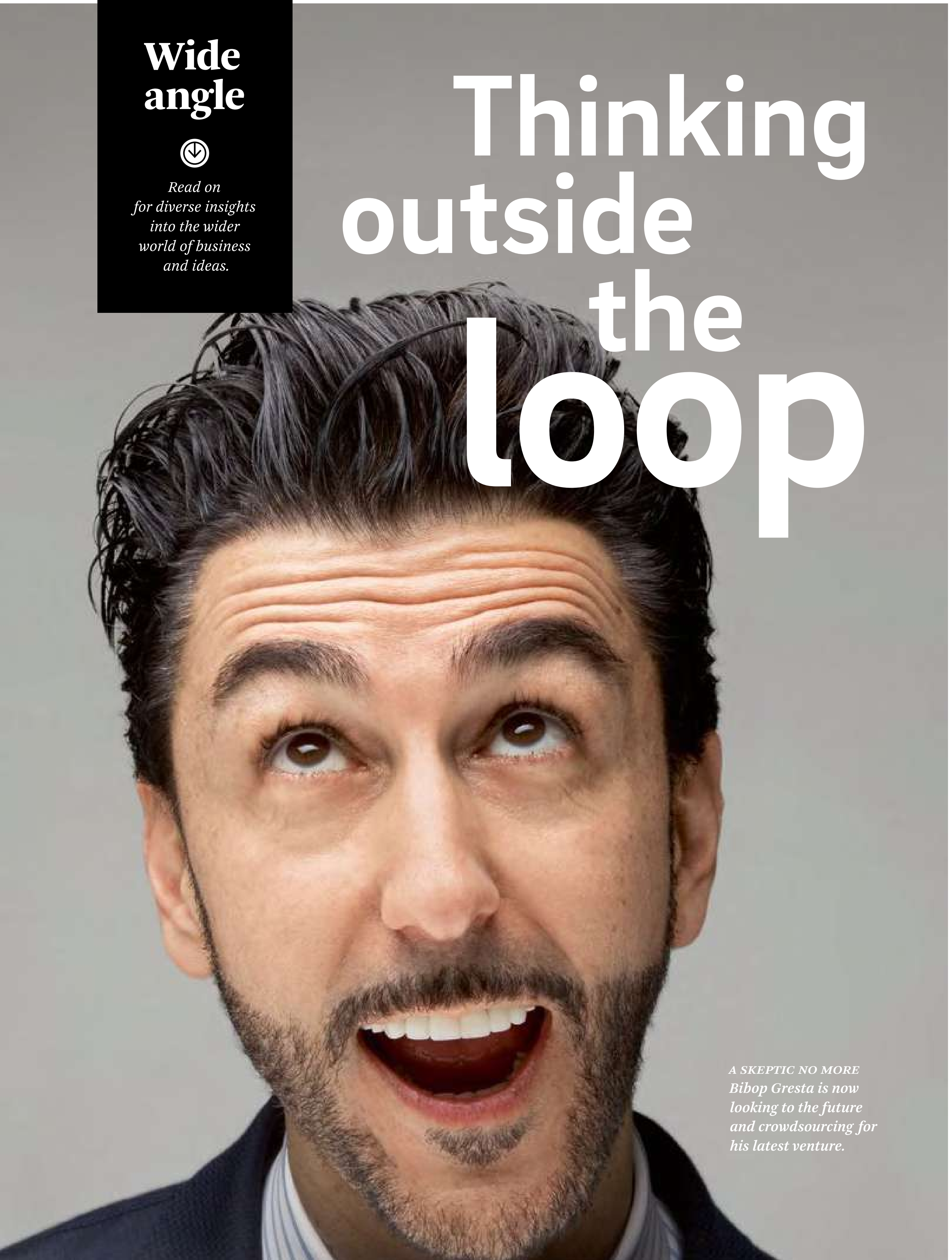
The Long Now Foundation

→ read the full story on page 26

Wide angle

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

Thinking outside the loop



A SKEPTIC NO MORE
Bibop Gresta is now looking to the future and crowdsourcing for his latest venture.

PHOTO: JUSHUA NAVALKAR / FORBES INDIA

As superspeed vacuum trains race ever closer to becoming a reality, Hyperloop Transportation Technology's Bibop Gresta speaks to Think:Act *about something that could prove just as revolutionary: the crowdsourcing model that's driving his company's innovations.*

BY ***Dan Matthews***

BIBOP GRESTA, chairman of Hyperloop Transportation Technologies (HTT), has an industrial revolution in his sights. He wants to develop a new system of transportation that will boast speeds that haven't been seen since the days of the Concorde. Gresta, who co-founded HTT in 2013 alongside CEO Dirk Ahlborn, believes they have hit upon a new company format. It is capable of responding instantly to emerging problems – or in HTT's case, what might be better described as a global opportunity – securing both the resources and the expertise in partnership with a range of stakeholders and collaborating to meet even far-fetched objectives.

Gresta sees a time in the future when the traditional system of hiring, firing and nine-to-five will be something we see as anachronistic. Instead, he says, people will lend their time and brainpower to projects that trigger their passions. They won't be employees; they will be more like partners. When HTT proves its technology – full-scale passenger pods fired through sealed tubes over vast distances at the speed of sound – it will license its intellectual property to other organizations and won't construct the commercial transport networks itself. He wants other companies to borrow from HTT's structure and methodologies, either wholly or in part, to build on and improve. This, from a seasoned entrepreneur who before the hyperloop had been involved in dozens of businesses in the traditional format, from startups to listed multinationals.

In this interview, Gresta describes his journey from skeptic to evangelist on more than one front. While HTT is not the only company racing to sign up governments and private sector partners to back the hyperloop, it's the only one crowdsourcing its expertise and relying on sophisticated project management and communications platforms to combine the efforts of more than 800 disparate stakeholders. This is the story of a business succeeding, even when 50% of the founders initially thought it couldn't be done.

840 experts

from a range of backgrounds are now collaborating through HTT's crowdsourcing experiment.

42 countries

are now home to the 420 groups working at the core of HTT's research and development efforts.

How would you sum up Hyperloop Transportation Technology's progress to date?

Six years ago, Elon Musk published his white paper proposing the hyperloop, a new form of transportation that is fast, convenient and energy-efficient. Now we are nearly ready to demonstrate a full-scale track at our installation in Toulouse, France. This is a four-meter diameter tube and the capsule is 32 meters long, with capacity for 30 passengers inside. This year will see the initial phase of testing and we are working on certification because we want our hyperloop to be implemented in just a few years, not a few decades. So we need to work on practical necessities such as insurance as well as the tech. It means we can build a hyperloop simply and efficiently using disruptive technology, but also move towards commercialization. We have signed three commercial lines in three key places: Abu Dhabi, Ukraine and China.

Moving from the research and development phase into the implementation phase, we are now talking to a host of governments about commercial hyperloops. I'm very proud of how we have built the company. We did it by asking people to help us answer the toughest questions and, in return, giving them a piece of the company.

Today there are 840 experts from a range of backgrounds working with us. It is the biggest crowdsourcing experiment on the planet, involving more than 50 of the top companies in the world. We have raised more than $50 million in cash ⟶

and $100 million in assets. This is how we have achieved our milestones in a short space of time.

The fundamental science behind the hyperloop has been the subject of experiments for centuries. Why, in 2013, did you think it was the right time to take it seriously?
Even though the fundamentals were in place, the R&D requirements were huge, the equivalent of millions and millions of dollars. Plus, there was no guarantee of success. The difference in 2013 – and ever since – is that the world is hyperconnected. You can give a worldwide call to action and humanity can come together to overcome even the toughest challenges. We had the technology, but more importantly the willingness to unite. It's an unprecedented market condition in which we can tap into global knowledge. Elon Musk's white paper was just a suggestion, but it was also a very inspiring call to action which triggered the imagination of a lot of people. Because so many people were able to talk about it, solutions to problems came quickly.

Why did you think the crowdsourcing model was a risk worth taking? What does it take to coordinate a collaboration on such a mass scale?
When I met my co-founder Dirk Ahlborn, he was already working on the white paper. I had 20 years' experience in 60 startups and as a board member of three listed companies, so I thought I knew everything. I was skeptical of his plan to build a megastructure using crowdsourcing. I thought he was delusional, but he showed me a document showing that 100 scientists from all sorts of companies were already collaborating, all working for the passion of it.

Now we have 420 groups divided between 42 countries and they form the core of the hyperloop R&D. We have an artificial intelligence platform which keeps track of all the conversations as the work develops, as well as a giant project management system that we developed in-house. We put together methodologies that created a unique environment that can be completely administered online. It's not particularly complicated and it works well. We have a system called "Lucy" which was supplied by Facebook. It contacts every member of every team each Monday and asks them to input their hours and the progress they have made. You can ask questions and find experts to help remove roadblocks. It's a mix of human and artificial intelligence that helps us coordinate the teams. The rest is done by our integration team, which checks the validity of the technology and decides what to implement and how.

Bibop Gresta

At age 15, Bibop Gresta became director of software development for Alpha Center International in Italy, later founding TV production and distribution company Bibop S.p.A before going on to co-found a successful startup incubator and joining the boards of listed businesses in the UK and Germany. In 2013, he co-founded Hyperloop Transportation Technologies after reading the white paper on the transportation technology by Tesla CEO Elon Musk.

What has proven a bigger challenge: constructing a working hyperloop or securing agreements with governments and dealing with the bureaucracy or creating a brand new form of transport?
Of course there are a lot of challenges regarding regulation because it is a big change and a lot of new infrastructure, but we are no longer the crazy guys talking about science fiction. It was a lot for national governments to digest. But when they saw the planning and the skilled engineering we could deliver, it persuaded a lot of them, especially when they came to see the working technology at our test site in Toulouse.

In the long term we don't want to construct or implement anything. We will be a large R&D company and we'll license the technology to the private sector locally. Private companies will create and operate the hyperloops around the world. The model will work because hyperloops will make money for the companies that run them, which is a rare thing for transportation systems like rail networks. They won't need a government subsidy. The dozens of companies that have provided assets are now candidates to build the hyperloops. We retain the IP but they commercialize it across industries, not just within the hyperloop project. When we started, people were laughing and they didn't believe we could achieve what we have done. But now, they don't question the how, only the when.

In terms of leadership, what challenges does your model present?
In a way we created a completely new kind of premise. Traditionally, people work for you because you pay them. In this new environment you have a different relationship with your "employees," because they are your partners and stakeholders. The culture was challenging in the beginning but it gave us an unfair advantage. It's incredible to see the amount of commitment and enthusiasm. It's not like hiring and managing people in the normal way. In the future people will share their time across multiple projects, companies and industries. It will be more efficient and more beneficial than the eight-hour behind-a-desk model. In the crowdsourcing model, people only work the hours they need to, so they are really efficient. This model is not just for the hyperloop, it is a new generation of company that will change the way we develop and progress humanity.

"We have the knowledge and technology to come together and focus on social responsibility, not just the profits."

POWER IN NUMBERS
Bibop Gresta believes collective work is the way to drive progress.

PHOTO: JUSHUA NAVALKAR / FORBES INDIA

You have compared yourself to Janus, the mythical creature with two faces – one looking to the future and one to the past. Why do you identify with that?
When we started, we couldn't hire a hyperloop expert – because they didn't exist – so we had to build a knowledge base. We attracted a mix of retired scientists and young PhDs, on one side looking at the lessons of the past and the other thinking of the future and how we can improve it. The former is NASA, the latter is SpaceX. We mix the two approaches for the best results and it's working well.

What has been your greatest error and how did you overcome it?
I think it was paying too much attention to what the other companies were doing. We were the first in the market, so when [Virgin] Hyperloop One came along they were aggressive. In the beginning, we were very reactive and that was a mistake. When we stopped reacting to the media and began focusing only on the technology, the company changed and we stopped competing. We were just creating the best solution for the hyperloop, that was an important change.

What are your projections for the future?
There are challenges to overcome – there are lots of regulations for example – but we are heading in the right direction very quickly. People will be able to ride in a commercial hyperloop soon. We plan to have the first prototype capable of transporting freight in Abu Dhabi in the next couple of years. That will help us to display the technology in a full-scale environment. After that we are planning to implement 1,000 kilometers of the system per year. We are finishing the design in Abu Dhabi at the end of the year, then construction begins. There is a lot of excitement.

What advice do you give to other ambitious CEOs who want to think big and innovatively?
Now is not the time to build walls and work alone: We should open up and come together to do collective projects that are meaningful for humanity. We have a responsibility because there are big topics that we need to fix. We have the knowledge and technology to come together and focus on social responsibility, not just the profits. We need solutions fast, and it's a new generation of company that will find them. My advice is to use the model we created, or even a new one, to help us go faster together. ■

How global are we?

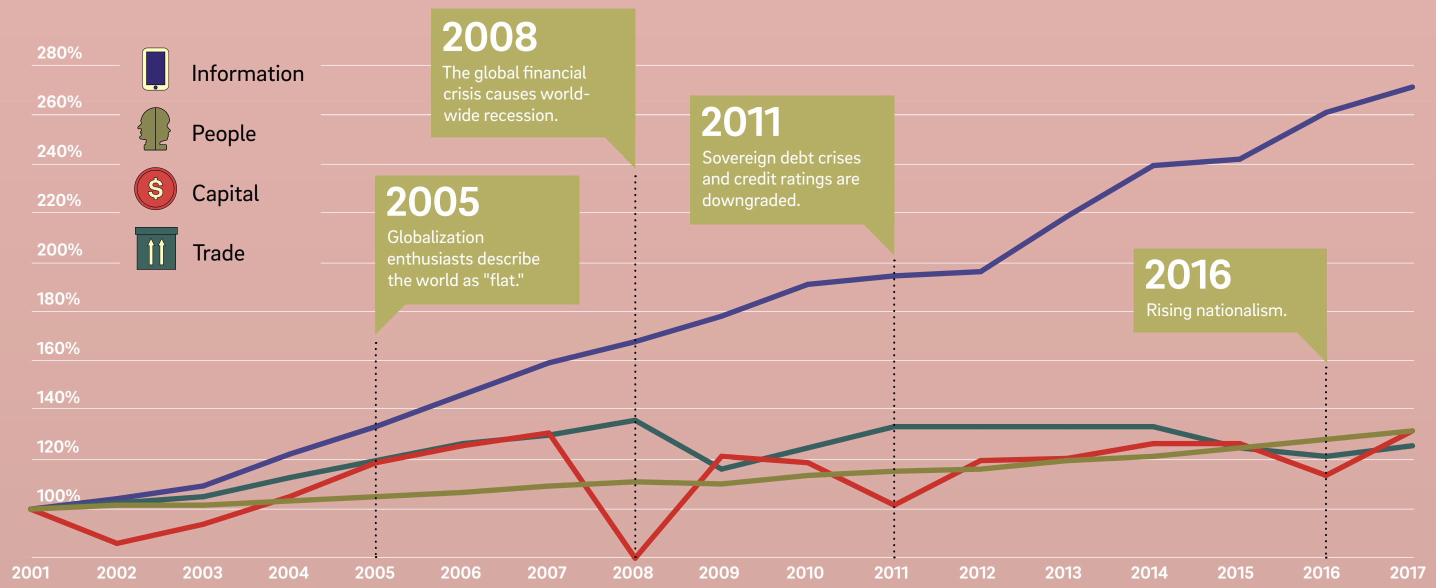
BY ***Janet Anderson***
ILLUSTRATIONS BY ***Maximus Chatsky***

GLOBALIZATION HAS BROUGHT many benefits to businesses, individuals and whole countries, but the recent backlash has called these into question. Amid growing tensions, it is vital to distinguish between perception and reality. Research by Pankaj Ghemawat, global professor of management and strategy at the Stern School of Business at New York University and co-author of the DHL Global Connectedness Index, reveals that we both over- and underestimate the extent of globalization. Getting the facts right can help business and policymakers identify key challenges and spot opportunities.

Information shows the biggest growth in globalization

Recent trade wars and a new nationalism have had an impact on globalization, but not as great as some may think. International flows of products and services (trade), capital, information and people, are still growing overall.

(Based on DHL Global Connectedness Index 2018)

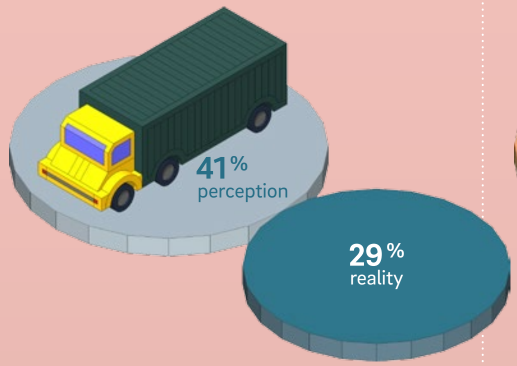


SOURCE: DHL Global Connectedness Index: https://www.dpdhl.com/content/dam/dpdhl/en media-center/media-relations/documents/2019/dhl-gci-2018-full-study.pdf Professor Pankaj Ghemawat: https://ghemawat.com

Public perception differs from reality

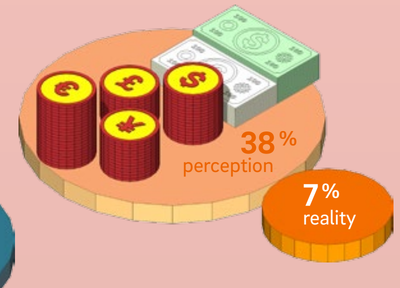
A survey of over 6,000 managers in Germany, the UK, the US, Brazil, China and India, carried out by Pankaj Ghemawat and colleagues in 2017, shows how much we overestimate globalization. In fact, domestic activity far outweighs international – and there is still potential for growth.

TRADE



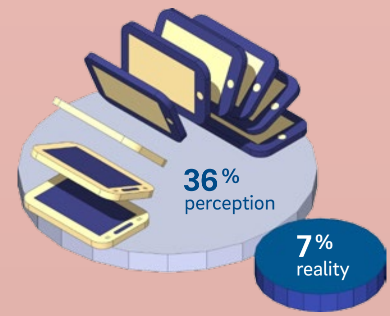
Gross exports of goods and services as a percentage of GDP.

CAPITAL



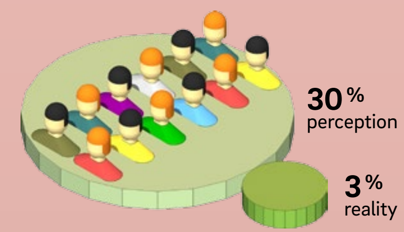
The flow of foreign direct investment as a percentage of gross fixed capital formation.

INFORMATION



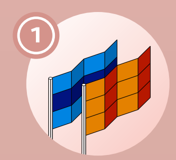
The percentage of telephone calls, including calls over the internet, that were international.

MIGRATION

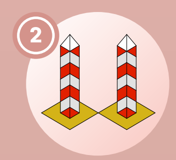


The number of people living outside the country where they were born as a percentage of the overall population.

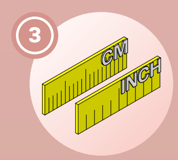
Four takeaways from Pankaj Ghemawat's research:



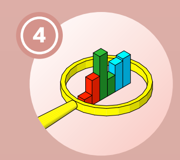
There is still potential. Current trends in nationalism and tariffs have not stopped globalization. There is room for growth, but a realistic approach should be taken.



Most business is domestic. Do not overestimate globalization and assume borders and distance do not matter – they do. Many successful businesses lose money expanding overseas.



Plan the right strategy. Work out whether it is better to offer a standardized product globally or a localized product for each market. Getting the right balance can be vital.



Globalization is not an imperative. Do a cost-benefit analysis that is based on your business reality and not on general assumptions.

Clayton Christensen

Twice ranked No. 1 in the Thinkers50, Clayton Christensen is widely regarded as the world's most influential expert in innovation. His groundbreaking ideas have led to nine best-selling books and four successful companies, including the Innosight consulting firm and the non-profit think tank, The Christensen Institute.

The titan of innovation

With one of the sharpest minds in business, CLAYTON CHRISTENSEN has dedicated his life to stimulating ideas. While he has had his own setbacks, he's still out in front with thinking that could yet change the world.

BY ***Neelima Mahajan***
ILLUSTRATIONS BY ***Jeanne Detallante***

AS YOU MAKE YOUR WAY to Clayton Christensen's office at Harvard Business School, you will pass an impressive artifact: a huge 4th century Roman mosaic, 6.5 meters in diameter, removed from the ancient city of Antioch and finally reassembled here across the floor. The artwork depicts the ocean goddess Tethys, serene and surrounded by sea creatures. In many ways it's a fitting image to set the tone before meeting Christensen. Not only is he a titan of his field with other people's ideas floating around him, but in the same way that this mosaic builds a bigger picture out of smaller fragments, so have Christensen's ideas cumulatively created a wave of influence that is both impressive and unparalleled.

Over a 25-year period, the business guru has focused his sharp mind on the power of innovation in business. In 1995, he coined the theory of disruptive innovation to explain why some companies with fewer resources can dethrone successful, well-entrenched ones. He explored how they were able to do so by focusing on market segments that had been ignored and employing new business models, new technologies or using old technologies in new ways. From that idea, he has built up a larger picture of what innovation can achieve through a series of best-selling books including *The Innovator's Dilemma*, *The Innovator's Solution* and *Seeing What's Next*.

Did he ever expect his theory to take off in the way it did? "We didn't have any aspirations for the theory at all," →

he says humbly, looking back on how that first idea took hold in 1995. He then goes on explain what has driven him to produce such effective theories: "The only way we can identify the future is if we have theories. The second thing is we are looking for anomalies, anything the theory cannot explain. That causes us to figure out why and then explore the theory so it does explain it."

ANOMALIES ARE CLEARLY important to him, and his office proves it. It's filled with objects which offer an alternative mosaic picture that reveals a life well lived, an inquiring mind and a hint of his own personal setbacks. Bookshelves line the walls with titles showing a hunger for new ideas, there's a basketball in a case – a testament to his skill as an accomplished player – and next to his desk, there's a framed photo of him on the cover of *Forbes* magazine titled: The Survivor. It gestures at how this 2-meter giant has had to dodge the curveballs life has thrown at him. A diabetic for decades, he dealt with a heart attack, cancer and a stroke: three life-changing incidents in as many years. He has refused to let his health hold him back and part of his solution has been to work with collaborators including Efosa Ojomo, co-author with Karen Dillon of their new book, *The Prosperity Paradox*. Ojomo is present during this discussion to help him set out some of his ideas.

Even so, Christensen has stood steadfast in this constantly shape-shifting world, both personally with his own setbacks and in a wider context where business ideas are also in flux. His appeal lies in logic so clear that it busts confounding phenomena down to easy-to-understand theories. "You really can see the future if you have a good theory," he says softly. So, how does that apply in an age of hyperacceleration where you are only as good as your last idea? What implications do fast business cycles have for the idea of disruption? "Well, it's hard to know," he says thoughtfully. "My belief however is that one of the theories in our research is

"When the theories begin to shift, we have to change course as well."

interdependence and modularity: If you have an interdependent product, then you have to do everything in order to do anything. If you are modular and open then you can be fast and flexible and responsive. And my sense is what we are seeing and what we think is accelerated growth, it's really the manifestation of interdependence and modularity."

IT'S HIS INNOVATION IDEAS that get more of an airing in his latest work, where he and his collaborators are applying his innovation theories to solve global poverty. Before you can understand how they might do that, you need to know that at the heart of Christensen's thinking is the idea that not all innovations are equal. He distinguishes between three kinds of innovation. First are efficiency innovations, which help make good products cheaper. Second are sustaining innovations, which make good products better. The third kind are market-creating innovations. While the vast majority of companies are stuck in the first and second kind, they don't really spur growth. But market-creating innovations really do make a difference.

Christensen has put this simple, yet often ignored insight to work to help solve the knotty problem of global poverty. His thinking is that to eradicate poverty we must not focus on "trying to fix the visible signs of poverty," but look instead at "creating lasting prosperity" using market-creating innovations. History has shown us that fixing the visible signs of poverty by pushing solutions at them, something that aid agencies have routinely done in country after country, rarely has impact. So he and his team advocate the idea of "pull" instead of "push" interventions.

One clear illustration given in the book is centered on the Singapore-based

ILLUSTRATION: JEANNE DETALLANTE / 2 AGENTEN

company Tolaram, which went into Nigeria 30 years ago to create a market for instant noodles. The country, then under military rule and much poorer than it is today, was hardly a lucrative market at that time. Tolaram, however, saw opportunities others missed: When everybody was looking at low GDP, Tolaram was looking for the "jobs to be done." As Ojomo puts it: "They saw things like rapid urbanization, a lot more women going into the workforce [and being] pressed for time and said if we can solve that 'job' – namely, 'I want to provide a flavorful meal for my family in three minutes' – that would create opportunity." Today, Nigeria eats more instant noodles than any Asian country.

WHAT TOLARAM DID with instant noodles was seed "market-creating innovation," creating jobs and incomes in the process. Over time they extended their range of products, multiplying the impact on Nigeria's economy. Tolaram adopted a "pull" strategy instead of the conventional "push" one, wherein you throw aid and resources at a problem and hope that will solve it. The "pull" strategy, on the other hand, responds to specific struggles of everyday consumers, and in the process of creating innovations, they pull in things like infrastructure, resources and talent needed to bring those innovations to fruition.

For bringing its products to market, Tolaram invested in areas like supply chain and logistics, electricity and sewage treatment facilities, a deep water port and educational institutions. The company now sells 4.5 billion packs of noodles in Nigeria each year, directly employs 7,500 people and makes almost $1 billion in revenue each year. It also pays the Nigerian government nearly $100 million taxes.

The logic behind market-creating innovations, turning non-consumers into consumers, is devastatingly simple. "What we are trying to do in many ways is to teach people theories of causality," says Christensen. "The theories of causalities we teach in our course here are disruption, jobs to be done, purpose brands and so on. And we teach people how to do these things so that when the market starts to change, we can predict in advance what's going to happen even though there's no data. That's the key because God didn't create data for mankind. We have to watch the theories and when the theories begin to shift, we have to change course as well."

How types of innovation affect growth

1 **Efficiency:** Doing more with less, this type can drive down prices and may appear disruptive, but minimizes growth and job creation.

2 **Sustaining:** Making products better keeps a market competitive, but rarely has an impact on consumption or jobs.

3 **Market-creating:** Transforming products to be affordable and accessible, this type of disruption creates more jobs and drives growth in the process.

Don't "push." "Pull."

Instead of "pushing" what you think your market wants or needs, identify a "job" your target market needs done and offer simple, affordable solutions. The new market these products create may "pull" in more than you ever thought possible.

CHRISTENSEN KNOWS all about changing course. His life-changing health events would have knocked the living daylights out of most ordinary people. He lost the ability to read and write after his stroke. He responded to the signifcant setbacks by rebuilding himself. He taught himself to read and write again, and after some time, he returned to his teaching and research. Even while dealing with intense physical challenges, Christensen didn't get bogged down. Instead, he reflected on finding meaning and fulfillment in life and he did it analytically, in classic Christensen style, with a series of questions on, for instance, how to find satisfaction in one's career, how to ensure one's relationships are sources of joy and how to avoid compromising one's integrity. He turned it into a book titled *How Will You Measure Your Life?*, which has had a profound impact on readers and revealed Christensen as a philosopher.

Like Tethys on the mosaic on the floor of his building, he has steered his way through uncharted waters, rising above any setbacks and building fragments of ideas into a grand picture which could yet have the power to change the world. But his real strength is in seeing the power of difference and that is summed up in a small handwritten sign that hangs in his office: "Anomalies wanted," it says. This simple statement and guiding principle shows his belief in the strength that comes from being open to criticism and how it can help challenge ideas and improve theories. And in a field full of people defensive about their work, that makes him a valuable anomaly too. ■

The sky is not the limit

From startups to aerospace giants, a growing number of companies are working on technology that could change your perspective on urban mobility. What will it take to make short-distance air travel just another normal part of city living?

BY ***Geoff Poulton***

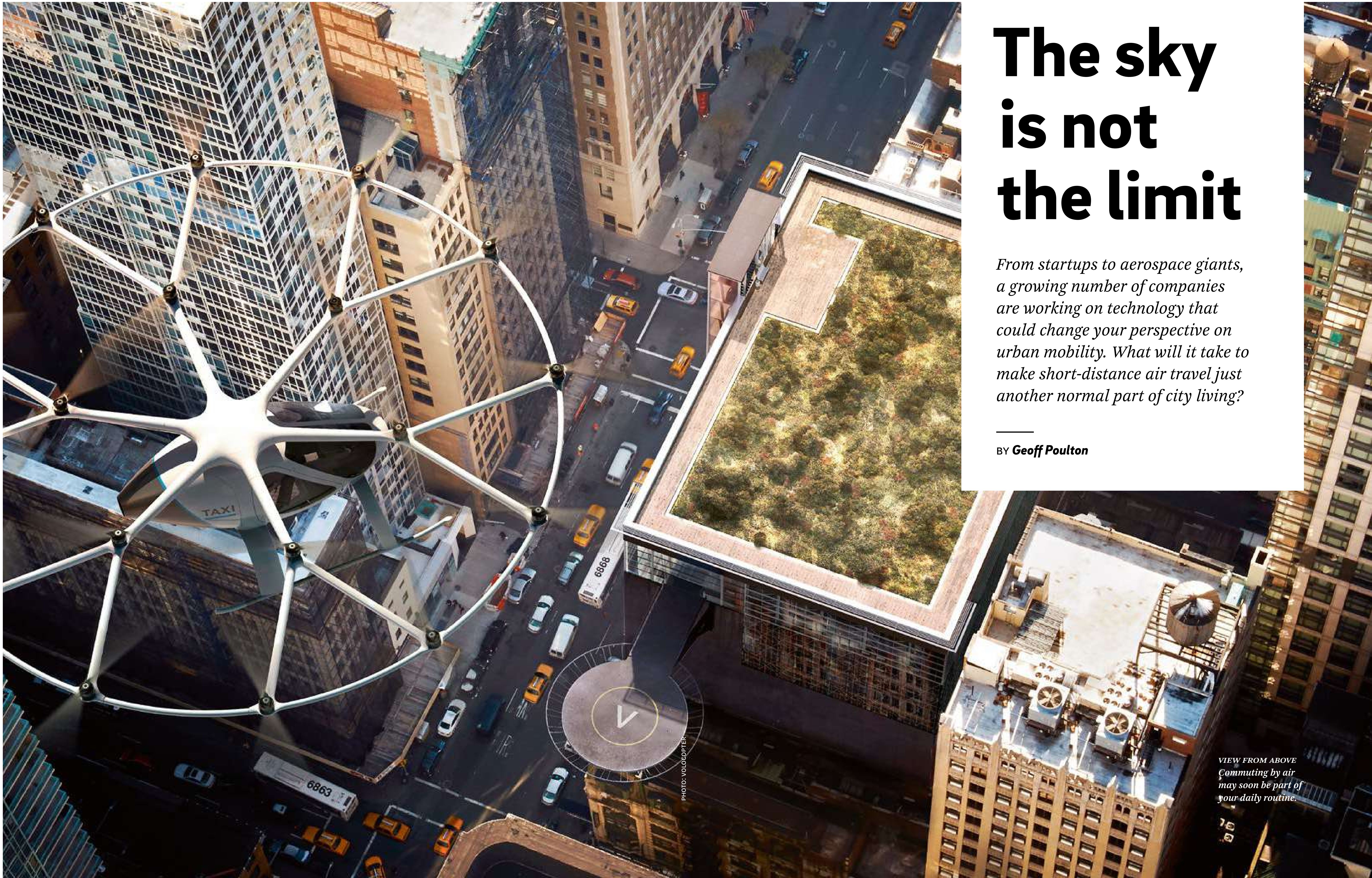


PHOTO: VOLOCOPTER

VIEW FROM ABOVE
Commuting by air may soon be part of your daily routine.

A FLYING START
German urban air mobility startup Lilium's four co-founders stand next to the Eagle, the prototype they successfully tested in 2017.

WE'VE PROBABLY ALL DONE IT. The streets are gridlocked, the cars ahead inching their way forward, if they move at all. You gaze out of the window, look upward and imagine yourself soaring over the congested streets below, arriving unstressed at your destination in a matter of minutes. Then a horn blares and reality punches you in the face. Sadly, science fiction won't save you from your traffic jam. Flying taxis don't exist.

But that might soon change. Around the world, companies from aerospace giants such as Boeing and Airbus to well-funded startups are working on the technology needed to create a new form of mobility. "It almost feels like the project Apollo of our generation," says Brian German, aerospace professor at the Georgia Institute of Technology. Test flights for prototypes are already underway and the dream of flying taxis is expected to become a reality within a decade. Fleets of electric-powered aerial vehicles will carry people and goods through and between cities in minutes rather than hours. Need to send a package? Hail a drone. In a hurry to get home? The next air taxi leaves shortly. "In particular, smaller drones could have a transformative impact on how future populations live, do business and interact," says Carlo Ratti, architect, engineer and director of the MIT Senseable City Lab. "They transcend geographical barriers without the need for large-scale physical infrastructure."

$70

The price German startup Lilium estimates a flying taxi ride between New York's JFK airport and air hubs within the city will cost, a service it hopes to start offering in 2025.

WITH GROUND TRANSPORTATION in many towns and cities stretched to the limit, urban air mobility (UAM) could provide a much-needed alternative. Since 1950, the world's urban population has ballooned from 751 million to 4.2 billion. By 2050, urban areas will be home to a further 2.5 billion people, with more than two-thirds of the total world population living in cities. Urban infrastructures are struggling to adapt, taking a toll on commuters, the environment and our economies. In London, drivers lost an average of 227 hours in 2018 due to congestion; traffic in the United States cost the country $87 billion in lost time last year.

Many cities have tried to fine-tune systems to alleviate the issues, but without more fundamental changes, the scope is limited. By utilizing three-dimensional airspace, UAM could lower pollution, reduce congestion on the ground, cut travel times and even reduce traffic accidents. A combination of recent advancements is driving this change, including lightweight composite materials and improvements in noise reduction mechanisms and communications systems. Perhaps most important, however, are the leaps forward in power-to-weight ratios for batteries that will make electric flight feasible across short distances.

How exactly these vehicles will fly will depend entirely on what they will be used for. To operate in dense urban areas, vertical take off and landing capabilities are a must, eliminating the need for runways. Beyond that, multicopters or quadcopters – something like a helicopter-drone hybrid – offer excellent hovering efficiency, making them ideal for short inner-city hops and deliveries, while fixed-wing vehicles will be better suited to faster flights across longer distances.

European aerospace manufacturer Airbus unveiled its vision for shared urban air travel in March 2019. CityAirbus is being developed with input from Audi and Siemens and will begin flight testing this year. Airbus expects its four batteries and eight rotors will give the vehicle a cruise speed of 120 km/h and a range of 30 kilometers. This is just part of the company's growing portfolio of UAM projects. Vahana, a single-passenger vehicle, has already made its first test flights in the United States, while Airbus UTM looks at how new forms of air traffic management will enable UAM to operate safely and efficiently. "The world is rapidly urbanizing, and ground infrastructure alone cannot meet the demands of tomorrow," said Airbus CEO Tom Enders of his company's UAM activities in a press release. "Adding the sky as a third dimension to the urban transport networks is going to revolutionize the way we live."

PHOTOS: LILIUM

Urban air mobility: the top 5 concerns

1 NOISE
Will the noise and air turbulence be disruptive?

2 AIRSPACE
Is there room for more aircraft? What about visual pollution?

3 COST
Can consumers be convinced to pay the higher cost of air transportation?

4 SAFETY
What can be done to ensure safety both in the air and on the ground?

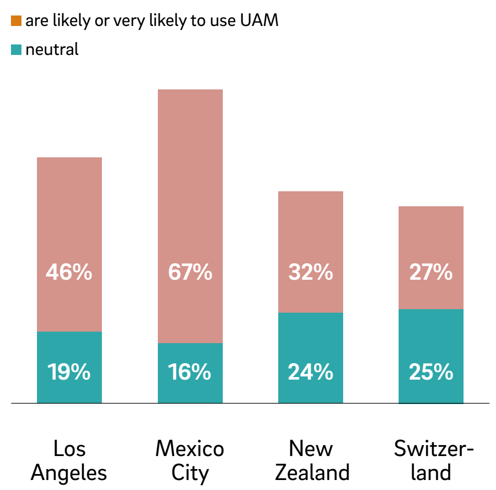
5 PRIVACY
How can we ensure UAM vehicles won't take photos?

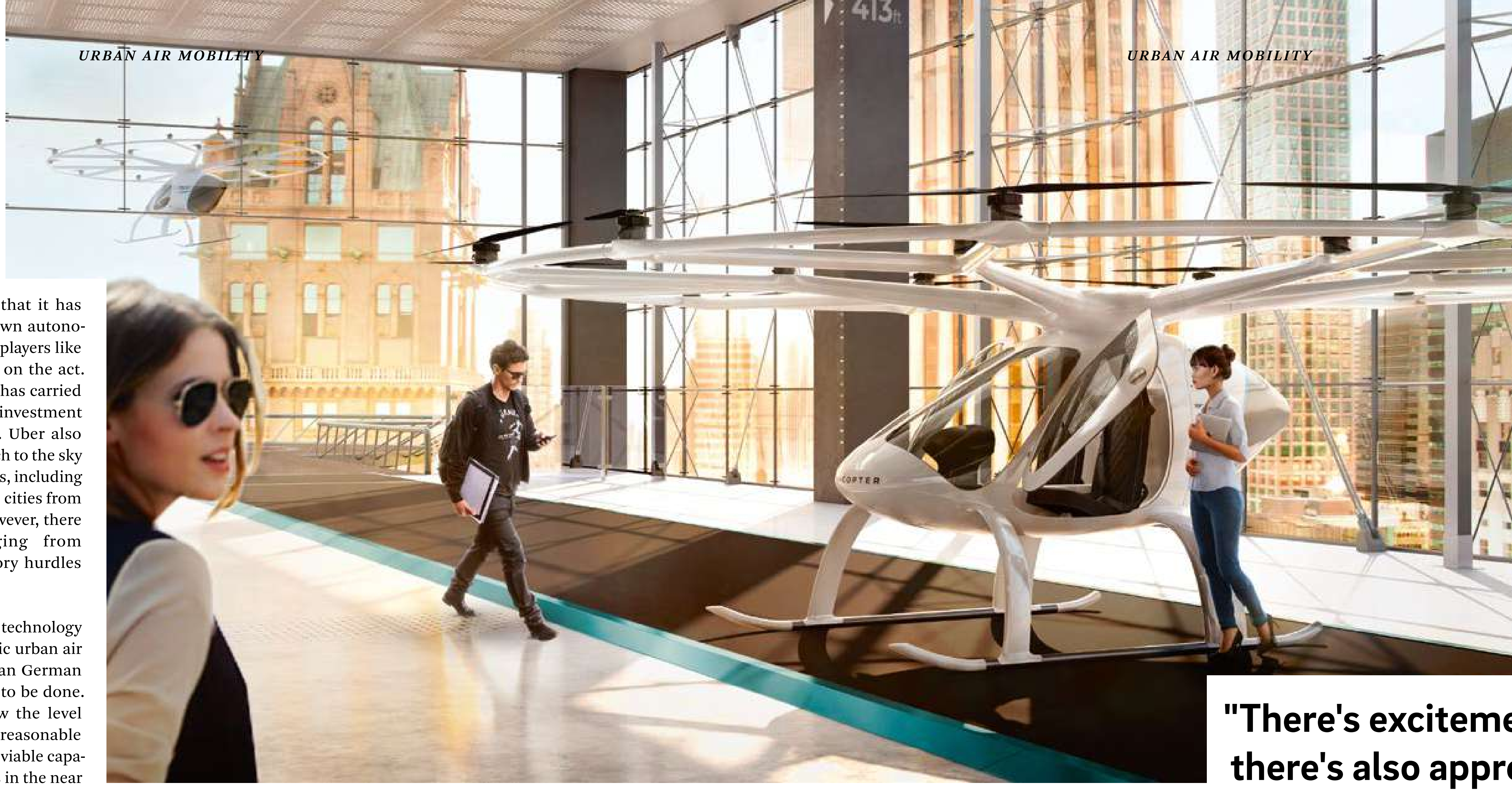
ALSO HOPING TO PLAY A PART in this revolution is Lilium, an ambitious German startup based near Munich. Founded in 2015 by four students, the company attracted leading figures from the worlds of aerospace, autonomous driving and design and has raised more than $100 million in funding. Its two-seater prototype, the Eagle, started test flights in 2017. Lilium has been working on a five-seater version that it expects to unveil in 2019, with entry into service planned for 2025. "Our jet will fly 300 kilometers in just one hour," says Lilium's Head of Communications Oliver Walker-Jones. "We believe connecting not only cities but entire regions will make a major difference to the use case." Cutting travel times by a factor of four, emission-free flights could take people from countryside homes to city-center offices in no time at all.

More than 20 other manufacturers have joined Lilium and Airbus in this increasingly crowded market. In January, Aurora Flight Sciences, ⟶

Tracking the path of public acceptance

For urban air mobility technology to take off, passengers will have to be ready and willing to board. Where does current public opinion stand? Airbus surveyed 1,540 respondents in four key geographic areas to see how likely different populations are to travel locally by sky.





ON THE FLY
Air hubs at key centers such as airports and business parks will enable fast and spontaneous travel.

a subsidiary of Boeing, announced that it has conducted initial flight tests for its own autonomous UAM vehicle. Other established players like Bell and Sikorsky are also getting in on the act. Another German startup, Volocopter, has carried out test flights in Dubai and boasts investment from the likes of Daimler and Intel. Uber also wants to bring its ride-sharing approach to the sky and is working with a variety of partners, including Boeing and NASA, to start flights in US cities from 2023. Before that becomes reality, however, there are significant challenges ranging from technological limitations to regulatory hurdles that must be overcome.

ADVANCEMENTS IN LITHIUM ION battery technology may have brought the dream of electric urban air transport closer to reality, but as Brian German explains, there is still plenty of work to be done. "Right now, we're still 30-50% below the level required for passenger flights of any reasonable distance. I'm confident we'll achieve a viable capability for traveling in and around cities in the near future, but going much beyond 100 kilometers will likely require a new breakthrough."

Electric propulsion is a fundamental pillar of UAM, not just in terms of emissions, but also noise. Lilium claims the noise of its jet will blend into existing background noise during takeoff and landing. No problem in isolation, skeptics say, but scale that up to hundreds of vehicles in the air at the same time and things may sound a little different. "UAM is exciting, but I don't see it as a feasible solution for carrying passengers. There is no way to achieve the lift required for larger passenger vehicles without a vast amount of both noise and air disturbance," says Carlo Ratti. "A city like New York would become unlivable." For that premise to be tested, though, air traffic management has to be able to safely handle a much busier urban airspace.

Uber Air

Keeping a focus on affordability, Uber is working on UAM prototypes that may enable shared aerial journeys between "skyports" that can handle 1,000 takeoffs and landings per hour as early as 2023.

The existing system is tailored to commercial flights for fixed-wing aircraft and relies heavily on human task execution. Airbus says we are already close to exceeding its capacity – and that's just for manned flight.

While some may initially fly with pilots, all the UAM vehicles currently under development aim to eventually travel autonomously. This will not only reduce operating costs, but also improve safety and airspace efficiency, enabling different aircraft to serve multiple purposes. Look out of the window of your flying taxi and you may see dozens of small, pilotless drones whisking deliveries past. For a society that is just beginning to come to terms with autonomous driving, public perception may be the most important factor behind UAM's success. "It's critical," says Oliver Walker-Jones. "We absolutely recognize that if we don't get that right, then the whole thing falls flat. Cost, noise, safety, privacy: There's excitement, but there's also apprehension around the unknown. That's understandable. As a new industry, we have plenty of work to do."

PHOTOS: UBER-ELEVATE; VOLOCOPTER

TO CREATE A NEW INDUSTRY, dialogues and alliances between businesses, authorities and communities are crucial. As part of its Innovation Partnership on Smart Cities and Communities, the European Commission has set up a UAM Initiative to work on demonstration projects in order to increase public acceptance. In total, it is estimated that more than 60 cities around the world currently have active programs to further UAM initiatives.

Rather than passengers, most early use cases are focused on autonomous delivery vehicles as a means of testing in a lower-risk environment. In Switzerland, for instance, lab samples are being flown between local hospitals by drone, while in Iceland, drones deliver parcels from online retailers to customers. Similar projects are scheduled in Finland, China and the United States.

The learning curve is set to be a steep one, says Brian German. "There's a pretty wide gulf between testing prototypes and operating vehicles commercially. It's great that we're starting to see things fly, but the pathway to certification, particularly for passenger vehicles, is going to take some time." Precisely who those passengers will be remains to be seen. Veteran aerospace industry expert Richard Aboulafia has been a vocal critic of UAM, saying it is "decades away from readiness."

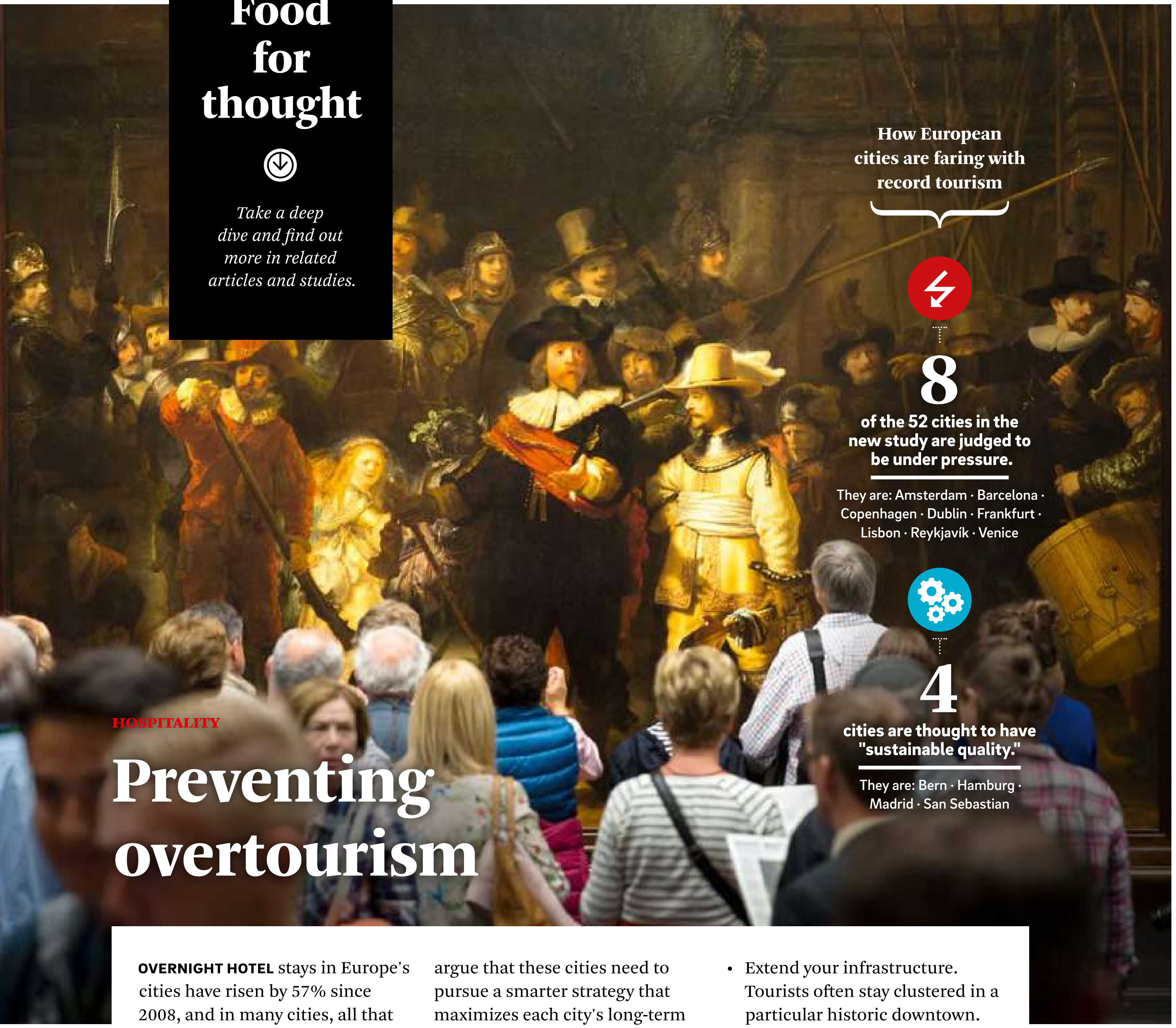
Manufacturers, however, are understandably more optimistic. By 2025, Lilium hopes to offer a trip from JFK airport to midtown Manhattan for around $70. By road, the journey can take about an hour, but by air it would take just five minutes. And that is ultimately UAM's biggest selling point. For many, time is the most valuable commodity there is – and who wants to spend it in traffic? ■

"There's excitement, but there's also apprehension around the unknown ... As a new industry, we have plenty of work to do."

Oliver Walker-Jones, *Head of communications at Lilium*

Food for thought

Take a deep dive and find out more in related articles and studies.



How European cities are faring with record tourism

8

of the 52 cities in the new study are judged to be under pressure.

They are: Amsterdam · Barcelona · Copenhagen · Dublin · Frankfurt · Lisbon · Reykjavík · Venice

4

cities are thought to have "sustainable quality."

They are: Bern · Hamburg · Madrid · San Sebastian

HOSPITALITY

Preventing overtourism

OVERNIGHT HOTEL stays in Europe's cities have risen by 57% since 2008, and in many cities, all that popularity has come at a cost to the quality of life for local residents as well as for travelers.

In a recent study, Roland Berger in partnership with the Austrian Hotelier Association examined the visitor data and tourism practices of 52 European cities and found that many of the cities have pursued more visitors without having a strategy for sustainable growth. Roland Berger analysts argue that these cities need to pursue a smarter strategy that maximizes each city's long-term value as a home and as a travel destination. In particular, they suggest:

- Market to particularly desirable segments of travelers.
- Promote different neighborhoods and out-of-season visits to reduce the crush of visitors.
- Encourage the development of upscale lodging. Higher-priced rooms mean better-heeled – and fewer – tourists.
- Extend your infrastructure. Tourists often stay clustered in a particular historic downtown. New attractions outside the core, supported by new transportation infrastructure, can help distribute tourists better.
- Limit access with caps on driving, timed entry tickets, and stricter lodging regulations.

→ **IN A SQUEEZE**
Read all about the latest strategies for promoting sustainable tourism growth: https://rb.digital/2JseaZ1

PHOTO: GETTYIMAGES | SOURCES: CB INSIGHTS

THE SIMPLICITY CHALLENGE

Detox your business!

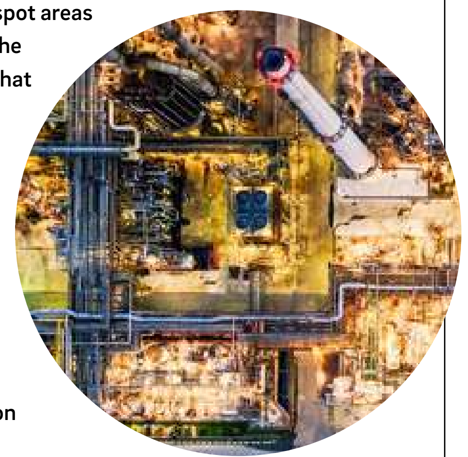
Lots of people these days take time out to refocus and simplify their lives. So should your company too? A new paper by Roland Berger Partner Jörg Esser argues that as the pace of innovation increases, customer demands grow and value chains give way to value networks, the best strategy for many companies is to find ways to simplify their business. And the best way to do so, Esser argues, is by pursuing a three-step process. The first step is to define the offering more carefully. Second, detox your operations, that is, outsource anything that is outside your core business. The third and final step is to declutter your organization through the simplification of its governance structure. These simple structures help successful companies master the delicate balance between cost-efficiency and adaptability.

→ **DEFINE AND DECLUTTER**
Read unique insights on the trends that are making simplification a necessity: https://rb.digital/2VPUwNn

ASSET INSPECTION

Drone surveillance will cut maintenance costs

Oil rigs, chimneys, antennae: Physical infrastructure has generally demanded a regular, sometimes risky – and often expensive – physical inspection. "Drones have the potential to become the new standard in inspection and maintenance," says Roland Berger Principal Uwe Weichenhain. Already today, unmanned drones with advanced visual and analytical capabilities are able to spot areas of wear and tear. Soon, he predicts, any situation that meets the so-called 4D criteria – dull, dirty, distant or dangerous – may become a job for an inspection drone. Depending on the application, inspection costs may be anywhere from 50% to 90% cheaper – not to mention 100% safer.



→ **EYES IN THE SKY**
Get up to speed with the latest technology that's changing the future of asset inspection: https://rb.digital/2DYH9jB

PHOTOS: GETTYIMAGES (2)

AUTOMOTIVE DISRUPTION

Progress for autonomous vehicles accelerates

4.3%

of all auto sales in China are electric vehicles (EV), making it the world's largest EV consumer.

"Developments are now moving incredibly fast."

DR. WOLFGANG BERNHART, Senior Partner at Roland Berger on the rapid progress with autonomous vehicles

THE TRANSITION to autonomous mobility is accelerating, according to the latest edition of Roland Berger's Automotive Disruption Radar. As regulators in more markets move to permit testing of autonomous vehicles, more countries introduce 5G networks (the next generation needed to direct most driverless navigation systems) and venture capital firms pour billions into related startups, Roland Berger analysts now believe that the first autonomous vehicles may launch as soon as 2020. But even if full adoption might take longer, some may miss the boat. The most promising work is being done by tech giants, such as Google's Waymo and a few startups. Analysts say that traditional original equipment manufacturers must cooperate closely now or risk losing their role in the future.

→ **HITTING THE GAS**
Find out more about who's passing the competition: https://rb.digital/2VUi4R8

Finding solutions in reason

Experimental psychologist and social researcher **STEVEN PINKER** *thinks it's time we revisit the ideals of the Enlightenment. Here he answers three questions concerning humanity's* ***long-term advancement.***

THE STATE OF GLOBAL AFFAIRS has some feeling like we are entering humanity's end days. In his new book *Enlightenment Now*, Pinker details why this thinking is incorrect and why now more than ever we must all vigilantly defend the values of reason, science and humanism.

1 How will big data continue to change our world?
Our decisions will be more based on reality. Any judgement under uncertainty is fallible, but human intuition is a low bar – one of the most robust findings in psychology is that humans predict outcomes less accurately than even simple algorithms.

2 Is it true? Have we really never had it so good?
In most ways, yes. We are healthier and longer-lived. We are better educated, less poor, more peaceful and more democratic. We are safer, less sexist and less racist, better socially connected and have greater access to knowledge and culture.

3 Do you think the values of the Enlightenment can prevail?
They can, although that does not mean they will – they need a constant defense against the darker side of human nature, with its tribalism, authoritarianism, magical thinking and zero-sum mindset. Gut instincts are fine for personal tastes, but for business and political policies, and for living a wise and satisfying life, reason is superior. That, perhaps, is the most important lesson of the Enlightenment. ■

Steven Pinker
Currently a professor of psychology at Harvard, Steven Pinker has also taught at Stanford and MIT.

PHOTO: LAIF / REDUX / BRYCE VICKMARK | ILLUSTRATION: SASAN SAIDI

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→ PAGE 44

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→ PAGE 58

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