

Breakthrough Business Leaders, Market Revolutions



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WE NEED A REVOLUTION OF CAPITALISM

Peter Bakker

President, WBCSD;
Former CEO of TNT

Volans Foreword

Business is increasingly critical in tackling the world's great environmental, social and governance challenges. And at the heart of business sits the C-Suite, the grouping of senior executives who direct the enterprise. *Breakthrough* is addressed to them—and to those who advise them.

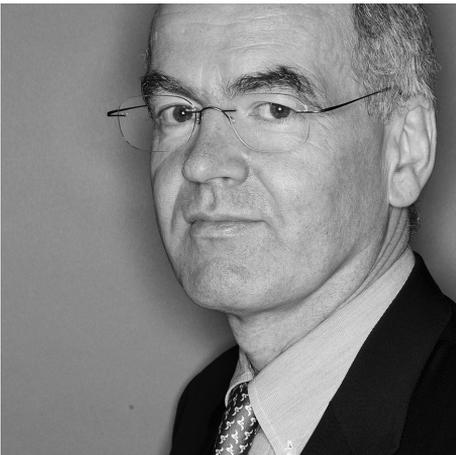
The context is that a series of giant societal pressure waves has impacted governments, business and financial markets in recent decades. Sometimes the changes they drive are predictable, but often they are complex and non-linear (see page 4). The latest wave focused on the emerging concept of 'sustainability' (see Figure 5.1, pages 28–29). Now, with that wave receding from its peak, we must begin to build the next wave—focusing on Breakthrough solutions across the economic, environmental, social and governance agendas. Our criteria for Breakthrough change can be found on page 18.

Meanwhile, at least in some countries, we see growing concern about 'zombie businesses,' propped up by government loans and spending all their cash on servicing debt—rather than investing in growth.¹ But what if climate change created zombie economies? The 2013 World Economic Forum global risk report noted that the world economy is at growing risk as “persistent economic weakness saps our ability to tackle environmental challenges.”²

The relative failures of the UN Rio+20 and Doha COP-18 summits in 2012 underscored the progressive weakening of the post-WWII system of global governance. Our latest survey reveals both real frustration in business about government failures, and a growing appetite at the leading edge to drive Breakthrough change. Currently, and paradoxically, our best hope for sustained Breakthrough at scale may lie in the C-Suites of incumbent businesses.

A new breed of business leaders is emerging, calling for “market revolutions.” Peter Bakker, president of the World Business Council for Sustainable Development (WBCSD), speaks of an impending “revolution of capitalism.” Like-minded leaders also include David Blood of Generation Investment Management, Sir Richard Branson of Virgin, Ian Cheshire of Kingfisher, Arianna Huffington of *Huffington Post*, Larry Page of Google, Paul Polman of Unilever and Jochen Zeitz of PPR.

These are some of the higher profile mainstream business champions, but experience shows that the field of social enterprise is full of such people—who have much to teach about effective system change. Take the case of Vera Cordeiro, a now internationally known physician in Brazil. She was frustrated because she kept seeing the same children turning up for treatment. Concluding that the real problems were in their home and social environments, she founded Associação Saúde Criança to address the relevant system conditions (among others, sanitation, nutrition and psychological challenges).



John Elkington
Co-Founder and Executive Chairman
Volans



Susie Braun
Consultant and On Purpose Associate
Volans

It would be great to be able to distil and bottle that spirit—and then liberally apply it across the Global C-Suite. The key characteristic of these pioneers is that they are not happy simply patching dysfunctional systems. They want to create new ones, that work in different ways. And while it is certainly unusual for business leaders to call for market revolutions, the pressures for change have been intensifying: western-style capitalism, as we all know, has been in a protracted crisis.³

This protracted downturn is something we forecast in our first market report, *The Phoenix Economy*, published early in 2009.⁴ Key to the analysis was our 5-stage model (see Figure 0.1), running from the ‘Eureka!’ moment through to the point where a new way of doing things is endemic across the entire ‘Economy’.

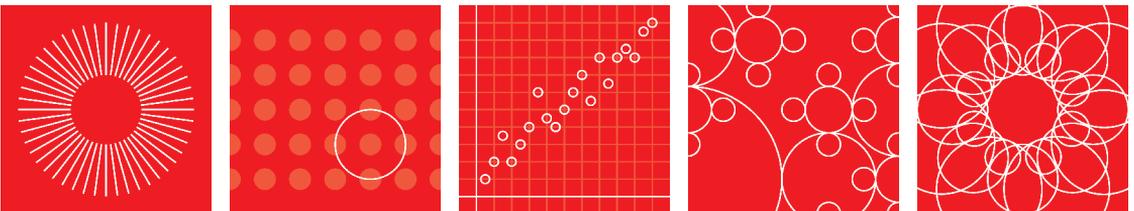
Now *Breakthrough*, our seventh publication to date (see listing on back cover),⁵ draws on five years of work—and over 100 interviews with key people in the field for this project—to sketch a Manifesto and linked agenda to help us move towards Breakthrough change. Our mapping of progress to date can be found on page 51, tracking the evolution of the agenda from early denial to today’s growing interest at the leading edge of business in catalysing market revolutions.

Here’s how *Breakthrough* runs:

- Chapter 1 outlines our Manifesto, version 1.0.
- Chapter 2 introduces the nature and scale of the challenges.
- Chapter 3 sketches three scenarios: ‘Breakdown,’ ‘Change-as-Usual’ and ‘Breakthrough’.
- Chapter 4 outlines key elements of the emerging agenda for the Global C-Suite.
- Chapter 5 focuses in on seven domains of system change.
- Chapter 6 considers next steps.

We warmly thank Generation and Tellus Mater for their sustained, engaged support for the Breakthrough Capitalism Program.⁶ Our wider Acknowledgements section begins on page 55, listing—among others—those interviewed, and those who presented at the 2012 Breakthrough Capitalism Forum. Because of the document’s format, we have been unable to quote all our interviewees directly, but their contributions are shot through everything that follows. Thank you all.

Figure 0.1
Pathways To Scale
 Source: Volans



- | | | | | |
|--|---|---|---|---|
| <p>1
 Eureka!
 Opportunity is revealed via the growing dysfunction of the existing order</p> | <p>2
 Experiment
 Innovators and entrepreneurs begin to experiment, a period of trial and error</p> | <p>3
 Enterprise
 Investors and managers build new business models, creating new forms of value</p> | <p>4
 Ecosystem
 Critical mass and partnerships evolve new markets and institutional arrangements</p> | <p>5
 Economy
 The economic system flips to a more sustainable state, supported by culture change</p> |
|--|---|---|---|---|

Generation Foreword

A breakthrough to a more resource efficient, low carbon and sustainable economic system is under way. Climate change, manifested by more extreme weather events and volatile commodity prices, is impacting many aspects of economic activity, driving a need to be more resource efficient, cutting emissions and wasteful use of natural assets. But forecasting wider trends is complicated because these challenges, and our collective responses to solving them, occur in non-linear ways.

The unpredictability of extreme weather events and the pace of market adoption of solutions illustrate this trend of non-linear change. The drumbeat of adoption of solutions such as renewable energy, LED lighting, data centre efficiency, industrial energy efficiency and bio-based products is clear. In our experience, too, there is significant opportunity for achieving superior investment returns in the context of the transition to a low carbon, sustainable economic system, while at the same time de-risking investors' portfolios by shifting them away from carbon-intensive assets.

The role of investors in enabling market adoption of Breakthrough solutions is fundamental. But it is worth noting that investors come in all shapes and sizes, with varying degrees of risk appetite.

- Investors seeking above market returns need to take risk to get rewarded, and this translates into an array of risk taking and risk diversification approaches.
- Risk capital, typically deployed via equity funds of various kinds, is required to fund losses of emerging innovative growth businesses.
- At later, more de-risked stages of investing, project investors are required to fund the build out of clean energy infrastructure, often a highly capital intensive process.
- At the social entrepreneurial level, impact investors accept significantly lower financial return in exchange for higher societal impact.

The fact that the pace of adoption of many Breakthrough solutions has been unpredictable has meant the sustainability sector hasn't been without its challenges, but there is evidence that such solutions continue to penetrate ever larger markets. The activities of investors, entrepreneurs, corporations, civil society and governments, coupled with evidence provided by the scientific community, suggest that the re-tooling of the industrial complex is an imperative that increasingly is defining our collective economic prospects.

Global trends towards resource-intensive lifestyles are undiminished, suggesting the likelihood of non-linear adoption of many Breakthrough solutions. And that's a message that the market revolutionaries spotlighted here are sending through their actions.



Colin le Duc
Partner
Generation

Tellus Mater Foreword

We are in unprecedented times. The global community is grappling with a rapidly changing economic, social and political environment.

On the one hand, it offers tremendous opportunity for innovation, thanks to highly digital, open-sourced infrastructure. On the other, endemic short-termism, lack of political leadership, civil unrest and public demand for greater corporate accountability are putting untenable pressure on our outdated institutions.

Poised on the edge of economic breakdown, system change is necessary to create a world that can exist within planetary boundaries. At Tellus Mater, a family foundation dedicated to catalyzing the shift to sustainable capitalism, we have come to recognize that the only way to make sustainable long-term progress is to embrace increasing complexity and interconnectivity, and adapt our strategy accordingly.

Inspired by the ‘systems maps’ presented by Marshall Clemens of Idiagram (see page 14) at the 2012 Breakthrough Capitalism Forum, we have embarked on a mapping project to help us better understand how to harness the incredible power of capital markets to move away from short-term exploitative “business-as-usual” practices that currently prevail, towards systems that preserve and enhance natural capital.

Through intensive research and dialogue, we are beginning to see a narrative emerge, from which we’ve gained the insight necessary to crystallize our own strategy and understand where we fit within the wider system. Going forward, we will continue to use the maps as a way to inform and consolidate our coalition of stakeholders and grantees to drive more meaningful systemic change than any of us could achieve on our own.

As a funder and early supporter of Volans in developing the Breakthrough Capitalism agenda, we have had the privilege of both co-creating this movement from the inside and observing it develop from the outside, learning from its momentum and its challenges. Participation in the Breakthrough Capitalism Program has helped us understand the interconnected reality that defines this precarious moment in history, as well as identify pressure points within the system that we can target for maximum impact.

The Breakthrough trajectory outlined in this report provides a clearer framework of tangible interventions that can shape forms of capitalism that work in our long-term best interest. This is just the beginning, and we look forward to supporting others as they take up the call to action.



Kelly Clark
Director
Tellus Mater

1

Manifesto

What We Want



**EXTREME
IS THE NEW
NORMAL**

New Scientist

18 January 2013

Business leadership is now make-or-break in rebooting capitalism

A specter is haunting the global economy—the specter of economic, social and environmental breakdown. Some people will instantly recognize that these words echo the *Communist Manifesto*, published in 1848.⁷ We are champions of future-ready capitalism, but it is hard when re-reading Marx and Engels to ignore the striking parallels with today's world, with an old order breaking down—and a new one struggling to be born.

The bloody chaos that ensued as various forms of communism helped socialize capitalism, forcing wrenching changes in wealth distribution, suggests that the timing and scale of our responses will determine the future prospects of billions of people. But at a time when we are incurring ever-greater debt—including environmental debt imposed on future generations—it is time for a giant, sustained deleveraging of our economies. Drawing on the 26 presentations at our first Breakthrough Capitalism Forum⁸ and some 100 subsequent interviews with leading figures in the field, we have distilled the various calls for action into this brief Manifesto. It is set in the context of the three scenarios spotlighted at the Forum and on pages 16–19: 'Breakdown,' 'Change-as-Usual' and 'Breakthrough.'

Volans is pursuing several Breakthrough trajectories. They include the promotion of zero-based targeting in business and public policy, with our agenda laid out in *The Zeronauts: Breaking the Sustainability Barrier*;⁹ our involvement in initiatives pushing the boundary of science and technology, among them Biomimicry 3.8,¹⁰ founded by Janine Benyus, and cleantech venture fund Zouk Capital;¹¹ and C-Suite-focused platforms like The B Team,¹² whose co-presidents are Sir Richard Branson and Jochen Zeitz, former CEO of PUMA (pages 17 and 26). Among projects in the pipeline: a new book, *Tomorrow's Bottom Line*, co-authored by John Elkington and Jochen Zeitz.

Breakthrough Manifesto 1.0

1 Breakdown is coming

Climate change, resource crunches and population growth mean that life in this new century of ours will be increasingly turbulent. “Extreme is the new normal,” concludes *New Scientist*.¹³ The magazine was talking about climate change, but the forecast applies more broadly. Lack of technology is not now the critical problem, recent surveys suggest (Figure 1.1, page 9). Key barriers include lobbying by those invested in the old order, ignorance (some of it willful), the complexity of the issues and responsibilities, the uncertainty that this complexity can induce, and the pervasive lack of political will.

Despite the lack of political will, system change is inevitable—the challenge is to shift our organizations from change-as-usual tactics to Breakthrough strategies.

2 Economic stimulus packages have skirted today’s disasters

But governments, struggling to rescue today’s economies, have often failed to effectively incubate tomorrow’s more equitable, radically lower carbon economy. The Breakthrough scenario (Figure 3.1, page 16), among other things, depends on massive, sustained investment—in science, in the deployment of technologies, in infrastructures, in business models affording access to life’s necessities for the have-nots, and in skills and education. Even more complex, it also depends on fixing trade and international agreements, filling regulatory gaps, and at the same time removing unnecessary regulatory constraints that slow progress.

Just as commercial start-ups help ‘de-risk’ technologies and business models for business, so civil society platforms can help de-risk new policies and governance models for governments—business must support them to do more, better, faster.

3 It’s time to do the Breakthrough politics

Economic, environmental, social and governance challenges are becoming critical, but government leadership is often conspicuous by its absence. Witness recent UN summits in Copenhagen, Rio de Janeiro and Doha. Despite President Obama’s climate-friendly second inaugural address, there is an immense inertia in the current political system, perhaps most strikingly in the USA, the EU, India, Japan and China. This is particularly problematic since coherent, timely and effective public sector action will be essential to spur and sustain the necessary market revolutions.

Governments and public sector agencies must develop and implement Breakthrough visions, mandates, rule-making and the necessary market incentives—and business has a key role to play in ensuring this happens at the right speed and scale.

4 Business leadership is make-or-break

Although the GlobeScan/SustainAbility survey (Figure 1.1, page 9), somewhat surprisingly, ranks business inaction low when it comes to sustainability barriers, societal expectations of business are changing, fast. As a result, growing numbers of business leaders are helping to push the needle and arguing the business case for market revolutions in such areas as accounting, valuation and economics.

The time is almost past for going it alone. The nature and scale of the challenges now dictate that we work together. If you want to go fast, as the old proverb puts it, go alone—but if you want to go far, go in company.¹⁴

5 Financial markets are almost willfully blind to future risks—and opportunities

There are honorable exceptions, including the socially responsible investment (SRI) and clean tech venture capital sectors, but market myopia has been further aggravated by scandals undermining public trust in both financial institutions and their regulators. Breakthrough will not happen without strong, competent and courageous financial markets.

We must energetically fund the development and deployment of the technologies, products, services and business models that drive Breakthrough innovation and enterprise.

6 Disruptive change is needed

Some problems can be treated with sticking plasters or acupuncture; others require radical surgery. Too many twentieth century institutions—and even models of activism—are now increasingly unfit for purpose. Among challenges that top the current agenda are new forms of accounting, integrated reporting, and incentives to drive longer-term investment, but disruption will involve many other vectors of change (see Chapter 5).

Consider defining your own ‘Grand Challenges’, a process The B Team has already embarked upon.¹⁵ Support—and learn from—such initiatives. Disrupt your organization—before disruption is forced upon it.

7 Join us

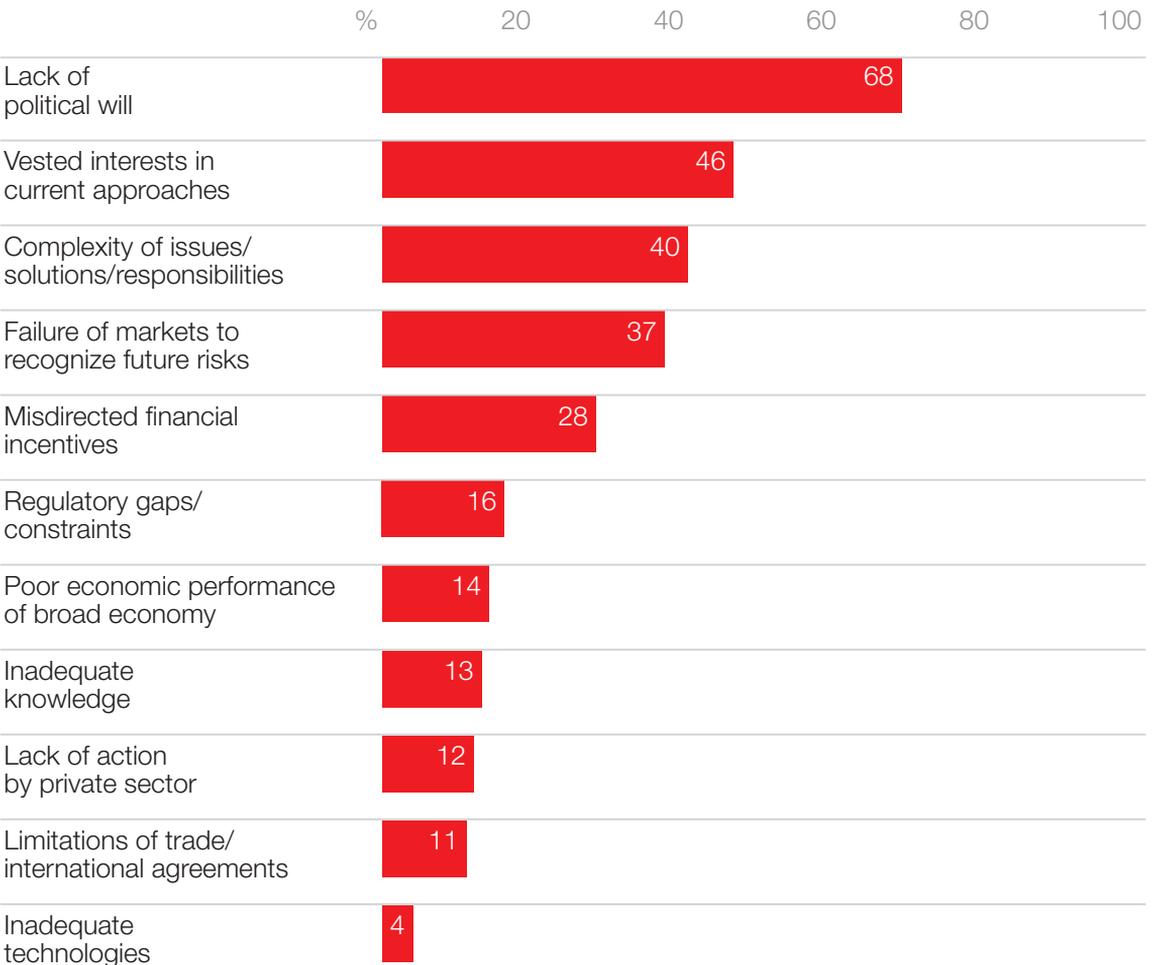
This is very much work in progress. We plan to refine the various elements of the evolving agenda through a series of Breakthrough Labs and Forums. Please send us your comments on this short report at breakthrough@volans.com.

And our question to you: how can we support your own Breakthrough efforts?

Figure 1.1
Barriers To Breakthrough Change

Source: GlobeScan and SustainAbility

Based on a 2012 survey of 1,660 experts in 117 countries. The original question related to progress in implementing 1992 Earth Summit’s Agenda 21, sadly still a reasonable proxy for Breakthrough change.¹⁶



2

Context

The System Is Blind

**WE BURNED
OUR WAY TO
PROSPERITY**

Ban Ki-moon

UN Secretary-General

An old order is coming apart, a new one struggling to be born

At our Breakthrough Capitalism Forum,¹⁷ speaker after speaker stressed that the inertia of that old order is now a massive constraint on system change efforts. “The system is blind to potentially existential threats,” warned Jeremy Leggett, a leading solar energy entrepreneur. He argued that the current order is “dysfunctional almost to the point of being suicidal.”

Nor is he the only one to have reached this conclusion. UN Secretary General Ban Ki-moon has also stressed that our economic mindset and models increasingly look like “a global suicide pact.”¹⁸ We “mined our way to growth,” he said. “We burned our way to prosperity. We believed in consumption without consequences.”

The UN, famously, is headquartered in New York. And more or less on the eve of America’s 2012 presidential election, Superstorm Sandy hit the country’s eastern seaboard and, most dramatically, New York City. One of the clearest voices for Breakthrough change as the scale of the damage became clear was New York mayor Michael Bloomberg.

“Our climate is changing,” he warned in his unexpected endorsement of President Obama. He insisted that Sandy “should compel all elected leaders to take immediate action.”¹⁹ Unlike many leaders, however, he was able to report real progress in his home patch.

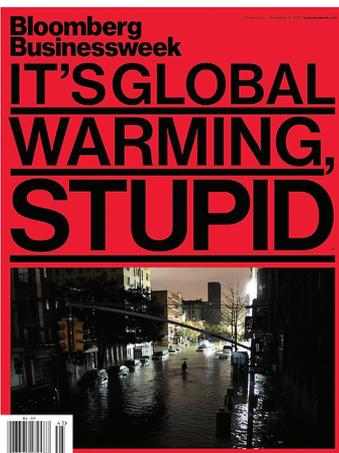
“Here in New York,” he said, “our comprehensive sustainability plan has helped us to cut our carbon footprint by 16 percent in just five years, which is the equivalent of eliminating the carbon footprint of a city twice the size of Seattle. Through the C40 Cities Climate Leadership Group—a partnership among many of the world’s largest cities—local governments are taking action where national governments are not.” In one of the most interesting responses to Sandy, Bloomberg’s main business publication, *Bloomberg Businessweek*, ran what rapidly became an iconic cover (Figure 2.1).

The water-energy-food nexus

As these issues are increasingly framed as security challenges, intelligence agencies—among them the US National Intelligence Council (NIC)—are forecasting systemic crises that sound very much like those heralded by environmentalists a few decades back.

In response, companies are forming new constellations, including one focused around Shell. “In the water-energy-food stress nexus, you have quite important linkages,” explained Ruth Cairnie, Shell’s executive vice president for strategy and planning—using the American, ironic sense of ‘quite.’²¹ “You need water to develop energy. You need energy to treat and to transport water. You need energy and water to produce food. So [...] you need to look at all of these issues in a joined-up way. Because if you try to find solutions for just one of the issues you’ll find unintended consequences, perhaps making the others more of a problem.”

Figure 2.1
Global Warming Makes The Front Cover



“I want our President to place scientific evidence and risk management above electoral politics.”

Michael R Bloomberg

New York Mayor

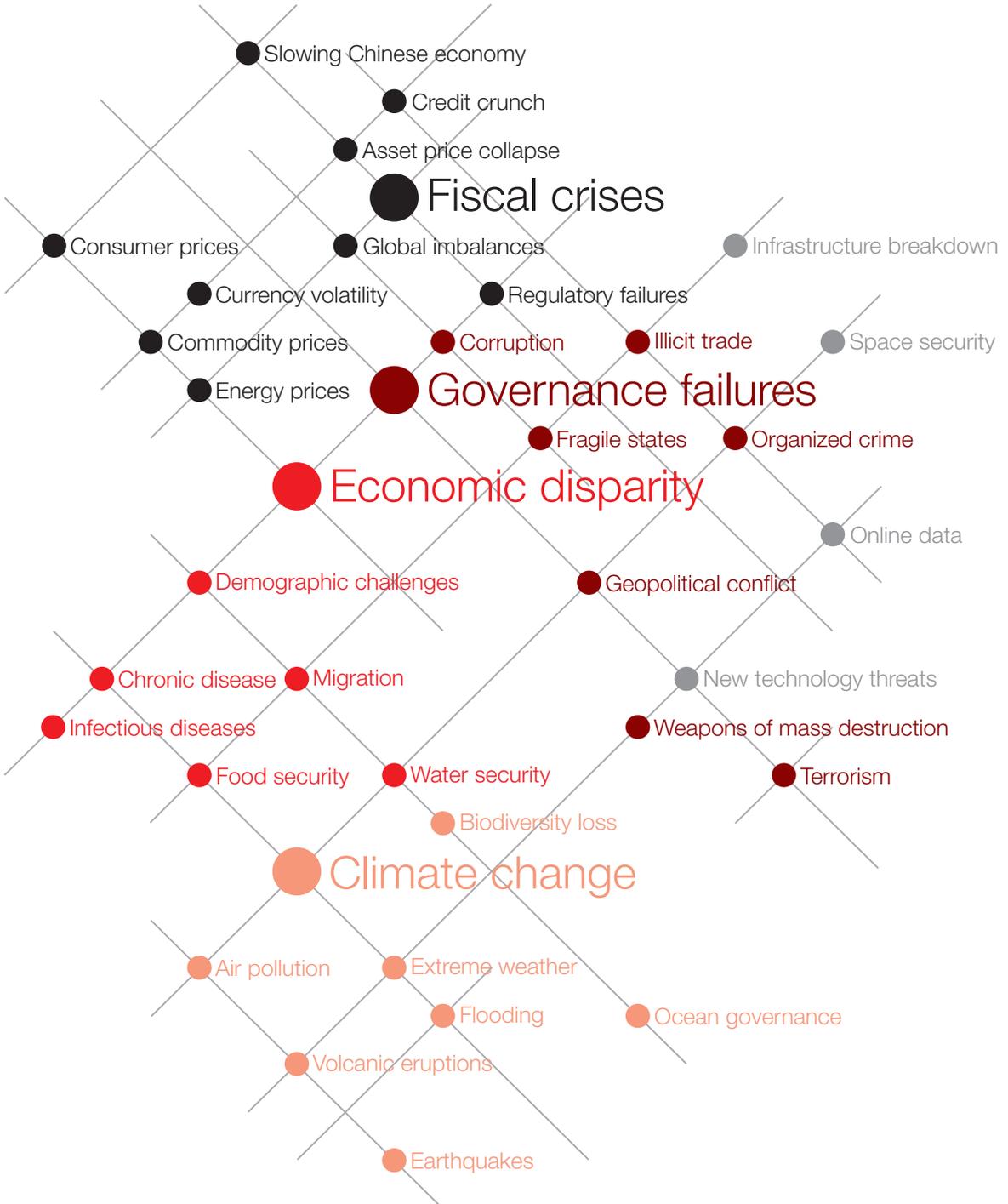
*Bloomberg View*²⁰

Figure 2.2

Interconnected Risks

Data adapted from Risks Interconnection Map, World Economic Forum, 2011

- Technological risks
- Economic risks
- Geopolitical risks
- Societal risks
- Environmental risks



Capitalism is dead, long live capitalism

By 2030, Shell forecasts, we will need 30 percent more water, 40 percent more energy, and 50 percent more food than today.

By the same year, the NIC concludes, the world will be: "... radically transformed from our world today. By 2030, no country—whether the US, China, or any other large country—will be a hegemonic power. The empowerment of individuals and diffusion of power among states and from states to informal networks will have a dramatic impact, largely reversing the historic rise of the West since 1750, restoring Asia's weight in the global economy, and ushering in a new era of 'democratization' at the international and domestic level. In addition to individual empowerment and the diffusion of state power, we believe that two other megatrends will shape our world out to 2030: demographic patterns, especially rapid aging; and growing resource demands which, in the cases of food and water, might lead to scarcities. These trends, which are virtually certain, exist today, but during the next 15-20 years they will gain much greater momentum."²²

Early Breakthrough initiatives seek to address the systemic nature of such challenges, but most are as yet experimental, fragmented and not in clear line of sight for key decision-makers—often because they fail to provide short-term pay-offs in terms of jobs, revenues and taxes. Worse, emerging solutions are often fiercely contested by incumbents, because they threaten their business models.

It's worth noting, too, that even breakthroughs often build over time through progressive, incremental changes. "Most successful innovation is incremental," Verdantix global head of research Rodolphe d'Arjuzon told us, "building out from something that already works. For example, successive generations of home energy management systems are getting close to generating real customer engagement." That said, very little innovation achieves anything like the sort of breakthroughs we have in mind.

Unless there is a clear competitive challenge from elsewhere, government support for Breakthrough innovation is typically weak, poorly focused and unreliable. To drive change at the level and scale now needed, a small but growing band of business leaders are doing what the Occupy movement did—arguing the need for system change, including a rebooting of the fundamental disciplines of business, economics and accounting.

We tested our Breakthrough hypotheses during in-depth interviews of business and thought leaders around the world. And in places as diverse as Tokyo, New Delhi, Johannesburg, Bristol, Cologne, Utrecht and Little Rock, we found a striking consensus that a profound transformation is now under way.

There are few more influential thought-leaders in this space than Ashoka CEO Bill Drayton. Among his claims to fame is launching emissions trading as a senior executive at the US Environmental Protection Agency during the Carter Administration. "We are leaving a world designed for efficiency in repetition and entering one where value comes from contributing to change," he told us. "Because change is the opposite of repetition, this requires every person to master a set of human social skills as a prerequisite to being able to contribute—including empathy, teamwork, changemaking and new forms of leadership."

Unlike much of the Occupy movement,²³ however, business champions of Breakthrough believe in capitalism, arguing that tomorrow's capitalism is the best cure for the ills of today and tomorrow. The problem is that we are seeing a deep-rooted shift in the nature and complexity of the challenges we face. One crucial tool in all of this, and one the World Economic Forum is developing (Figure 2.2), is system mapping. This can help identify the key 'acupressure points' or levers of change.

"The system is in gridlock."

Nick Parker

Executive Chairman,
Cleantech Group

Another significant mapping initiative, presented at the Breakthrough Capitalism Forum by Marshall Clemens, has helped a growing consortium of brand-name sportswear companies and retailers to pull together their roadmap for 'Zero Discharge of Hazardous Chemicals' in their supply chains reaching into China (Panel 3.1, page 17).²⁴ Those using this approach also now include Tellus Mater (page 5).

On the positive side, the more we looked into possible future trajectories, the more we found innovators, entrepreneurs, intrapreneurs, investors and policy-makers playing into this space.

Among Breakthrough champions flagged in our earlier work have been organizations like InnoCentive,²⁵ the X Prize Foundation²⁶ and Solve for X.²⁷ The latter's powerful visualization of the opportunity space is shown in Figure 2.3—and for X, read Breakthrough.

Google also now has a separate division, Google X, dedicated to 'moon-shot' projects like driverless cars. And that is just the start: "I think we need to be doing breakthrough, non-incremental things across our whole business," says Google CEO Larry Page.²⁸

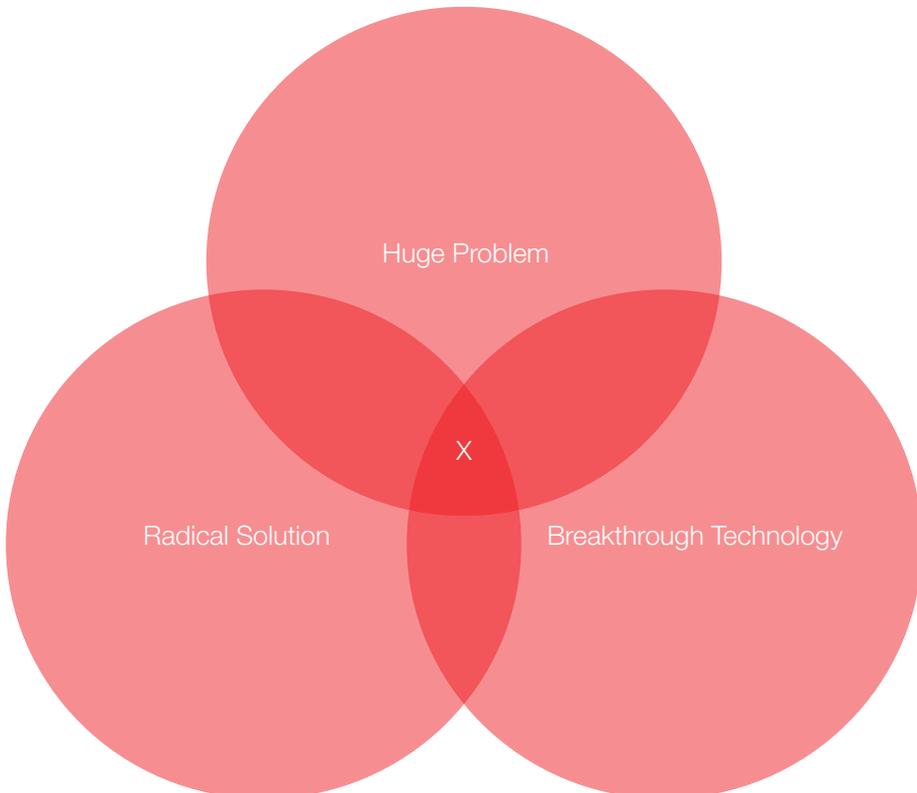
Figure 2.3

The Opportunity Space

Breakthrough mindsets, technologies and business models enable radical solutions to systemic challenges.

Source: Solve for X

"Solve For X is a place to hear about and discuss radical technology ideas for solving global problems. Radical in the sense that the solutions could help millions or billions of people. Radical in the sense that the audacity of the proposals makes them sound like science fiction. And radical in the sense that there is some real technology breakthrough on the horizon indicating that these ideas could really be brought to life."



3

Scenarios

Where We're Headed

THE CHOICES: UGLY, GOOD OR GREAT

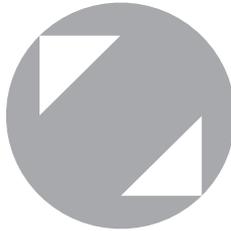
The Breakthrough Scenarios²⁹

From Breakdown To Breakthrough



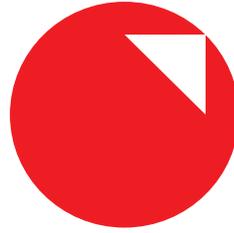
Breakdown

System collapse comes in many forms. Some impending failures are easy to spot; others, involving systemic weaknesses, are harder to see coming. Breakdown mindsets often favour the 1% in the wealth spectrum over the 99%. At the same time, when we try to meet the needs of the 99%, we may also ignore crucial system conditions, like strains on resources or the natural environment, triggering different forms of breakdown.



Change-as-Usual

Many Change-as-Usual approaches were semi-revolutionary when they began—including corporate social responsibility, socially responsible investment and sustainability reporting. Where they succeed in being adopted by companies and industry sectors, however, they often become diluted by wider priorities. There is a clear risk that CSR and even SRI leaders become too closely embroiled with those they support in the business world. The focus is often on rolling out current tools rather than on stretching towards tomorrow's Breakthrough solutions.



Breakthrough

An uncomfortable, high-risk zone. As Jeff Bezos of Amazon put it, "If you're inventing and pioneering, you have to be willing to be misunderstood for long periods of time."³⁰ Most CEOs are not prepared to take that risk. Unsurprisingly, then, incumbents don't make good insurgents, so the best place to look for the future is often at the fringes of the current system. But don't rule out all incumbents. The more nimble among them will find ways to link with insurgents to bring disruptive Breakthrough solutions to scale. Innovators, entrepreneurs, intrapreneurs, investors and—crucially—policy-makers work together to build a new economic and governance order, fit for purpose in a world of 7-going-on-9-billion neighbors. Progress is achieved through ventures that set ambitious targets and drive them through to change the market and political systems within which they operate.

Breakdown, Change-as-Usual or Breakthrough?

We have crystallized three scenarios, outlined in Figure 3.1. They underpin the rest of this short report.

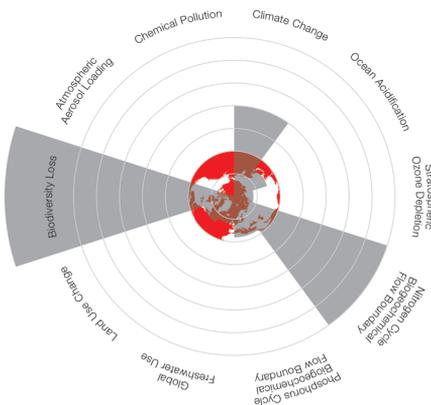
Breakdown is a future where the worst fears of people like Ban Ki-moon are realized. This is the almost unrelentingly bleak scenario, a world in which early experiments and enthusiasm fade in the face of wider incomprehension and resistance to change. Our businesses, cities and economies overshoot critical planetary boundaries (Figure 3.2), bringing the planetary roof down on our heads. The gray fans in the diagram show where we have already exceeded planetary limits. Symptoms of breakdown are increasingly apparent in our economies (examples include the southern arc of Eurozone and the banking sector in some countries), our societies (consider youth unemployment in countries like Spain) and our natural environment (recall 2013's toxic smog over Beijing, the collapse of oceanic fisheries and recent climate-related events).

The second scenario is **Change-as-Usual**, where earnest efforts are made in such areas as corporate social responsibility, socially responsible investing and sustainability reporting, but overall the outcome is little more than a set of patches on the existing, dysfunctional system. Most initiatives and strategies fail to highlight and tackle the systemic nature of such challenges. In this somewhat more optimistic scenario change does happen, but political leaders, investors, and the 'Global C-Suite' proceed at a dangerously relaxed, incremental pace. There are plenty of projects designed to boost efficiency and effectiveness, to satisfy and even exceed customer needs and wants, but the system change imperative is largely ignored.

And then the third scenario is **Breakthrough**. This assumes that, with the usual ups and downs, the trajectory of our societies and economies is pointed toward a very different set of outcomes. Here innovators, entrepreneurs, intrapreneurs, investors and—crucially—policy-makers manage to work together to build a new system, fit for purpose in a world of 7-going-on-9-billion neighbors.

Progress is achieved through ventures that dare to set ambitious targets and then, over time, drive them through to change the market and political systems within which they operate.

Figure 3.2
Planetary Boundaries
Source: Stockholm Resilience Centre³¹



Panel 3.1
The B Team and ZDHC
Volans on the Breakthrough trail

Five years on, Volans is shifting its focus towards projects, programs and partnerships offering potential for Breakthrough outcomes. On the zero-based-targeting front, we have helped organize and facilitate workshops for sportswear companies and retail groups (resulting in a roadmap to Zero Discharge of Hazardous Chemicals in their supply chains in China³²), and for Nestlé.³³ In terms of the C-Suite agenda, we have been involved in The B Team³⁴ since its outset. We see its strategy of convening CEOs as citizens—rather than simply as representatives of their companies—as key to getting C-Suite engagement on system change challenges.

Breakthrough defined

But once the system is mapped, how can we tell if a particular initiative really merits the Breakthrough label? The consensus to date is that such initiatives and ventures should aim to achieve the sort of criteria listed in Panel 3.2. In Panel 3.3, we spotlight the still-evolving case of EnergyBank, featured at the 2012 Breakthrough Capitalism Forum, giving an early sense of how the concept measures up against our also-still-evolving criteria.

“I urge this Congress to pursue a bipartisan, market-based solution to climate change . . . But if Congress won’t act soon to protect future generations, I will.”

Barack Obama

US President,
State of the Union Address,
2013

Panel 3.2

Breakthrough Criteria

A Breakthrough solution meets the following criteria

Key Concepts

Future-Ready

Works well in a world of 7-going-on-9 billion people, providing affordable access to needed products or services, while respecting planetary boundaries.³⁵

Ecological Footprinting

Global Footprint Network³⁶

One Planet Living

Bioregional³⁷

Planetary Boundaries

Stockholm Resilience Centre³⁸

Stranded Assets

Carbon Tracker³⁹
Generation Investment Management⁴⁰

Ambitious

Aims to transform key aspects of capitalism—and drive radically better outcomes across the triple bottom line.

Environmental Profit & Loss

PUMA/PPR⁴¹

The B Team⁴²

Impact Investment

Global Impact Investing Network⁴³

Zero

Interface Mission

Zero⁴⁴

Zero Discharge of Hazardous Chemicals⁴⁵

‘X’

The X Prize Foundation⁴⁶
Solve for X⁴⁷
Google X⁴⁸

Fair

Helps tackle critical equity issues, including the transfer of intergenerational debt created by public borrowing, natural resource extraction and environmental destabilization.

Access to X

Where X might be medicines, clean water, renewable energy, education or finance

Fair Trade

Fairtrade International⁴⁹

Social Innovation / Entrepreneurship / Investment

Skoll Centre for Social Entrepreneurship⁵⁰

Sustainable Living

Unilever⁵¹

Disruptive

Promises (or threatens, depending on your viewpoint) to disrupt the current economic or governance system, moving the needle from incrementalism to system change.

Biomimicry

B Corporation⁵²
Biomimicry 3.8⁵³

Circular Economy

Ellen Macarthur Foundation⁵⁴

Cradle-to-Cradle Design

MBDC⁵⁵

Sharing Economy / Collaborative Consumption

Oxfam / Marks & Spencer⁵⁶
Mesh⁵⁷
yerdle⁵⁸

“Our business model makes no sense when viewed within the existing rules of the game. We started by asking what the energy sector would look like if it was operating optimally in the long-term public interest. From that perspective, our business model makes all the sense in the world.”

Tim Helweg-Larsen

CEO, EnergyBank

Panel 3.3

EnergyBank

How one venture measures up against our Breakthrough criteria

Future-Ready

The economics of our energy sector are inherently short-term,” Helweg-Larsen notes, “leading to a system level preference for fuel-based energy, rather than fuel-free renewable power.” EnergyBank addresses this problem head-on. He told us: “Our business model makes no sense when viewed within the existing rules of the game. We started by asking what the energy sector would look like if it was operating optimally in the long-term public interest. From that perspective, our business model makes all the sense in the world.”

Ambitious

He then explained that: “EnergyBank aims to disintermediate the mainstream energy utilities, giving energy users direct ownership of the utility scale energy assets that supply their needs. But disintermediation does not mean that the existing roles of the value chain become redundant. Far from it, it’s just that they become better aligned with the long-term public interest.”

Fair

But how does the ownership side work? “The housing market today,” Helweg-Larsen says, “is owned by one generation and risks being unaffordable to the next. Exceptions to this rule are houses gifted and inherited from parent to child, and houses held in trust, such as almshouses. In EnergyBank’s model, the nation’s renewable energy assets will be owned by energy users, but held in trust by EnergyBank—ensuring the nation’s energy heritage is passed affordably and equitably from generation to generation.”

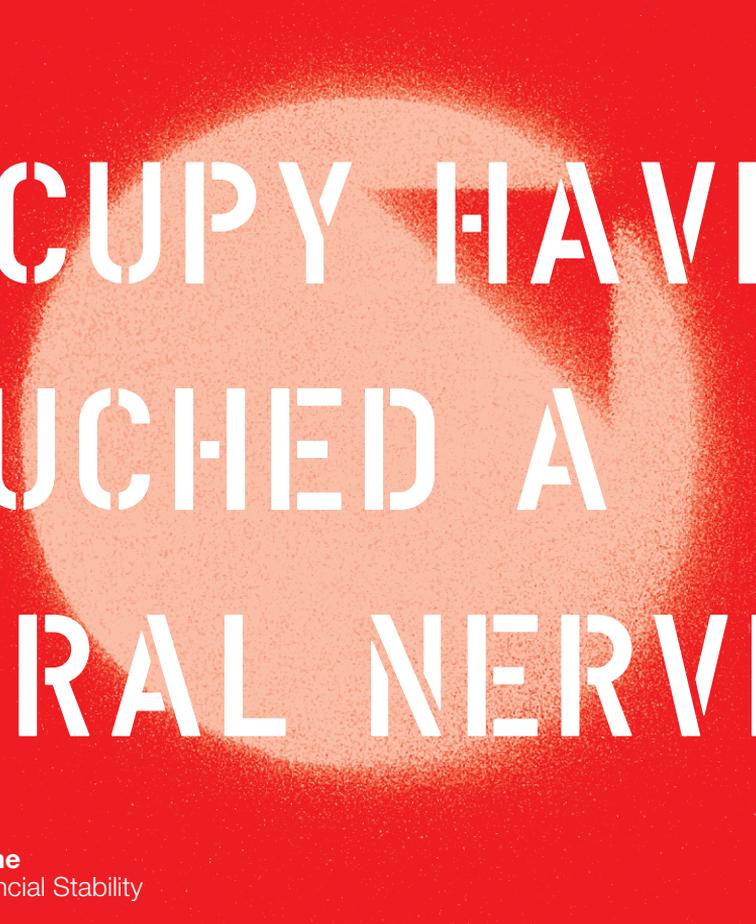
Disruptive

The enterprise is being built in a collaborative fashion, working with a handful of ‘Energy Pioneers’ as Helweg-Larsen calls them—major corporates that want to be early movers in a new, more efficient and healthier world of energy. We have no idea whether EnergyBank will take off, but we see its strategy of working with—and transforming—incumbents as prototypical of tomorrow’s Breakthrough business models.

4

C-Suites

What Top Teams Are Doing



OCCUPY HAVE
TOUCHED A
MORAL NERVE

Andrew Haldane

Director for Financial Stability
Bank of England

The rise of the CSO—and the coming CXO challenge

It is interesting that the man flagged as the ‘world’s top CEO’, Amazon’s Jeff Bezos, outlined his mission to shareholders as follows: “It’s all about the long term.”⁵⁹ He had added \$111 billion to the company’s capitalization and severely disrupted the businesses of many of his competitors—and it is unsettling that so many CEOs have failed to draw the obvious lessons.

On the other hand, an analysis in the same issue of the *Harvard Business Review* mapped the performance of 1,100 CEOs against the social and environmental performance of their companies for their last two years in office.⁶⁰ Although the analysis identified many interesting role models, among them Danone and Natura, it failed to show an overall link between financial performance and social responsibility.

Meanwhile, there is growing interest in—and concern about—the striking power of the ‘Global C-Suite,’ as an accelerator of (and brake upon) change. Clearly, to have any chance of realizing our Breakthrough scenario, we must get much better at engaging and influencing corporate boards and C-Suites.

Recent research by one of our interviewees, Professor Robert G Eccles at Harvard Business School, fills in some of the numbers.⁶¹ Globalization, he says, “has concentrated economic power within a group of large companies who are now able to change the world at a scale historically reserved for nations. Just 1,000 businesses are responsible for half of the total market value of the world’s more than 60,000 publicly traded companies. They virtually control the global economy.”

He concludes that: “This vast concentration of influence should be the starting point for any strategy of institutional change toward a sustainable society.” But he then goes on to note, “There’s substantial concentration even within the top 1,000. Eighty-three companies account for one-third of the group’s \$32 trillion in revenue. The top 172 companies account for about half of it.”

Paradoxically, this very concentration may help the cause of change. “Market opportunity, peer pressure, investor pressure, and brand reputation are doing for these companies what otherwise might be accomplished only through regulation. And since regulation is enforced by national agencies, all roughly 200 countries in the world would have to pass and enforce similar regulations. What a headache. Instead, the market itself has already gone a long way toward making the global economy adaptable by concentrating market and moral leadership into 1,000 boardrooms.”

Figure 4.1
**Global C-Suite
In The Three
Scenarios**



Retrospective or short-term focus
Past priorities; how things were done; preservation



Short- to medium-term focus
Pragmatic accommodation to current realities; incremental change



Focus on past, present and future
Long-term framing; ‘unreasonable people;’ how things will be done; disruption

Breakthrough Champions

Looking back, the first wave of Breakthrough champions tended to be company founders, which gave them greater flexibility (at least in the early years) in terms of the wider ethical, social and environmental missions they wanted their campaigning companies to embrace.

Early examples included the late Anita Roddick and her husband Gordon, co-founders of The Body Shop International, subsequently, bought by L'Oréal, in which Nestlé has a 30 percent stake; Gary Hirshberg of Stonyfield Farm, bought by Danone; Jeffrey Hollender of Seventh Generation; and Ben Cohen and Jerry Greenfield of Ben & Jerry's, bought by Unilever. Interestingly, Ben & Jerry's is one of the larger companies that have been adopting for-benefit B Corp status (Panel 3.2, page 18).

Patagonia, the clothing company, is another B Corp, and still independent: using the company as his platform, founder Yvon Chouinard has campaigned for ecosystem preservation, and in his book *The Responsible Company*⁶² proposes that companies should reduce their environmental footprints through creating lasting products—and selling fewer of them. Paradoxically, but perhaps as Chouinard intended, the publicity boosted sales.

Carpet-maker Interface is also still independent. Its founder, the late Ray Anderson, persuaded his colleagues to embrace the company's 'Mission Zero' agenda, aiming to become the world's first fully sustainable company with zero negative impact by 2020.

Anderson's philosophy was outlined in his book *Confessions of a Radical Industrialist*.⁶³ His dramatic awakening became the stuff of legend, including his uneasy sense that, "some day people like me will end up in jail," for crimes against nature.

“Some day people like me
will end up in jail.”

Ray Anderson

Founder and CEO, Interface

Another iconic figure as this agenda begins to mainstream, and described by some as the next Ray Anderson, is Unilever CEO Paul Polman. He has attracted a good deal of (largely positive) media coverage for his Sustainable Living Plan.⁶⁴ This is designed to double the size of the business while halving its environmental impact by 2020.

Famously, Polman underscored the need for long-term investment perspectives at the Plan's launch, telling financial people in his audience, "if you buy into this long-term value model, which is equitable, which is shared, which is sustainable, then come and invest with us. If you don't buy into this, I respect you as a human being, but don't put your money in our company."

Other companies, among them Nestlé, have been more reserved about setting such stretch targets in public.⁶⁵ But their chairman (and former CEO) Peter Brabeck-Letmathe (working closely with the company's current CEO, Paul Bulcke) has steered a process focusing on 'Creating Shared Value,' where the three priority areas are nutrition, rural development and water.

Pushing the water agenda forward, Brabeck-Letmathe chairs the 2030 Water Resources Group, spawned at the World Economic Forum and now hosted by the International Finance Corporation (IFC). The aim is to mobilize public and private sector actors to help change the political economy for water reform.⁶⁶

Most of those global 1,000 companies have still to wake up to the Breakthrough agenda, however. And some business leaders have found it easier to pursue their wider agendas when out of their former corporate roles. A striking example here has been Pavan Sukhdev, a former managing director at Deutsche Bank who went on to head the TEEB (The Economics of Ecosystems and Biodiversity) investigation for the UN (page 44).

A CEO-level Breakthrough champion who spoke at our 2012 Breakthrough Capitalism Forum is David Blood, senior partner with Generation Investment Management and a former managing director of Goldman Sachs Asset Management. He highlighted the five key ‘asks’ contained in Generation’s landmark white paper on ‘Sustainable Capitalism’.⁶⁷

Other terms in circulation have included ‘conscious capitalism,’⁶⁸ ‘responsible capitalism’ and ‘Capitalism 24092,’ promoted by Sir Richard Branson, and reflecting the fact that the Earth’s circumference is 24,092 miles. “Very simple, really,” he notes, “it does what it says on the tin—that every single business person has the responsibility for taking care of the people and planet that make up our global village.”

Beyond the Mad Max economy

A growing number of boards and C-Suites have switched on to the agenda the hard way, as when Hurricane Katrina bounced the then Wal-Mart CEO, Lee Scott, into starting the giant retailer’s experiment with greening. Still, there will always be those capitalists who manage to find a more immediate market opportunity in natural and social disasters.

Some speak of the ‘Mad Max economy,’ “a multibillion-dollar-a-year collection of industries that thrive when things get really, really bad. Weather radios, kerosene heaters, D batteries, candles, industrial fans for drying soggy homes.”⁶⁹ No doubt the same was true in Japan after the 2011 tsunami. This dynamic also features in a new set of World Economic Forum scenarios on the future of activism (pages 35–37).

“Industry hardwires you:
you want to change, but
you can’t on your own.”

Prasad Menon

Chairman,
Tata Petrodyne, India

Wake-up calls come in many forms, however. Take Siemens, where CEO Peter Löscher used a massive bribery scandal to drive change.⁷⁰ Within months of his taking over the company, “we replaced about 80% of the top level of executives, 70% of the next level down, and 40% of the level below that. I fundamentally changed how our managing board made decisions.”

Löscher had been at GE when it launched its highly successful ecomagination platform. “So when I arrived at Siemens,” he recalls, “I said, “where’s our environmental portfolio?” An environmental portfolio simply showcases those of your products that are more energy-efficient and resource-efficient than the marketplace average, and with which you can make a real difference.” Siemens, he discovered, had never tracked things that way, so “we hired Barbara Kux, who was the head of sustainability at Philips, as the managing board member responsible for the portfolio.”

A key part of the challenge is to help customers do more. As Roslyn Sayers of Siemens told us, “Siemens is doing a lot on ‘the business of sustainability,’ addressing challenges as opportunities—among other things, helping customers gain efficiency and productivity in their operations and, at the same time, reduce their CO₂ footprints.”

The license to operate—and innovate—is cited by many companies as a reason for their citizenship activities, though it seems highly unlikely that this sort of response alone will catalyze true Breakthrough innovation.

For that, a much greater sense of urgency and commitment will be needed, as signaled by WBCSD president Peter Bakker. “We have a global emergency and a global process which is completely not working to address that emergency,” he says. “The time of creating awareness is behind us,” he insists. “If you are not aware today then you are not a global leader in business, so now we are going to concentrate on the scaling of solutions.”

Enter the CSO

If you wanted to switch on the Global C-Suite to the Breakthrough agenda, it would be tempting to think that one obvious way forward would be to parachute Chief Sustainability Officers (CSOs) into every boardroom worldwide, including the top teams of major family businesses, co-operatives and state-owned enterprises. Whether or not a given CSO pursues change-as-usual or breakthrough, most of these people are experienced business insiders. So we asked a range of them, including a group via the Australian Sustainability Leaders Forum, for a quick sense of what they do.

Key tasks, they agreed, include: developing a strategy, 3–5 strategic priorities, and associated metrics and targets; risk management; supply chain management; greenhouse gas emission reductions; internal and external communication, including sustainability reporting; encouraging employee engagement; participation in external forums; exploring routes to better integration with the mainstream business; internal culture change; and community investment programs.

Some CSOs are still very much focused on CSR and citizenship (Figure 6.1, page 51), which tends to be change-as-usual, but there are some significant exceptions. Take Barbara Kux, one of eight board members at Siemens. She is responsible for global supply chain management, alongside her role as CSO. This operational clout has enabled her to achieve dramatic results in using sustainability to help create competitive advantage.

At UK-based retailer Marks & Spencer, Mike Barry is seen as one of Europe's leading corporate sustainability champions and has led the charge with the company's 'Plan A' initiative. Launched in 2007, this set out 100 commitments to be achieved by 2012. The Plan A platform has now been expanded to 180 commitments to be achieved by 2015, "with the ultimate goal of becoming the world's most sustainable major retailer."⁷¹

In this way, M&S are working with customers and suppliers to combat climate change, reduce waste, use sustainable raw materials, trade ethically, and help customers to lead healthier lifestyles. Mike Barry told us he has seen a shift in his role, "from 'doer' to strategist." Whereas stakeholder engagement used to take up a large proportion of his time, he now leaves that to those more directly involved in the business, focusing instead on internationalizing Plan A across the company's 40 country offices, and on shifting the focus from efficiency to new revenues.

A new dynamic is for companies to work together, sometimes on a pre-competitive basis, sometimes in pan-sectoral configurations. One of the most interesting initiatives in this field is the Sustainability Consortium, which pools the resources of 10 leading universities and 80 international companies—including Wal-Mart, Coca-Cola and Disney—and is evolving a sustainability index potentially covering the entire supply chain.⁷²

"We need to 'cannibalize.' Insulation cannibalizes energy markets. Interface is also cannibalizing glue, by dropping it from our flooring products."

Ramon Arratia

Sustainability Director,
EMEAI, Interface

Converting the CXO

It is clear, however, that most CSOs start off in a difficult position. Even where they enjoy direct backing from the CEO, they must cajole different members of the C-Suite to implement relevant ventures within their own functions. So how to convert the ‘CXO,’ a generic label for all the other C-Suite roles? Let’s look at three other C-Suite functions, to get an early sense of how the CSO’s role is evolving:

— Chief Financial Officers

If there’s one area that holds the key to implementing a Breakthrough agenda, it’s the function holding the keys to the corporate safe: the finance department. And the message here hasn’t been all gloomy. According to David Jones, CEO of global advertising agency Havas,⁷³ who works with different disciplines at a senior level, “Strangely, the most easily convinced people tend to be in the financial departments, because they are familiar with regulatory reporting obligations.” The finance team “saw efficiency benefits early,” we were told by another CSO, although a different respondent presumably spoke for many when describing their company’s CFO as a “toughie.”

— Chief Marketing Officers

According to a global Nielsen study, 66% of consumers “prefer to buy products and services from companies that have implemented programs to give back to society.”⁷⁴ So you’d imagine marketing might be a primary ally where social and environmental bottom lines most naturally contribute to the financial bottom line. But some of our respondents are finding the opposite to be the case. Campbell Soup VP for public affairs and corporate responsibility Dave Stangis noted that “communicating and leveraging this in our consumer-facing strategies is one of our most complex challenges.”

— Human Resources

HR is another domain that might be expected to work harmoniously with the CSO, since company values are often high up on the list of influencing factors for an employee. One survey found that 69% of graduate recruiters provide information on corporate responsibility.⁷⁵ If you went to the Unilever careers website at the time of writing, ‘Sustainable Living’ and ‘Innovation’ were two of the site’s four tabs. One CSO described HR as a natural ally, yet “painfully hard to persuade,” while another stressed the urgency of getting sustainability fully integrated into staffing, training and development programs.

Figure 4.2
**CSOs In The
Three Scenarios**



Breakdown
CSOs absent—
or used as
camouflage



Change-as-Usual
CSOs pursue
incremental
targets



Breakthrough
CSO stretch agenda
standard for all
CFOs and CXOs

To date, very few CSOs are former CEOs, CFOs or even CMOs—though more will need to be, whatever the job title. An exception is Jochen Zeitz, the CEO who turned around the German sportswear brand PUMA. Later, he became CSO at PUMA's parent company, the PPR Group. Here he was charged with the task of integrating the innovative Environmental Profit and Loss (EP&L) methodology into the rest of the business, including brands like Bottega Veneta, Gucci and Stella McCartney.

We asked Zeitz whether he sees his role as transitional, or likely to endure? Like pretty much everyone else we spoke to, he thinks this role has come to stay. BT CSO Niall Dunne agrees. “The role will be critical through to 2020,” he commented. “But I hope that the need for this role in most businesses will fade away after that as sustainability is recognized as a part of everyone's job, especially the business leader's.” Once established, however, such roles have a way of digging in for the duration.

Enter The B Team

One of the most hopeful initiatives in the Breakthrough space is The B Team,⁷⁶ founded by Sir Richard Branson of Virgin, Jochen Zeitz of PUMA and Derek Handley (the B Team CEO).

Interest declared, Volans has been involved in the process since the outset, is represented on the B Team Advisory Board, and is co-producing a new book, *Tomorrow's Bottom Line*, with Jochen Zeitz. That said, and while this is very much work in progress, we see The B Team (page 17) as a powerful new entry point into the Global C-Suite.

“The [CSO] role will be critical through to 2020, but I hope that the need for this role in most businesses will fade away after that as sustainability is recognized as a part of everyone's job, especially the business leader's.”

Niall Dunne

CSO, BT

5

Vectors

Domains Of System Change

WHAT ARE COMPANIES FOR?

John Davies

Head of Technical
Association for Chartered and
Certified Accountants
(ACCA)

Seven areas where Breakthrough solutions are evolving

As we trawled through the Breakthrough Capitalism Forum presentations and discussions, plus some 100 subsequent interviews, seven distinct—but overlapping—zones of potential system change leverage emerged (pages 33-48).

By way of context, since 1994 (starting out at SustainAbility and then at Volans) we have tracked a series of societal pressure waves that have progressively impacted governments, business and financial markets.

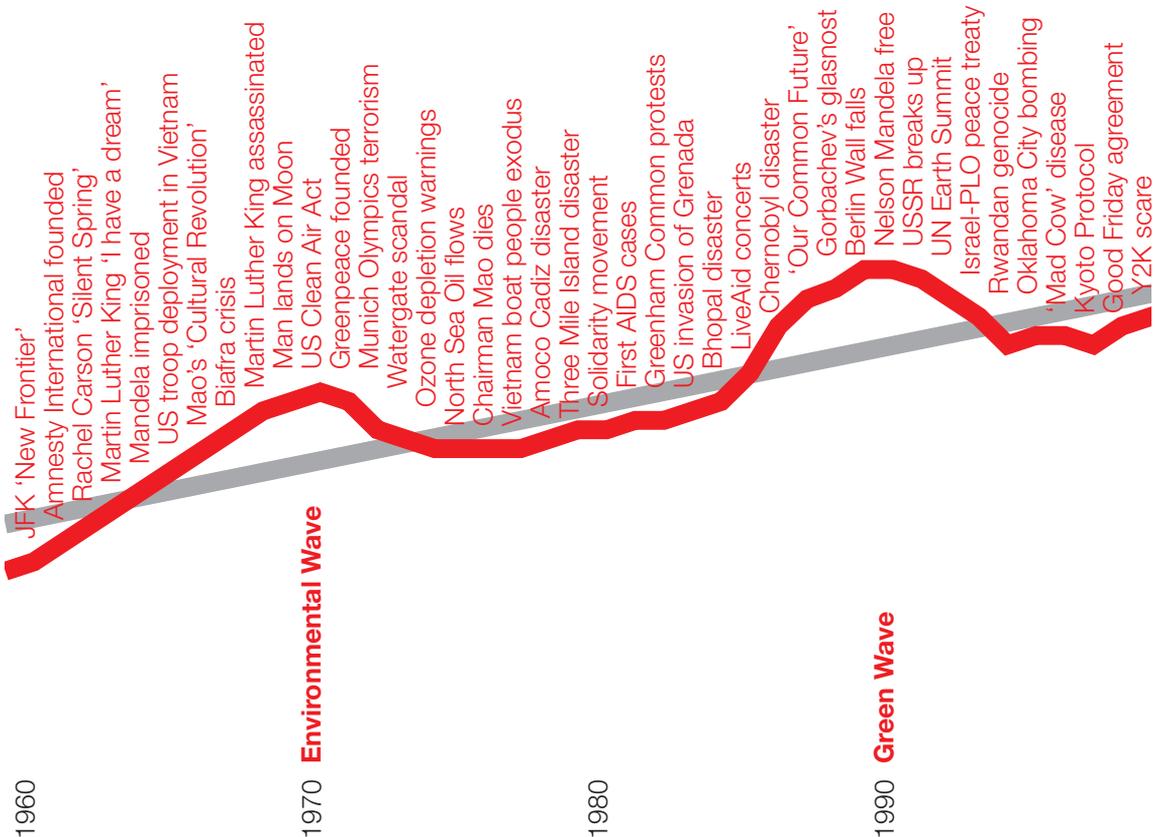
The latest version of our waves mapping, focusing mainly on the OECD world, or Global North, is shown in Figure 5.1. Often, however, there are echo effects in the Global South, offset both in time and interpretation.

A key question: how do we get a Breakthrough trajectory well established in both the Global North and South by 2020? A key part of the process is now under way—and that involves waking up to the systemic aspects of our challenges.

One organization we recently encountered at the Wharton Business School was the Joseph H Lauder Institute. Mauro Guillén, its director, later sent us a copy of his fascinating new book, *Global Turning Points*.⁷⁷

Figure 5.1
Societal Pressure Waves, 1960-2012

Source: Volans



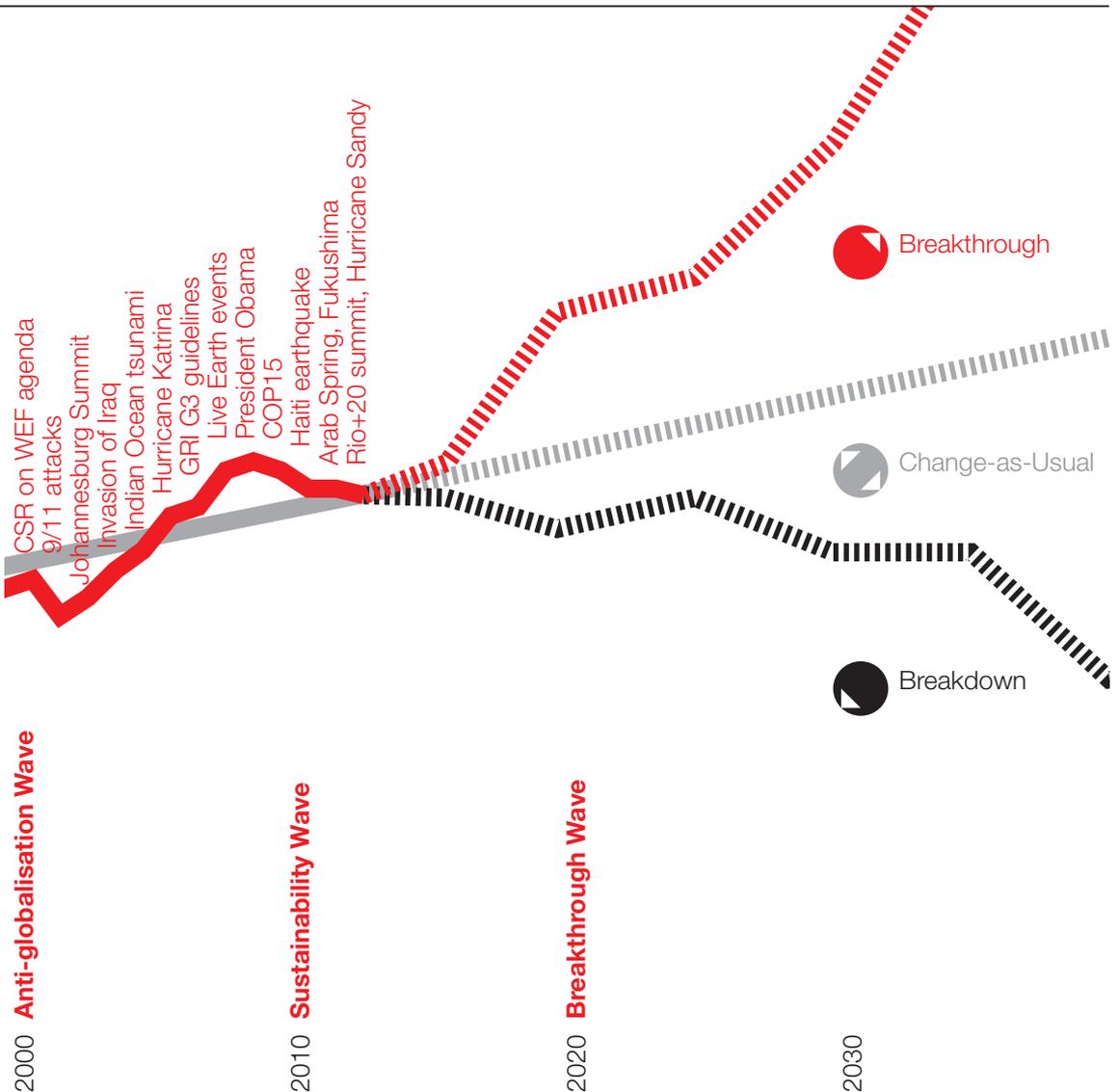
With co-author, Emilio Ontiveros, he concludes that the business environment is now “drastically different”. They explain: “We are overwhelmed by the systemic interactions among economic, business, political, social, demographic, environmental, and geopolitical variables.”

Dancing with the system

So the importance of systems thinking can only grow. This is an area the sustainability movement has ventured into in the past.

In her seminal book *Thinking in Systems*,⁷⁸ the late Donella (Dana) Meadows offered a 12-point menu of leverage points that she described as “an invitation to think more broadly about system change.”

Originally developed for a meeting on global trade systems, the list has become a touchstone for many in terms of what is most likely to work in system change. To simplify things, we group her leverage points under just six headings. But we stick with the original ordering, which ran back-to-front, from the solutions likely to be least effective to those likely to be most effective.



System Change 101

1 Changing the numbers: subsidies, taxes and standards

Counter-intuitively, the least effective approach to system change can be trying to change the numbers. You can turn the taps on a bathtub on or off, Meadows notes, but as long as they're the same old taps, plumbed into the same old system, and turned according to the old rules, the system's behavior isn't going to change much. It's still the same old bathtub, the same old economy.

Still, the numbers game can work when a particular lever—a tax, a subsidy or a standard—successfully shifts one of the other factors further down the list.

Note: While we understand where Meadows was going on this, the old economic order is now buttressed by an array of misguided subsidies, tax incentives and standards—so numbers do matter. We must change the financial incentives, across markets and across businesses.

2 Changing buffers, stocks, flows, delays and feedback loops

This second heading groups five of the original system leverage points: the manipulation of the size of the buffer stocks that stabilize flows; the structure of the stocks and flows themselves; the delays built into the system; and the feedback loops that balance or reinforce system dynamics. Interestingly, though she died well before the current financial crisis, Meadows warned us that if you dramatically cut the information and money-transfer delays in the financial system, as IT and dark liquidity pools have done, you would be asking for exactly the sort of wild gyrations we ended up with.

In terms of balancing feedback loops, which damp down system dynamics, critical areas include antitrust laws, full-cost accounting, truth-in-advertising laws, and the removal of perverse subsidies that distort markets. As far as reinforcing feedback loops are concerned, the loops that tend to amplify system dynamics, key levers include anything that impacts birth rates, interest rates or (in the environmental domain) soil erosion rates.

3 Changing information flows

In many markets, a key problem is that information flows via price signals—as when fish stocks shrink and the price of fish goes up. Perversely, that then means that more effort is put into fishing diminishing stocks (see page 45).

By contrast, information flows can help where they feed back into system dynamics in ways that help conserve stocks or maintain flows. So, for example, if a community is forced to install a water intake downstream from its effluent outfalls, there is a much greater chance that it will pay attention to both water and effluent quality.

“The CEO and board are trapped between what the market wants and what the future needs.”
Senior oil company executive

4 Changing the rules

The rules of a system define its scope, boundaries, and resilience. When Mikhail Gorbachev took over as president of the USSR, he both opened up information flows (glasnost) and changed the economic rules (perestroika), triggering cascades of change through a profoundly dysfunctional system.

Rules are often high leverage points, which is why constitutions (which set the rules for writing the rules) are so powerful—and why so much effort is put into lobbying politicians and legislators.

5 Changing the system's genetic code

The purpose of a system is crucial in determining its behavior: if profit maximization is the sole purpose, the results will be very different than if there is a balanced scorecard, shared value or triple bottom line orientation. Leaders who can redefine the purpose of a society or a corporation potentially have a very powerful lever at their disposal.

We must now pay much more attention to the genetic code that dictates how organizations and cultures operate. And a key part of that coding is the discipline of economics (page 44). Constant evolution is often the price of survival.

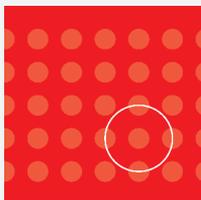
That is why the Stage 2 'Experimentation' part of our Pathways to Scale model (page 3) is so critical. Meadows again: "Any system, biological, economic, or social, that gets so encrusted that it cannot self-evolve, a system that systematically scorns experimentation and wipes out the raw material of innovation is doomed over the long term on this highly variable planet"—and, we would add, in fast-changing markets.

6 Changing paradigms

Ultimately, this is the level at which the potential leverage is greatest, but where the resistance to change is often most intense. To take an example that system theorist Jay Forrester used, it doesn't matter how you rewrite the tax codes if they cut across what most people feel is "fair." These great, often unstated assumptions reflect the underlying belief structures, or paradigms, which are themselves the sources of systems. From our shared social agreements come our system goals, information flows, stocks, flows and feedback loops.

Paradigms can be slow to change, because all those "infected" with an earlier paradigm must retire or die, but they can also flip almost overnight when incontrovertible new evidence crashes in—as when the global chemical industry was forced to acknowledge the existence of the Antarctic Ozone Hole.

Ultimate power, however, flows from the ability to stand outside current systems and paradigms. And the ultimate characteristic of system mastery, Meadows concluded, is the capacity to "dance with the system." That's something that a number of the pioneers spotlighted on pages 22–26 are attempting.



Experiment

The problem here is that the financial world's "masters of the universe" worked through all six of these steps—and managed to virtually crash the system. So these leverage points need to be applied with the right values to create the outcomes the future will need.

A paradigm shift is under way all about us, but we need to accelerate and shape it. Whereas Copernicus sparked a scientific revolution by declaring that the Earth goes around the Sun, and Einstein worked out that energy and matter are virtually interchangeable, the emerging paradigm relates to our new role as the dominant global species in what scientists dub the Anthropocene era (page 34).⁷⁹

And that's a key reason why Breakthrough change requires better science, the subject of the first of seven vector sections that now follow. We also cover the potential contributions of activism, institutions, new market access initiatives, finance, economics and, perhaps most fundamentally of all, culture.

Some people may feel that politics should feature among our seven vectors of change—perhaps even at the top of the list. But our sense is that much of today's politics remains deeply rooted in the old paradigm. And that means tomorrow's politics will often emerge from the vectors of change that did make it onto our list.

"If a community is forced to install a water intake downstream from its effluent outfalls, there is a much greater chance that it will pay attention to both water and effluent quality."

Donella Meadows

Thinking in Systems

"This is not easy stuff—
if it were easier it would have
been done already."

Neil Hawkins

Vice President, Global EH&S
and Sustainability,
The Dow Chemical Company

5.1

Science

Breakthrough means new knowledge—and new routes to knowledge

“Increasingly, our R&D has to have triple bottom line benefits.”

Patrick Thomas

CEO, Bayer Material Sciences

If you picture our economy as a human body, then science—probably the single most important factor driving the evolution of our technologies, economies and societies—can be seen as the brain and senses. “For hundreds of years people have used the scientific process to build a better future,” noted *Scientific American*, “one step at a time.”⁸⁰

One problem with relying on science, however, is that truth decays over time—and scientific paradigms shift.⁸¹ Just as we went from flat Earth perspectives to the ability to look back to the Big Bang, scientific breakthroughs have ushered in a series of new paradigms. Biologists and geneticists unraveled the secrets of the DNA’s double helix, while geologists woke up to the planet-shaping power of plate tectonics.

Now we are in the late stages of another shift, towards a one-planet paradigm, a process tracked in our Waves mapping (Figure 5.1, page 28–29). A key reason is that the evidence on the climate change front is increasingly worrying. As a result, some scientists—among them, famously, James Hansen⁸²—have felt compelled to become activists.

So a crucial task today is to keep tabs on the leading edge of research—and its implications for business. Fascinating work, for example, is now being done to build large-scale computer models, able to track the dizzyingly complex interactions between the world’s population, economy, society and biosphere—with the aim of creating a virtual environment in which new laws could be tested to see how they work.⁸³

Breakthrough innovation will critically depend on all forms of science—for example on the sort of educational work the Science Museum has been doing in the UK and the STEM (Science, Technology, Engineering and Mathematics) movement does in the United States.⁸⁴

Figure 5.2
Breakthrough Science



6 planets
Endless resources assumed



2–3 planets
Limits understood, but exceeded



1 planet
Paradigm shift, Anthropocene

It is fascinating to see the blurring of boundaries between sciences, as in IBM's use of lessons learned in semiconductor technology to create new medicinal products to tackle hospital infections—at a time when antibiotics are failing because of misuse.⁸⁵

A pivotal area in future will be earth system science, including Gaia Theory.⁸⁶ Current science, for example, suggests the outlandish possibility that Amazonia could become a net greenhouse gas emitter.⁸⁷

On the plus side, optimists point out that science has created technologies that would have been unimaginable to our great-grandparents, from the Internet to genetic therapies. Some people imagine that we will move to new planets, like Mars, but the numbers of colonists involved, even if we do head in that direction, will be vanishingly small. For the rest of us, stuck on Earth, with our numbers growing, it is clear that we are entering a new geological era.

“The Earth is a big thing,” as *The Economist* reminded us, when introducing the dawning of the Anthropocene era.⁸⁸ “If you divided it up evenly among its 7 billion inhabitants, they would get almost 1 trillion tonnes each. To think that the workings of so vast an entity could be lastingly changed by a species that has been scampering across its surface for less than 1% of 1% of its history seems, on the face of it, absurd. But it is not. Humans have become a force of nature reshaping the planet on a geological scale—but at a far-faster-than-geological speed.”

That's a key reason why the World Business Council for Sustainable Development has linked up with the Stockholm Resilience Centre, to test WBCSD's *Vision 2050*⁸⁹ forecasts and targets against the Centre's ten planetary boundaries (Figure 3.2, page 17).

Another focus of emerging science is the future role of cities, where over half of our species now live and work.⁹⁰ Scientists like Geoffrey West of the Santa Fe Institute ask new questions, like why do cities continue to evolve when corporations and people die?⁹¹

Some see cities as evolving into vast “open-air computers,” data factories churning out ‘Big Data’ that can help us work out how to radically shrink our environmental footprints over time.⁹² Intriguingly, too, new science is evolving around how to design cities to this end—and to tackle the growing global challenge of slums.

Other emerging areas of interest include artificial intelligence, biomimicry, environmental restoration, synthetic biology and, because we will probably have little choice in the end, geoengineering. For better or worse, in a sign of the times, Volans is starting to find would-be geoengineers turning up on our doorstep, wanting to test their thinking.

On the biomimicry front, which involves drawing design lessons from nature, we are also involved with Biomimicry 3.8⁹³— and fascinated by the growing number of business applications. Take the recent example of Levi's learning from bees how to make stronger and more durable jeans.⁹⁴

Intentionally or not, *Homo sapiens* has embarked on a series of experiments in planet management. Climate science is finally pointing conclusively to the fact that we are responsible for a growing slice of global warming.⁹⁵

Serial social entrepreneur Stewart Brand once noted: “We are as gods and HAVE to get good at it.”⁹⁶ Some may find that framing a bit arrogant, but making sense of the Anthropocene will require Breakthrough science, technology, business models, finance, economics and politics. Above all, it will require cultural breakthroughs (pages 47–48).

“We have to adapt our science to the realities of a single, closed planet.”

Peter Head

Executive Chair,

Ecological Sequestration Trust

5.2

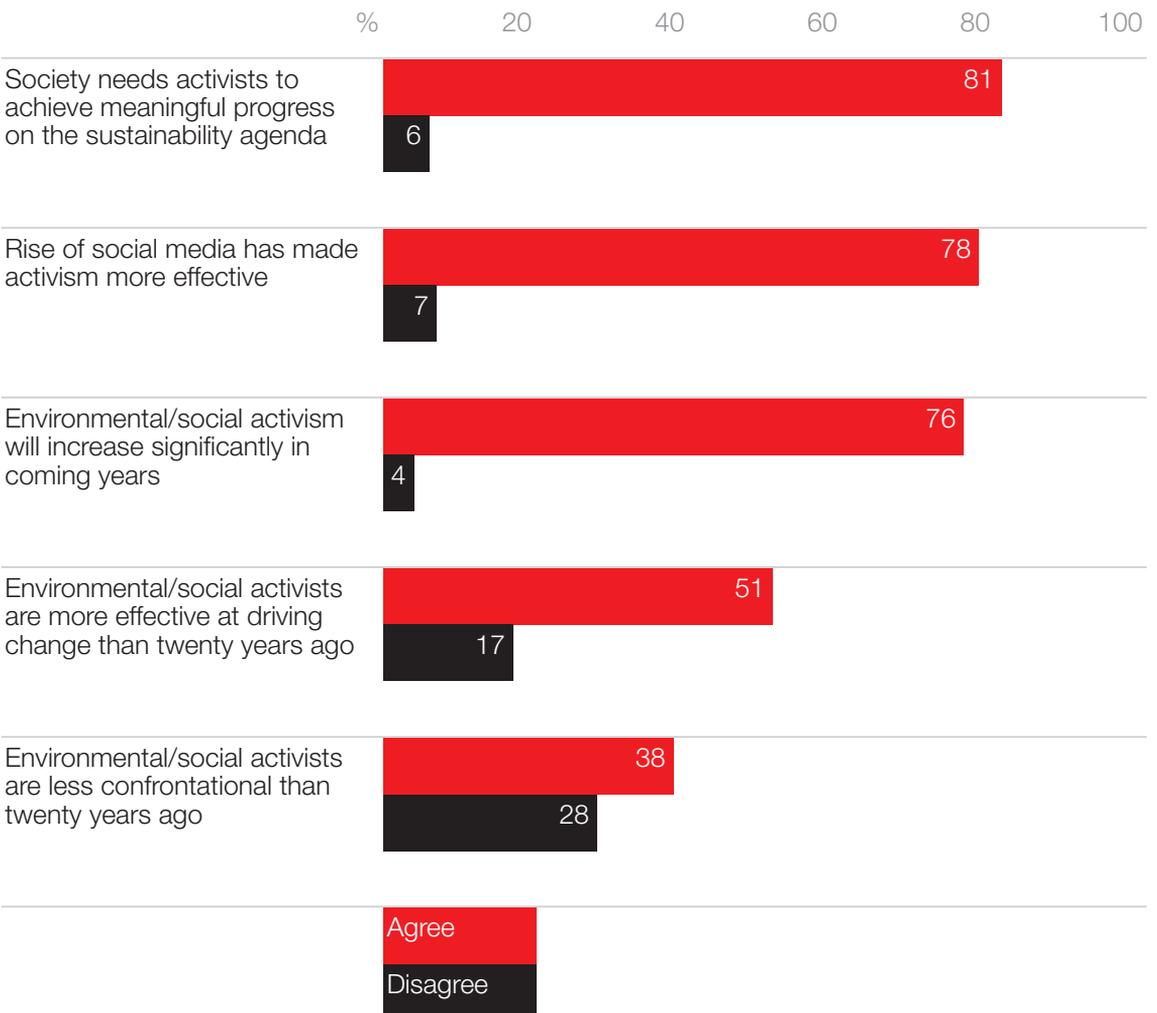
Activism

Breakthrough means taking stands—lobbying for change

Activism acts like the economy's immune system, as Paul Hawken argued in his remarkable book *Blessed Unrest*.⁹⁷ And activists continue to have a real impact. In a recent poll of 1,660 sustainability and CSR experts, 81% saw effective activism as central to further progress (Figure 5.3). Social media may have helped many of their causes, but the challenges activists face are no less complex. Take Sea Shepherd, which undertakes direct action to stop Japanese whaling in what it calls 'Operation Zero Tolerance.' It turns out that Japan has spent more than £3.5 million from its tsunami disaster fund, which should have gone to relief operations in the wake of the 2011 disaster, on refitting a security vessel to protect the country's whalers against such protesters.⁹⁸

Figure 5.3
Society Needs Activists

Source: GlobeScan and SustainAbility, 2012, based on a survey of 1,660 experts in 117 countries⁹⁹



At a time of growing armchair activism, it remains crucial that activists continue to turn up. At a major event in Utrecht, for example, we found ourselves alongside Ruud Bos, CEO, GDF SUEZ Energie Nederland, against whom activists were protesting outside. The issue: GDF SUEZ Energie Nederland's continuing use of coal in some its power plants.

When we quizzed Bos later, he agreed that carbon-neutral energy is now an imperative—but stressed that the current price on carbon is too low to drive real change. If allowances were squeezed out of the Emissions Trading Scheme, he stressed, technologies like carbon capture and sequestration (CCS) would become more attractive. A clear case of the difficulties in using company-level action to shift system-level needs.

Some movements have stalled, including Occupy—with *Time* magazine reporting that the group has been getting a professional makeover.¹⁰⁰ Among the new branded platforms highlighted were 'Occupy SEC' (seeks to counterbalance the outsize influence of financial firms within the US Securities Exchange Commission) and 'Occupy the Boardroom' (with thousands of lower-income Americans sending letters to the CEOs of firms like Goldman Sachs and Citigroup).

“Occupy have touched a moral nerve in pointing to the growing inequities in the allocation of wealth and income globally. The 99% certainly agrees. But so, more interestingly, do a high and rising share of the 1%.”

Andrew Haldane

Director for Financial Stability,
Bank of England

Interestingly, however, Occupy seems to have won the argument with at least some mainstream decision-makers. Andrew Haldane, the Bank of England's director for financial stability, commented: “Occupy have touched a moral nerve in pointing to the growing inequities in the allocation of wealth and income globally. The 99% certainly agrees. But so, more interestingly, do a high and rising share of the 1%.”¹⁰¹

And new campaigning organizations continue to surface, like 350.org (lobbies to get US colleges to disinvest from fossil fuel sectors), Avaaz (mobilizes instant online campaigns), Black Fish (aims to take direct action to stop illegal fishing in the Mediterranean) and Femen (organizes topless protests to fight the sex industry in countries like the Ukraine).

We also see new forms of activism in China, where protests have stalled industrial developments in cities like Ningbo.¹⁰² It has also been interesting to see the Chinese forced to experiment with public consultation on their new air pollution rules for Beijing.

Nicholas Davis, head of strategic initiatives at the World Economic Forum, concludes: “Civil society has a vital role to play, both independently and as an enabler of other sectors.” A new WEF report based on discussions with more than 200 civil society stakeholders, plus industry, policy and academic experts, spotlights four emerging scenarios,¹⁰³ as shown on page 37.

“It's not about picketing outside any more—it's about bringing stakeholders in.”

Jay Ralph

Chairman, Allianz Asset
Management

1 Mad Max

A world characterized by international and national conflict, where governments exert strong security controls on both business and society. Levels of funding for societal and development challenges are limited.

2 Transparently Blurred

A future where economic growth is relatively high over the period 2020-2030 and where the government and private sector are both deeply engaged in tackling societal challenges. Access to data, technology and rigorous monitoring are the hallmarks of a revolution in both economic activity and social development.

3 Turbulence and Trust Deficits

A chaotic world where trust is a scarce commodity. Yet, thanks to the rise of the networked society, there is a latent desire for social engagement by citizens, particularly at local levels.

4 Privatized World

Here many governments are seen to have failed, inequality is extreme and corporations play the most important role in society as the main providers of social services.

The scenarios aim to challenge decision-makers' assumptions about civil society's current and future context in order to make more informed decisions. Fundamentally, we need effective activism—including C-Suite activism—across all the vectors of change spotlighted here. In the process, we will be building the foundations for institutional Breakthrough.

That's why we are so excited to be involved in The B Team (page 17), which aims to mobilise CEOs as effective champions for system change. The spirit of the new breed of market revolutionaries is symbolized by Sir Richard Branson, a founder both of The B Team and of Virgin Galactic. His ambitions for his space travel company are extraordinary enough, and part of the accelerating privatization of space travel, but note his argument that democratizing space travel could help save the planet. "We can send enormous quantities of people into space," he told *Wired* magazine, "who come back determined to make a difference." Watch this space, as they say.

"Using business and entrepreneurial skills to help solve critical social and environmental issues is one of the biggest opportunities of our lifetimes."

Sir Richard Branson

The B Team

Figure 5.4
**Breakthrough
Activism**



Outsiders
Activists shut out,
ignored



Outliers
Activists engaged as
lead indicators
of change



Insiders
Global C-Suite
calls for market
revolutions

5.3

Institutions

Breakthrough means old institutions changing, new ones evolving

A society's political, judicial and religious institutions are closely linked into the economy, providing the equivalent of both the skeleton and nervous system. They come in different forms, but many have a critical influence on whether or not our economies and societies stay healthy.

Unfortunately, there is what Kevin Kelly has dubbed the 'Shirky Principle,' after Clay Shirky, who noted that: "Institutions will try to preserve the problem to which they are the solution."

Harsh, perhaps, but one notoriously successful institution was the Inquisition, which policed Catholicism for around 700 years. Interestingly, some see the Inquisition as paving the way for the modern world with its record-keeping, legal system, bureaucracy and communication systems.¹⁰⁴ An uncomfortable question: will environmental trends serve as an excuse to create new inquisitional forms in future?

Meanwhile, as Ashoka Founder and CEO Bill Drayton told us, the ongoing shift in our economies means we must abandon old institutions, "with a few people telling everyone else how to repeat together efficiently, be it a law firm or an assembly line, a world characterized by a limited and vertical nervous system and by walls." The future, he believes, lies with institutional forms based on networks, "an open, fluid team of teams" and continuous "changemaking."

Figure 5.5
**Breakthrough
Institutions**



Intergenerational debt
Decreasing returns,
debt cascaded



Intergenerational equity
Intra- and inter-
generational rights



Intergenerational wealth
Creation of increasing,
sustainable returns

The early result, though, is that many companies and other institutions increasingly feel that they are at the “whim and mercy of the public,” as global CEO of JWT Ethos Tony Pigott told us.

Some commentators put it even more starkly. In his book *The Great Degeneration*, Niall Ferguson argues that the great institutional innovations that enabled the West to thrive are now degenerating.¹⁰⁵ Critical among them have been representative government, the free market, the rule of law and civil society.

Ferguson describes our institutions as increasingly “fraudulent.” Because of the way public sector accounting is done, we increasingly cascade huge amounts of debt to future generations, who have little or no say in the matter—quite apart from the costs we are imposing on them in such areas as the destruction of biodiversity, the exhaustion of mineral resources and the acceleration of climate change.

Perhaps the most fundamental question that needs asking about business-related institutions is how they might be better structured to meet twenty-first century challenges—rather than those of the nineteenth and twentieth centuries. One champion of structural change is system thinker and serial entrepreneur Heerad Sabeti, who foresees the further evolution of what he calls the ‘Fourth Sector,’ made up of for-benefit organizations and sectors.¹⁰⁶

“Institutions will try to preserve the problem to which they are the solution.”

Clay Shirky

Writer, consultant

Future institutions must be designed to be what Lebanese American scholar Nassim Taleb describes as “antifragile”—gaining (rather than losing) strength through responding to the inevitable external challenges in a period of considerable turbulence.¹⁰⁷

One way to do this will be to build new institutions along the lines of—and ideally building out from—successful civil society initiatives. These might include the International Integrated Reporting Council (IIRC) or the Marine Stewardship Council (MRC) and its counterparts in sectors like aluminium and forests.

Over time, too, it seems inevitable that new crimes will be defined. One possible step would be to introduce a new crime of ‘ecocide’¹⁰⁸ and to create something along the lines of a UN Court of the Generations. A new generation of institutions will be needed to help us become better ancestors.

In that context, we are heartened by the recent announcement of a new Global Ocean Commission, headed by David Milliband, former UK foreign secretary. “The worst of the current system,” he says, “is plunder and pillage on a massive scale. It is the ecological equivalent of the financial crisis.”¹⁰⁹ He also spotlighted the triple bottom line framing: “We are going to try to fashion practical solutions that are an environmental win and an economic win, and with a commission that is avowedly across north-south, east-west, rich-poor divides.”

“The post-World War Two wave of technological and institutional innovation is running out of steam.”

Tom Burke

Founder Director, E3G

5.4

Access

Breakthrough means an end to systemic inequities

“System challenges are growing. Users want more health care—and generally don’t want to pay more taxes to have them. Producers struggle to contain rising costs. And politicians and policy-makers, who must provide growing levels of health care, have to persuade the public of the scale of the transformation needed.”

John Brodhead

Ontario Premier’s Office,
Canada

Now we have identified our economy’s brain, senses, nervous system, skeleton and immune system, let’s focus on the economy’s digestive system—including consumption patterns and lifestyles.

Infrastructure will be at the core of the long-term access agenda. “Insufficient or inadequate infrastructure,” say consultants McKinsey & Co., “and the resulting congestion, power outages, and lack of access to safe water and roads, is a global concern.”¹¹⁰ Just keeping pace with projected global GDP growth, they conclude, “will require an estimated \$57 trillion in infrastructure investment between now and 2030.”

At a more granular level, and in the Global South, leading social entrepreneurs have used cell phone technology as a powerful lever of social change, opening up agricultural information and financial services to millions. Increasingly, too, major businesses are linking with such social enterprises to help scale their impact.

We spoke to Dorje Mundle, head of corporate responsibility management at Novartis. He explained, “We’re moving towards a new access paradigm. It started off with philanthropic product donations, but we’re moving towards innovation in technology, pricing, business models and partnerships.”

It is worth noting that this base-of-the-pyramid business targets one of the toughest and most under-served segments, “namely the rural poor in the \$2–4 a day income bracket,” as Mundle added, “and the Indian business (‘Arogya Parivar’) broke even in its third year, is now financially sustainable, and hence, scalable.”

The Novartis BOP business model currently improves access to health information and medicines for over 40 million people across 10 Indian states, and is being piloted in other Asian and sub-Saharan African countries.

New innovations are now spreading in the process of ‘reverse innovation,’ where products and technologies developed in the Global South begin to jump to the Global North.¹¹¹ The net result can be products that are strikingly cheaper, but meet most needs. And one outcome may be that this helps the Global North tackle the growing squeeze between a growing demand for public services and a growing inability (or unwillingness) to pay.

Super-optimists include Peter Diamandis and Steven Kotler, co-authors of *Abundance*, sub-titled ‘The Future is Better Than You Think.’¹¹² They herald the “DIY Revolution,” built around artificial intelligence, robotics, bioinformatics, new forms of human-machine interface, 3-D printing, and nanotechnology. Alvin Toffler used to talk in terms of *prosumers*¹¹³; now we hear of *makers*—people who produce more of what they consume.

Diamandis knows what he is talking about, having led one of our favorite ‘institutions,’ the X Prize Foundation, which aims to spur innovators to Breakthrough achievements in areas like automobility and space travel.¹¹⁴ What is unclear is how this ‘Revolution through Competition’ approach can help build vital infrastructures to supply water, sanitation, electrical power and other services. But where there is a will, as they say, there is often a way.

Major companies we spoke to are increasingly involved. They include Atkins (which forecasts that 75% of the global population will live in cities within 40 years, all needing future-proofing¹¹⁵), IBM (with its ‘Smarter Planet’ platform), Siemens (now focusing a growing proportion of its efforts on cities), and Hitachi (involved, among other things, in mass transit systems).

We see Breakthrough innovation emerging in areas like bioenergy, with Cool Planet Energy Systems now offering to create fuels that potentially both reverse global warming and cut dependence on imported oil.¹¹⁶

Another exciting trajectory in social innovation and new business model generation is the ‘sharing economy.’ One pioneer we spoke to was Lisa Gansky, author of *The Mesh*,¹¹⁷ sub-titled ‘Why the Future of Business is Sharing.’ She keeps her finger on the pulse of the emerging sharing economy, tracking firms like Airbnb (which employs an open source approach to travel rentals) and Zipcar (ditto with car rentals).

Adam Werbach, former CSO at Saatchi & Saatchi and now co-founder of yerdle,¹¹⁸ told us, “The sharing economy is already a reality. In fact the informal economy—brothers sharing with sisters, friends sharing with friends, neighbors sharing with neighbors—already far outstrips the \$1 trillion formal economy in durable goods in the US. But this sharing economy has never had the benefit of the sort of retail technology we expect when we shop. Our aim with yerdle is to provide those tools.”

The implications are profound for incumbents, some also beginning to enter the arena. For example Avis, the US car rental chain, has agreed to buy Zipcar for nearly \$500 million—even though Zipcar is currently barely profitable.¹¹⁹ There are even firms, like Whipcar, that help you rent out your own car.

And the trend is showing up in other sectors, too. As Marks & Spencer head of sustainable business Mike Barry asked: “Will the retail market still be alive in 10 years? Or will it have switched to swapping, sharing, exchanging, or what we call ‘Shwopping’?” Jump to a very different level and the question becomes: will competitors like Amazon have won out a decade hence, regardless of whether or not they address the full range of ESG issues?

Figure 5.6
**Breakthrough
Access**



Producers
Building a world for
the super-rich 1%



Consumers
Building a global
middle class



Prosumers/Makers
Building better futures
for ourselves

5.5

Finance

Breakthrough means a shift to new types of impact investment

“The Social Stock Exchange could be a small revolution, enabling people to use their pensions and other investments to back social ventures.”

Mark Campanale

Executive Director,
Social Stock Exchange

Finance is the pumping heart and bloodstream of modern economies—and the shocks that came in rapid succession from 2007 were like a series of cardiac arrests. Governments resorted to stimulus packages, like emergency teams using defibrillators. Unfortunately, as investor-in-entrepreneurial-innovation William Rosenzweig told us, “most US Federal stimulus money has gone to incumbents, reinforcing the old order.”

Financial malpractice and crime have also been in the spotlight, meanwhile, in both the Global North and Global South. The Libor scandal in the UK showed how systemic the problems have become. Financial crimes—including corruption and tax evasion—cost the developing world nearly \$1 trillion in 2010.¹²⁰ Few systemic changes are going to be as critically important as cleaning up corruption, which makes decision-making more personal, tribal and short-term.

There are bright spots, however, including the rapidly evolving impact investment field,¹²¹ which encourages investors to track, assess and value social and environmental outcomes. “The progress in the past year has been frightening,” reported Jonathan Jenkins, CEO of the Social Investment Business. “There’s so much opportunity: it’s good, but bewildering.”

New insights are flowing in as financial innovators move into the social innovation space. But they are not always impressed by what they see. The US social sector is the focus of \$700 billion in foundation assets and 10 million people working for non-profits, Sir Ronald Cohen and William Sahlman note, but they conclude that there are “massive inefficiencies in capital allocation.”

With a world now “awash in capital,” there is a growing need for new instruments, including social impact bonds, that can deliver a reasonable financial return, coupled with a high social return and limited downside risk.¹²²

Figure 5.7
**Breakthrough
Finance**



Negative externalities
Financial capitalism kills other capitals



Reported externalities
Accounting goes multi-capital



Positive externalities
Multi-capital, impact investors

Many interviewees, however, were downbeat about progress to date in waking up C-Suites, financial analysts and investors. Emma Howard-Boyd of Jupiter Asset Management summarised a key problem: “CEOs tell us that none of their investors is talking to them about ESG.” As head of the firm’s sustainable investment and governance practice, she is well placed to know.

More positively, leading social investor Bob Monks stresses that the value of “extra-financial” analysis can only grow. He notes that his firm, GMI, “downgraded BP before Deepwater Horizon, Tepco before Fukushima, AIG before the financial crisis, News Corp before the phone-hacking scandal, Olympus before Michael Woodford blew the whistle, and many other companies before major negative events irretrievably destroyed shareholder wealth.”¹²³

Current forms of non-financial reporting, meanwhile, must evolve considerably to be of real use to mainstream investors. And as Harish Hande, managing director of Indian solar firm SELCO told us, the big credit risk agencies have little clue to date on how to value social impact. Those who hoped that the poor performance of such agencies in predicting the Great Recession would spur systemic reform have been disappointed by progress to date.¹²⁴ But change will come.

Another gap in our knowledge which can only become increasingly important, as IIED director Camilla Toulmin stressed, is in our understanding of the worlds of sovereign wealth funds, state-owned enterprises and family-owned businesses.

Areas of real progress include cleantech venture funding (despite the inevitable wobbles), integrated reporting, the Global Footprint Network’s work on the environmental risk rating of sovereign bonds,¹²⁵ and the potential ‘Carbon Bubble’ spotlighted by Carbon Tracker. If we want to keep global temperature rises below the danger threshold of 2°C, Carbon Tracker calculates that 80% of the fossil fuels listed on stock markets cannot be burned.¹²⁶

Still, crises call forth solutions. We asked Michael Liebreich, CEO of Bloomberg New Energy Finance, for a progress report: “Going into 2013 we are way ahead of where I thought we would be in 2004,” he replied.

“I was deeply convinced that the costs of renewable energy would come down the experience curve, to the point where clean energy would become much more competitive. But I thought we might get to 15% renewable energy by the time I retired, and now everyone is talking about reaching 20% by 2020.”

One of the ventures we really like is Mosaic, which enables ordinary citizens to invest in solar power projects.¹²⁷ It’s still a niche offering, but the principle of allowing many more people to invest in—and benefit from—clean energy registers as a Breakthrough concept on our market seismograph.

None of this will be easy, clearly. In China, the twelfth 5-year plan (launched in 2012) committed the country to make \$290 billion of investments in clean energy—aiming to produce 20% of its energy from renewable sources by 2015. But, as *Bloomberg BusinessWeek* reported, China’s “green strategy is awash in red ink.”¹²⁸ Thus far investment has replaced about 50 coal-fired power plants, but the industry is “overbuilt and heavily in debt.”

Progress will depend on impact investment reaching levels where institutional investors can come into play. For example, as populations age, pension activism will become more important. Most pension funds invest in blue chips, so pension-holders have significant leverage. “Shareholder activism is relevant to anyone with pension savings,” explains Catherine Howarth, CEO of FairPensions, which campaigns for responsible investment. “As savers we have a clear interest in how companies operate—our incomes in retirement depend on it.”

Meanwhile, recent work funded by Aviva Investors on stock exchanges, the multiple hearts of the global economic circulatory system, suggests at least some progress.¹²⁹ The impending rise of social stock exchanges is a particularly noteworthy trend. Some observers see a possible stalling of some voluntary initiatives in such areas as greenhouse gas emissions, water, waste, and lost time injury rates. That suggests a need for business to do more to encourage politicians, policy-makers and regulators to step in, as happened with the US Climate Action Partnership (USCAP)¹³⁰ and the UK Corporate Leaders on Climate Change.¹³¹

5.6

Economics

Breakthrough means
that economists must
recalculate

If finance represents our economy's bloodstream, think of economics as its genetic code. Critics have described economics as everything from the "dismal science" (Thomas Carlyle) to a form of "brain damage" (Hazel Henderson, who told us that she often felt like an "extraterrestrial" among economists). But it has been central to the success of capitalism.

The leadership of most economists was called into question, unsurprisingly, as much of the capitalist world struggles to escape from the protracted downturn. As market distortions came to light, it became ever clearer that, as Colin le Duc of Generation Investment Management put it at the 2012 Breakthrough Capitalism Forum, efficient market theory may have become "all-pervasive," but turns out to be profoundly flawed.

It is ironic that Nobel Prizes should go both to those who helped concoct the algorithms that almost collapsed the economy as well as to those, like Elinor Olstrom, who have worked to understand the political economy of efforts to manage commonly owned resources. Olstrom showed that breakdown is far from inevitable, given common sense and wise leadership.¹³²

Pavan Sukhdev (page 22) is also helping reboot economics through his work on the economics of ecosystems and biodiversity.¹³³ The TEEB study concluded that an annual investment of US \$45 billion into protected areas alone could secure the delivery of ecosystem services worth some \$5 trillion a year. An impressive rate of return by anyone's metrics.

"We need true costing,
true pricing, true taxing."

Ralph Thurm

Associate Director,
Collaborative Sustainability
and Innovation,
Deloitte

"We're going to have to invent
new economics to capture
the impact of the sharing
economy."

Professor Arun Sundarajan

Stern Business School,
NYU¹³⁴

The problem with conventional economics was underscored in the first auction of 2013 in Tokyo's sprawling Tsukiji fish market. At a time when many oceanic fisheries are being pushed to the edge of collapse, a single Bluefin tuna sold for a record \$1.67 million.¹³⁵ The winning bidder said he wanted to give his country "a boost," but the implications of such prices for already endangered tuna stocks are profound.

Economic models encode a story, a version of how we see the world, as applied mathematician David Orrell, author of *Economyths*,¹³⁶ told the 2012 Forum. But our models contain many assumptions, "a lot of them not true." So, "we must change economics if we want to break through."

Instead of modelling our economies as if people are always rational, Orrell argues, we must learn to think of economies as living systems, far from equilibrium and powerfully influenced by uncertainty, network dynamics and feedback loops.

Paradoxically, there is no better time than a major economic crisis to push forward disruptive new policy and investments, once people recover from their early blind funk.

This point was underscored at the 2012 Forum by Dimitri Zenghelis, Cisco's chief economist for climate change, and the man who led Lord Stern's inquiry team on the economics of climate change. Stern concluded that climate change is set to be our biggest market failure ever. And a key reason is that our current institutions are simply not up to the task.

As if that was not enough, Stern announced early in 2013 that he had been wrong on his forecasts—the picture, he now concludes, is even worse than he had thought. We are now on track for an almost unimaginable 4°C temperature rise.¹³⁷

Behind all of this, there is a growing sense that the oscillation between micro economics (focusing at the level of households and firms) and macro economics (focusing on entire economies and factors like national income, consumption, unemployment, inflation, savings, investment, and international trade and finance) is outdated.

Part-way through the *Breakthrough* project, we came across a blog on the World Economic Forum (WEF) website, written by the Hong Kong-based Fung Global Institute's president, Andrew Sheng, and director of research, Xiao Geng.¹³⁸ They identify two further levels of economics: at the outer level, *meta* economics (focusing, for example, on the systemic interactions between economies and the biosphere) and *meso* economics (focusing on the institutional aspects of the economy not captured by traditional micro or macro economics).

"By presupposing perfect competition, complete information, and zero transaction costs," Sheng and Geng argue, "neoclassical economics assumes away the need for institutions like courts, parties, and religions to deal with the economic problems that people, firms and countries face."

Figure 5.8
Breakthrough Economics



Physics as model
Mechanical view of value creation



Internet as model
Growing focus on network effects



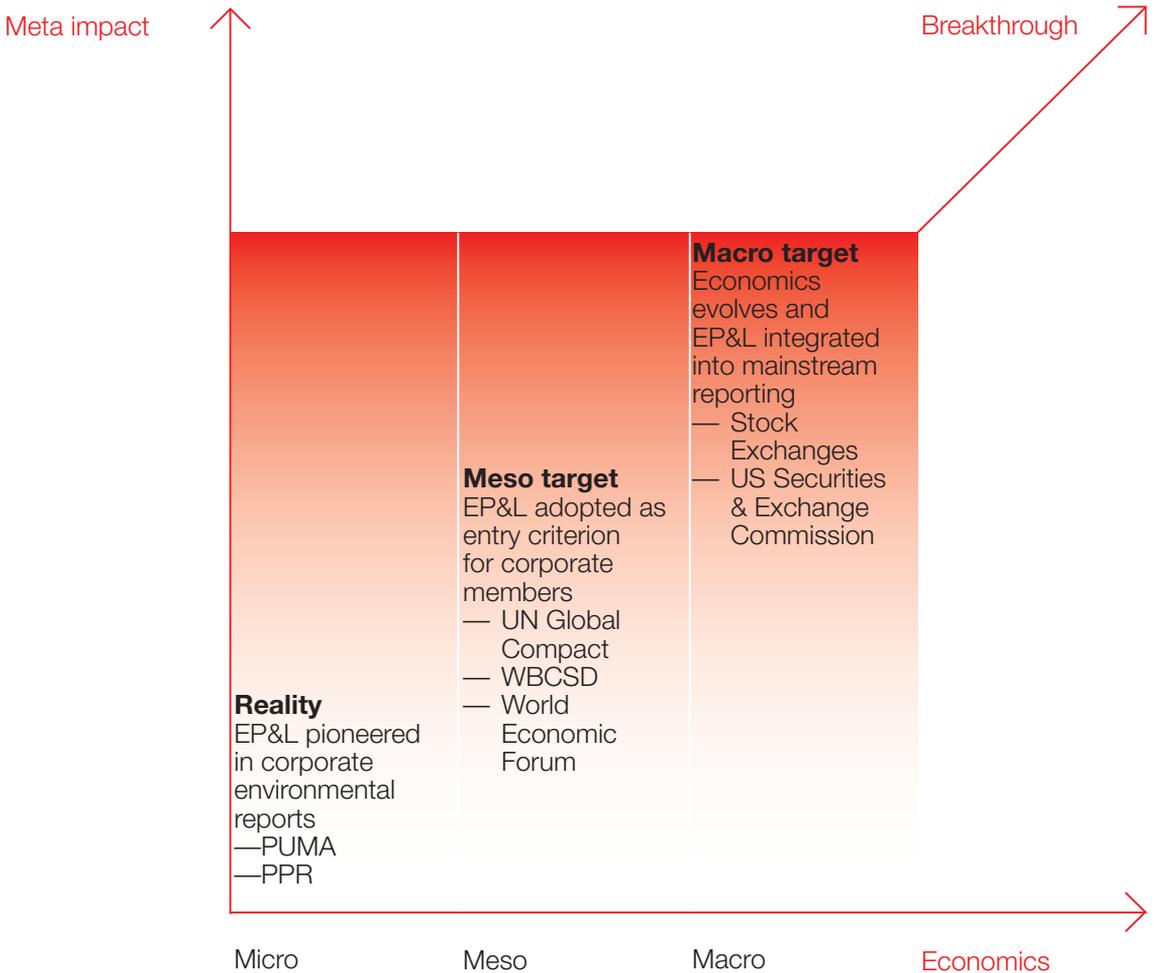
Ecology as model
Economies seen as living systems

In contrast, a core assumption in our *Breakthrough* project has been that the most important challenges that our species faces now reflect meta-level dynamics, while many of the solutions must now be at the meso, institutional level (Figure 5.9), focusing on the rules of the economy, on its institutional context (pages 38–39) and on the cultures (pages 47–48) that so powerfully shape our thinking and behaviors.

In Figure 5.9, PUMA's adoption of an Environmental Profit and Loss approach kicks off at the micro level, with the potential to impact how the company and its holding group (PPR) operate. For the EP&L to change the macro economy, however, the meso layer is crucial: getting a critical mass of businesses to adopt it, through influential leadership collectives, en route to wider market institutionalization. Macro-level implementation involves EP&L thinking being integrated into the listing rules of stock exchanges, for example, and into the master discipline of economics.

Figure 5.9
The Role of Meso Innovation In Scaling Breakthrough

Source: Volans



5.7

Culture

Breakthrough means experimentation and a willingness to fail

“There’s not one business school with a total grip on this.”

Gabi Zedlmayer

Vice President, Sustainability and Social Innovation, Hewlett Packard

It’s time to move beyond physical metaphors in which aspects of our economy are compared with the brain, heart or metabolism. Let’s look at emergent system properties—like our personalities. Just as the interaction between our minds and the wider world shape our personalities, so communities, corporations, societies and economies develop distinctive characters over time. And so do different generations. All of these now need to be engaged, with true empathy, and over time.

That’s why social innovation, entrepreneurship, intrapreneurship and investment are so important¹³⁹—and why we are delighted to have been involved with the Skoll World Forum for Social Entrepreneurship¹⁴⁰ since its inception a decade ago. Mao Zedong may have given cultural revolutions an extremely bad name, but leading social innovators, entrepreneurs, intrapreneurs and investors are now giving the term new (more positive) meanings.

Someone once said that culture is what people do when no-one is looking over their shoulders. Take BP and Deepwater Horizon: a clear case of a corporate culture being wildly out of whack. Clearly regulators need to do their job better, but forms of business education and training must now rise to the challenge.

We must also work out how to better engage the cultural industries. One speaker at our Breakthrough Capitalism Forum was Alison Tickell, CEO of Julie’s Bicycle, working to green the music industry.¹⁴¹ We also interviewed Clare Brass, who has had leading sustainability roles at the UK Design Council and Royal College of Art, and Dilys Williams, director of sustainable fashion, London School of Fashion.

Figure 5.10
Breakthrough Culture



Obsessed with past
Works for wealthy 1% of 1–2 billion people



Driven by present
Works for 30–40% of 7 billion people



Future focused
Works for growing majority of 9–10 billion people

As Williams told us, “the move towards open innovation and sharing of information has been a big shift—with the Sustainable Apparel Coalition¹⁴² bringing competitors together to collectively seek and try out solutions. But as the recent Bangladesh fire in a garment factory showed, we still have the same things happening and the complexity of the reasons means that auditing is not enough to change the situation.”

Volans is now helping the French holding group PPR to explore how the Environmental Profit and Loss (EP&L) methodology developed by PUMA¹⁴³ (also owned by PPR) could be cross-applied to PPR’s luxury and fashion brands, and a social equivalent developed.

Our cultural and political challenges are likely to worsen as our populations age—with older people typically more conservative, and more invested in incumbent parts of the economy, which produce the dividends their pensions are based on. This is an area Volans has been working on alongside Accenture, the British Council and Cranfield University’s Doughty Centre for Corporate Responsibility.¹⁴⁴

And then, often overlooked in an age of growing secularism in some world regions, there are those extremely long-lived meso-level institutions, the world’s religions. Some are major barriers to progress on challenges like climate change or education in evolutionary biology, but others are adapting as best they can—even though the pace of change can seem glacial to outsiders.

“Social innovation is becoming part of the competitive equation.”

Pamela Hartigan

Director, Skoll Centre for Social Entrepreneurship;
Co-founder/NED, Volans

For several years we have worked with F&C Investments, in a process chaired by Justin Welby, a former oilman—and now Britain’s new Archbishop of Canterbury. As the *Financial Times* noted, he has been a fierce critic of financial world misdeeds, bridging the worlds of “God and Mammon.”¹⁴⁵

We need more such people in what might be called the faith ‘industries.’ And with so many of our challenges intimately linked to values, the need to embrace Breakthrough-friendly ethics can only grow. One key question raised by one of our interviewees, John Davies of accounting body ACCA: What are companies for? This is a question that the new breed of B Corporations should begin to help us think through.¹⁴⁶

Some of the biggest influences on the culture of business, however, are going to be the growing number of emerging market firms surging into world markets. How many of us have heard of Grupo Bimbo, a household name in Latin America, or China UnionPay, LAN, LATAM, Naspers and Wanxiang? These were just some of the emerging market players covered in a recent article in *The Economist*¹⁴⁷—and, while their rise may be somewhat volatile at times, we must now urgently work out how to engage and effectively influence these new market players.

6

Breakthrough

Next Steps

THE BUSINESS
OF BUSINESS
IS MORE THAN
BUSINESS

Harsh Mariwala

Chairman and Managing Director
Marico, India

Moving beyond incrementalism to system change

Every so often, history goes non-linear, unpredictable. Revolutions, when they do happen, can take decades to crank through—and many run off the rails into a maze of unintended consequences. By contrast, while the environmental revolution¹⁴⁸ that began in the early 1960s may have made much slower progress than we might like, it continues to push forward. A key part of the reason is that new science keeps coming in—much of it, as in the recent case of black soot and climate change,¹⁴⁹ pointing to bigger problems than we had previously suspected.

Over time, as illustrated in Figure 6.1, early concerns around safety, health and environment have moved from the stage of denial (“there is no problem—or, even if there is, we are not to blame”), through the compliance stage (“we have to do this because regulators tell us to, but they don’t know what they’re talking about”), to the point where those early agendas have increasingly been subsumed into wider (or different) frameworks, including corporate social responsibility, social innovation, shared value¹⁵⁰ and sustainability.

As the focus has shifted from compliance to citizenship, and then on to entrepreneurship, replication, scaling and system change, new types of stakeholders have surfaced and had to be engaged by business. In the process, very different parts of companies and other business organizations have been pulled into the conversation—some willingly, some less so. Now the emerging focus on systemic issues means that the agenda must push to the very top of business, to the Global C-Suite.

For Volans, *Breakthrough* is a step on a longer journey—and an opportunity after our first five years to sketch elements of a roadmap for our own future.

“Anything non-incremental is seen as insane.”

Peter Thiel

President, Clarium Capital

The project has provided a timely opportunity to engage some of the most interesting people we know, and a fair few we hadn’t yet met. The work built out from the agenda we had evolved for the first Breakthrough Capitalism Forum, and provides a starting point for future Forums and Labs.

A central area of concern, as outlined earlier, is that the economic downturn is reinforcing a natural inclination to incrementalism in areas like CSR and ‘sustainability’. Nor is this problem confined to this space. As Peter Thiel, a leading venture capitalist in the US, puts it, “There is so much incrementalism. Even back in the ’90s there were companies like Amazon that were willing to do big things. That has gone out of fashion now.”¹⁵¹ The fact that people like Elon Musk, who has developed the electric car company Tesla Motors and is now pushing into orbit with SpaceX, are seen as “quixotic”, Thiel comments, “reflects the insanity of our country, that anything non-incremental is seen as insane.”

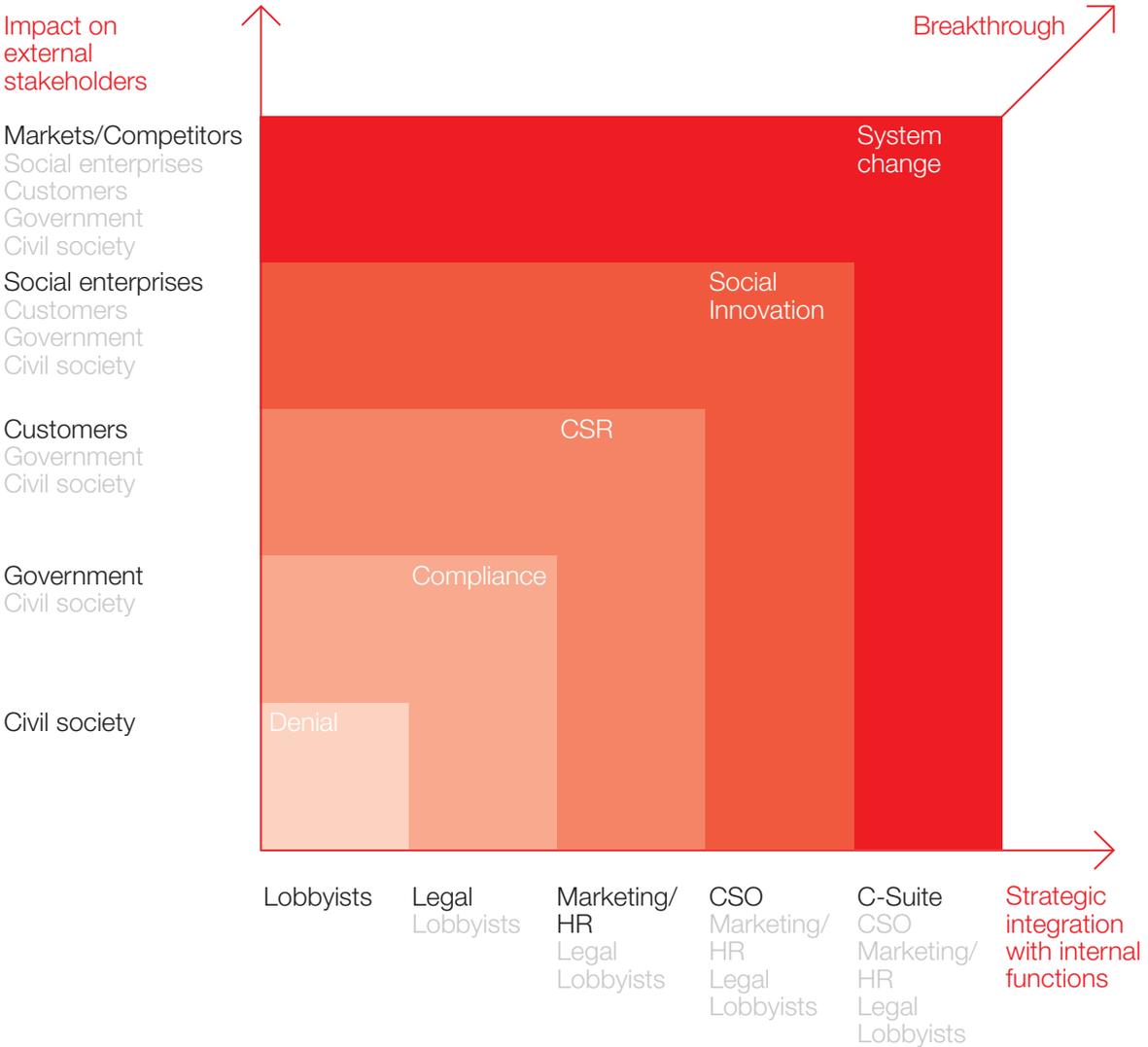
On the other hand, we are excited to see growing opportunities in world of corporate venturing. There could be huge value in enabling big companies to work with other entrepreneurs, designers, sector specialists, business leaders, and even competitors, to activate tangible and timely Breakthrough innovation. This could take the form of new products, services, processes or—perhaps most critically—business models. We hope to take the best of what has happened in the incubator space to design a membership network, which will focus on nascent corporate ventures that have serving a planet of 9 billion people at their core.

In this space, Breakthrough ideas can be tested, nurtured and supported until they are ready to be either ‘spun in’ or ‘spun out’ of the business. Stay tuned for more on the ‘Breakthrough Clubhouse’ initiative in 2013.

How else can we make sure our businesses are at the cutting edge, evolving coherent, resilient Breakthrough trajectories? Some possible next steps are outlined on pages 52–54.

Figure 6.1
From Denial To Breakthrough

Source: Volans



“The argument that sustainability will save you money is weak—more likely it will require the investment of a lot of money, energy and time. But business success now depends on performing in terms of People, Planet and Profit.”

Jochen Zeitz

Co-President, The B Team

1 Test reactions to our scenarios

If you have found *Breakthrough* interesting, and hopefully provocative, circulate copies to key colleagues, inviting their comments. And please send any feedback on to us. If there is appetite to push forward, consider organizing an internal Breakthrough Lab to explore the sort of agenda outlined below.

Breakthrough change management should only be attempted if there is real support from at least one powerful champion at the level of the board or C-Suite. The risk of misfiring is considerable.

“Senior management rarely spend enough time in developing and budgeting,” for such initiatives, Tony Benitez (managing partner, Ascension Management Consulting) told us. “The tendency is to start and see how it goes. Before long the traction fades and the budget is exceeded. Game over!”

Breakthrough change programs will require continuous and consistent engagement and communication across the organization, with early Board and C-Suite involvement likely to be crucial. In some cases, though, the “don’t ask for permission, be prepared to ask for forgiveness” approach may give Breakthrough change initiatives a better chance of survival.

The caliber and stamina of the core Breakthrough team or network will be crucial, as will the capacity to manage communications at all levels, to catalyze effective incentive programs, and to hold key business units to account.

“The biggest challenge is [finding the] courage.”

Lindsay Levin

Managing Partner,
Leaders’ Quest

2 Map your organization against the Breakthrough criteria

If you like a giant leaps approach, a key step will be to review how your business contributes—and could do so in the future—to the World Business Council for Sustainable Development goal of a world of 9 billion living well within planetary boundaries by mid-century. Make it easier by pulling the timescale back to the 2020s, with 8 billion people expected by 2025.

But if you prefer to start with small steps, map your organization’s existing initiatives and models against our beta version of the Breakthrough criteria (Panel 3.2, page 18). Consider using the techniques evolved by Marshall Clemens (page 5) to map the structure and emerging dynamics of your business environment.

If your organization produces extra-financial or integrated reports, try assessing what proportion of the effort qualifies as Breakthrough, rather than Change-as-Usual.

Remember that a key part of the challenge will involve thinking around corners. Former oilman Sir Mark Moody Stuart demonstrated this ability when he assured us that the oil-rich Middle East could well emerge as a future pioneer in scaling the solar energy sector. Looking around corners is what successful investors like Warren Buffett do: he recently announced that he is investing up to \$2.5 billion in what is billed to be America’s largest solar operation.¹⁵²

So don’t be distracted by short-term reverses. They’re inevitable. While renewable energy’s fortunes may go up and down, for example, that’s more or less guaranteed for any Breakthrough technology. As Samer Salty of Zouk Capital told us, this is about creating critical mass. He is optimistic, seeing virtuous cycles in the renewables market: “More and more renewables,” he said, “will drive more and more renewables.”

3 Convene Breakthrough champions

One key to *Breakthrough* is adopting the right sort of stretch goals and targets. To move in this direction, invite the most innovative people in your business to help sketch a Breakthrough trajectory for your organization. Cut across silos, inside and out.

Internally, if your business or organization has yet to appoint a CSO, review progress at other leading organizations that have taken this step. Consider appointing a C-Suite-level leader (CSO or otherwise), and—if you head in this direction—ensure the new appointee has a good understanding of system thinking.

Externally, consider having your CEO or Chair join one of the task groups of Breakthrough-oriented initiatives like The B Team.

As Figure 6.1 indicates, the Breakthrough phase will increasingly see competitors working with competitors. The lawyers, once again, will have a field day in terms of potential anti-trust risks, but the risks are manageable and, for a growing number of sectors, this has to be the way to go.

One potentially Breakthrough initiative we have been involved in was catalyzed by Greenpeace's 'Detox' campaign.¹⁵³ This resulted in a pre-competitive consortium forming among sportswear brands (e.g. adidas Group, Levi's, Li Ning, Nike, PUMA), retailers (C&A, H&M) and others, not to fight back against Greenpeace but to co-evolve a roadmap for 'Zero Discharge of Hazardous Chemicals' in their supply chains in China.¹⁵⁴

4 Embrace a vector—or three

Identify which systemic challenges have the biggest implications for the future of your business—and which you are (or could be) best placed to help tackle. Which vectors speak most powerfully to your organization's core purpose? Which new ones would you add to the list? What partnerships would you need to break through? And what sort of investment, with what payback periods, might be involved?

Along the way, it's important to feed your team's imagination. Consider taking a learning journey to connect—and help your colleagues connect—with the wider world of risks, needs and opportunity. *Invisible Giants*, a new book by Lindsay Levin of Leader's Quest, gives useful background.¹⁵⁵

“In 20 years we won't be able to imagine a world where we didn't have access to things through collaborative consumption.”

Greg McAdoo

Former partner,
Sequoia Capital¹⁵⁶

5 Help build critical mass

If you do host or co-host a Breakthrough Lab, consider including outsiders—and make sure you pull in some unusual suspects. Remember, whatever the nature and scale of your business, you can help catalyze system change, if you identify the right leverage points and get the timing right.

Whatever the size of your business, it can help to travel in the right company. Consider Danish superchef Claus Meyer, whose spectacularly successful Noma restaurant, founded with head chef René Redzepi, champions locally sourced, foraged food.¹⁵⁷ They know the importance of building a movement. Meyer told us that in 2003 he and 15 other chefs launched a manifesto promoting food that was locally sourced, sustainable and “delicious to eat.” Strikingly, Meyer is also experimenting in Bolivia, through his Melting Pot Foundation,¹⁵⁸ to see if the model can be replicated at the base of the pyramid.

“Our focus has to be on ingenuity—we’re at the dawn of a new era of intense experimentation.”

Jim Woods

CEO, Green Mondays

That’s the can-do, will-do spirit behind our own Manifesto (pages 8–9). But now for the public health warning: while it is fairly easy to flag Breakthrough innovators in this sector or that, the uncomfortable fact is that much of the global economy is still headed in the wrong direction. And it’s not hard to find key reasons why.

We had an enlightening session, for example, with Fraser Thompson, senior fellow at the McKinsey Global Institute, exploring their work on the resource revolution needed to open up sustainable access to a wide range of products and services for a forecast surge of 3 billion more middle-class consumers.¹⁵⁹

He noted that in McKinsey’s efforts to interest national and regional government agencies in enhanced natural resource productivity programs, a major problem has been government itself, specifically the silos within government. Governments, for this reason and others, are often letting us all down. They must catch up, fast—and that means their voters, all of us, have to help them do so.

Then in Mumbai, shortly afterwards, we facilitated a CEO-only session at which Harsh Mariwala, chairman and managing director of Marico (India’s leading beauty and wellness company), insisted: “The business of business is more than business.” For us, that captured a crucial part of the emerging zeitgeist, though Milton Friedman would not have approved.

The question now is whether CEOs and other business leaders will be content to remain part of the problem—or whether they have the will and the audacity to ride the rising *Breakthrough* wave. It must be our business to ensure they have little choice in the matter.

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