

## OPINION

# Green Swans fly in

**John Elkington, Founder and Chief Pollinator of sustainability think tank Volans, proposes how some of the weirdest ‘Ugly Ducklings’ of today can turn into tomorrow’s world-saving ‘Green Swans’, particularly when it comes to addressing the energy transition.**

Every so often, the music stops. When it does, as it did earlier in the year for the fossil fuels industry, ideas that were once unthinkable become thinkable. Futures that seemed impossible begin to seem possible, then probable and, finally, inevitable. Like it or not, the writing is now on the wall for fossil fuels – and daubed on the metal flanks of the world’s oil storage tanks. The industry will be massively disrupted in the 2020s, the ‘Exponential Decade’. At worst, Big Oil could even be forced to enter some form of global Chapter 11 bankruptcy, undergoing a radical restructuring to survive.

So why do our brains fail to spot such discontinuities coming? One answer is that today’s global challenges are so far beyond our collective experience they demand a radically different kind of engagement from senior leadership teams in the private sector. The threats that the accelerating climate emergency pose to business, markets, and, indeed, capitalism itself are spectacularly hard for most top teams still operating in fossil fuel realities to detect, let alone act on.

## The carbon vortex

Our brains evolved to respond reflexively to immediate threats but ignore or downplay systemic crises that creep up on us. Such market dynamics behave like vortices – a whirlwind in the air or a whirlpool in water. When a vortex is beginning to form, it is virtually invisible unless you have extremely good peripheral vision and happen to know what you are looking for. At this stage, things move at a deceptively slow pace. But even the best-designed vessels – or ventures – can find themselves drawn inexorably into the danger zone. Then suddenly you reach a point of no return. Such slow, but ultimately exponential, dynamics characterise what we might call

the carbon vortex.

Recall the three major hurricanes photographed from space in the autumn of 2017 in a single, unparalleled NASA image. Think too of reports that – pre-COVID-19 – carbon dioxide emissions, instead of declining, have been growing, in part because much economic growth in China is still fuelled by coal. But as the carbon vortex gains momentum, there is also evidence of an equal and opposite vortex pulling us toward breakthrough innovation and a more sustainable future.

Remember the Norwegian Sovereign Wealth Fund’s landmark commitment to run-down its coal industry holdings. Or Siemens explaining that the major job cuts planned for its gas turbine business have been partly triggered by the renewable energy boom. GE, which decided to double-down on coal, despite its much vaunted ‘Ecomagination’ platform, soon found itself caught in the same market riptides, forced to eliminate thousands of jobs from its power division. It is clear that much of the world is at a market inflection point, where issues once seen as peripheral are surging into the mainstream.

## Sustainability revolution

As Generation Investment Management put it in *The Transformation of Growth*, their 2017 white paper: ‘The

Sustainability Revolution appears to have the scale of the Industrial Revolution and the Agricultural Revolution – and the speed of the Information Revolution. Compared to these three previous

revolutions, the Sustainability Revolution is likely to be the most significant event in economic history.’

Even where companies embrace the responsibility agenda, rejection



remains part of their armoury, particularly where their basic business is not – or not yet – fit for the future. But perhaps the most powerful factor behind the inability to see what lies ahead is the very different nature and scale of what is now coming at us. Struggling to survive in the wake of the COVID-19 pandemic, business leaders are also being told that the global economy is heading for the mother of all downturns as the carbon bubble bursts.

This process, partly driven by disinvestment from fossil fuels and the

2008 was triggered by the loss of \$0.25tn. Then imagine what might happen when this coming energy transition wipes somewhere between \$1tn to \$4tn from the global economy.

Energy remains critically important, but way more value is now created by collecting and analysing data, than by burning coal, oil, natural gas or uranium. Those oceans of data and new technologies are evolving and we increasingly hear of big data, machine learning and artificial intelligence. Indeed, we live in increasingly exponential times.

### An emerging reality

This emerging reality, where a single species has a global impact akin to geological forces, is a world first. As the process continues, the world will be plagued by malign flocks of what Nassim Nicholas Taleb calls 'Black Swans'. These are challenges that get exponentially worse in ways that most of us struggle to understand, let alone tackle and solve. Black Swans are dramatic events that are outliers, beyond the realm of normal expectations, that have a major impact, and yet are often 'inappropriately rationalised after the fact with the benefit of hindsight'. In simple terms, that means we fail to

task, however. Times of disruptive change upend market and political pecking orders, creating political shock waves that can last for decades – even generations.

More specifically, a Green Swan is a profound market shift, generally catalysed by some combination of Black Swan challenges and changing paradigms, values, mindsets, politics, policies, technologies, business models and other key factors. A Green Swan delivers exponential progress in the form of economic, social and environmental wealth creation.

However, these Black and Green trajectories are not either/or scenarios. They are parallel realities, already emergent and slugging it out all around us. Some Black Swans will sport green feathers and vice versa.

Fossil fuel companies will invest in renewable and other next generation energy technologies, publicly preening their greenest feathers. Though when an ExxonMobil talks about its advanced biofuels and algal technologies it is hard to tell how significant a clean energy play this could be. Still, when

companies like Finland's Neste and Denmark's Ørsted sprout green wings, the hope index soars.

Companies like Eastman Chemicals are also pursuing Green Swan strategies in response to wicked problems like the massive increase of plastic debris in the ocean. In their case by developing technologies able to turn all plastics into genuinely circular economy materials.

Still, the struggle between Black (or Grey, foreseen but ignored) and Green sectors of the economy has been, is and will always be brutal. It is a Darwinian struggle for existence. Take a look at the work of RethinkX, for example, exploring how exponential disruptions will upend the automotive, energy and dairy industries, to take just a few examples.

Given how central energy will be to our economic transition, my personal favourite Green Swan candidate in the energy space as my book *Green Swans* went to press was the proposal from Stanford

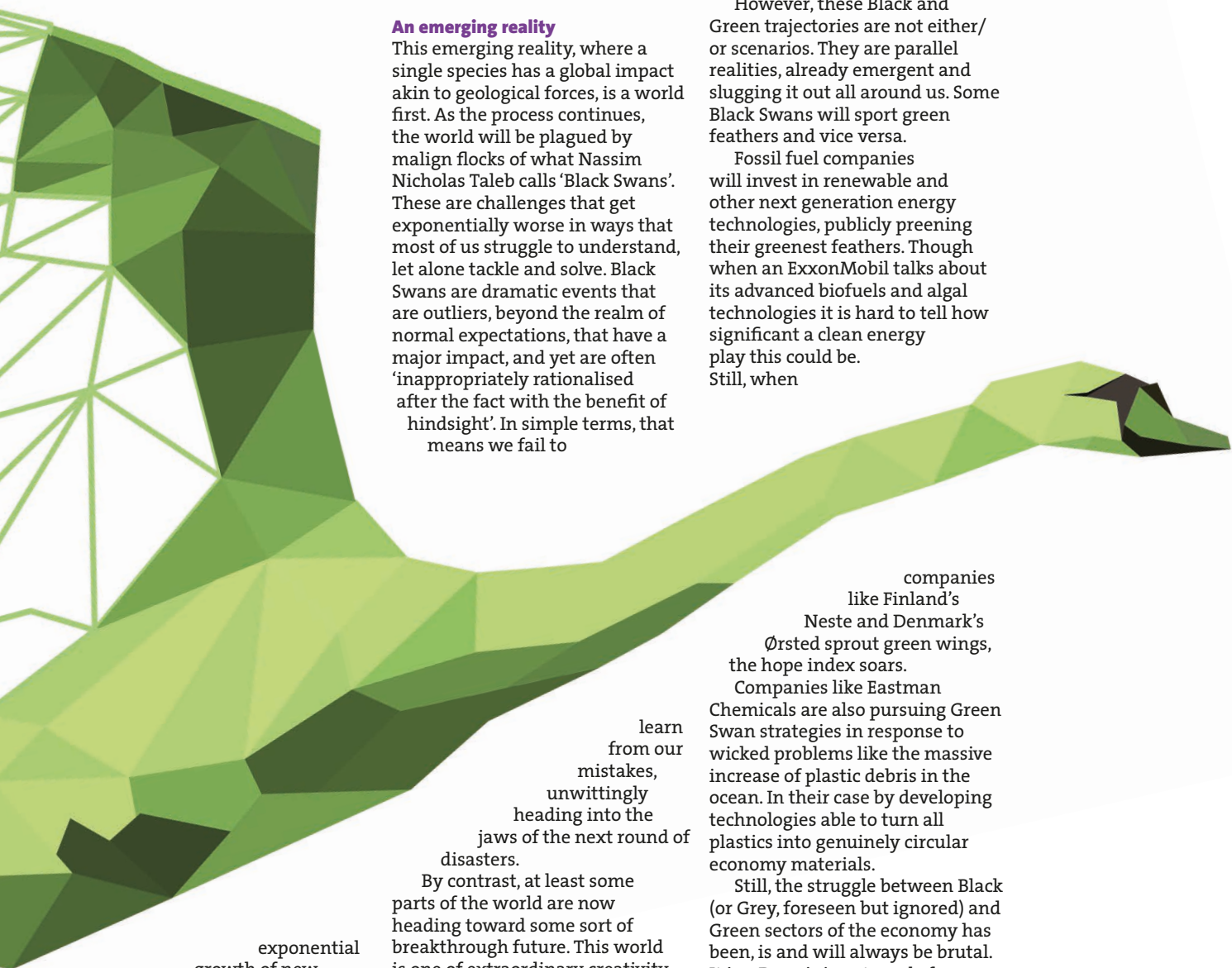
learn from our mistakes, unwittingly heading into the jaws of the next round of disasters.

By contrast, at least some parts of the world are now heading toward some sort of breakthrough future. This world is one of extraordinary creativity, innovation and enterprise. The environmental and natural resource burn rate of many key players here is shrinking, often at an accelerating pace. A world of 'Green Swans'.

The Green Swan is a symbol of radically better times to come. It is also a template for exponential change toward the distant goal of a sustainable future for all. Getting from here to there will be no trivial

exponential growth of new technologies in renewable power generation and electric vehicles, could ensure that the oil industry's vast reserves turn into stranded assets. This could undermine pension funds heavily invested in old forms of energy and, once again, trigger both mass unemployment and, as a consequence, new waves of populist politics.

Recall that the financial crisis of



University showing how 143 countries around the world can plug into 100% clean, renewable energy by 2050. The low-cost, stable electricity grid solutions outlined could cut world energy needs by 57%, create over 28 million more jobs than are lost, and reduce energy, health and climate costs by 91% compared with business-as-usual pathways.

However, the proposed initial investment of \$73tn worldwide may seem outlandish. But our collective challenge now is to make it seem – then become – inevitable. Nor is there just one narrow road to this outcome. Lead researcher, Mark Z Jacobson, explained: 'We're just trying to lay out one scenario for 143 countries to give people in these and other countries the confidence that, yes, this is possible. But there are many solutions and many scenarios that could work.'

#### Transforming the future

Think of it this way. The greenest of Green Swans often start out life looking pretty hopeless. We see them as 'Ugly Ducklings'. In the fairy tale of the same name, the Ugly Duckling is a baby swan dismissed by its community for looking so unlike any of the other

birds around – all of them ducks. Similarly, the future often looks totally alien when we first spot it.

Picture an Ugly Duckling as an early-stage concept, mind-set, technology or venture with the potential to become either a Black Swan (often driven by 'bad' exponentials) or Green Swan (driven by 'good' exponentials). Its potential future evolution is very hard to detect early on, unless you know what you are looking for. As a result, tomorrow's breakthrough solution often looks seriously weird today.

The net result is that we give them significantly less attention and resources than they need – or than the future of the 2030s and beyond would want us to in hindsight. It seems to be hardwired into most of us to view anyone who seeks to transform the future with suspicion, at least early on. In some cases, such reactions rein in bad exponentials, stalling Ugly Ducklings that are latent Black Swans. But basic statistics suggest that it is also likely to hold back – even derail – emerging Green Swan solutions.

To accelerate their evolution, we at Volans have launched a Green Swans Observatory, to track, analyse and help support

solutions that could go positively exponential. Energy must be a key focus, however sourced, but ultimately the Sustainability Revolution will upend and transform every form of wealth creation. As Shell CEO Ben van Beurden put it recently, we are all going to struggle to stay on the 'right side of history' in what's coming.

As Black Swan sectors of the economy come under growing pressure, there will be a proliferation of potential Green Swan solutions on show. Our collective challenge will be to identify them early and support them energetically. Every energy sector has technology, expertise and capital resources that could be deployed as we struggle to bend the carbon curve. Those that miss out on the emerging Sustainability Revolution risk losing out on the biggest energy bonanza so far. ●

John Elkington's new book, *Green Swans: The coming boom in regenerative capitalism*, is published by Fast Company Press.

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