

Live the Revolution



By Nigel Lake

As three new revolutions change the world, are you ready to ride the wave of innovation?

The Agricultural Revolution took centuries to transform human food production. The Industrial Revolution lasted from 1760 to the 1830s, and the twentieth-century telecommunications revolution took decades to create a global community. The smartphone revolution, presaged by BlackBerry in 1998, and launched by the iPhone in 2007, has transformed access to information for nearly two billion people in barely five years. It turns out that Moore's law applies as much to revolutions as it does to computer chips.

For businesses and governments, this means that technological revolutions now occur extremely quickly. If you don't look beyond the near term, there is a real risk that your business will die, leaving behind the saddest of epitaphs: 'Here lies a once-great company'. Happily, many revolutions are surprisingly easy to anticipate if you know where to look—and even the pace of change is eminently predictable. This creates great opportunity for those that have the courage and confidence to embrace the future.

Consider the energy revolution which is unfolding around us.

Politicians and businesses may argue about renewable-energy targets, but the economic reality is that renewable-energy prices have fallen for decades. Pottinger's analysis shows that solar PV prices have halved every seven years since the 1960s, and battery storage costs have halved every 18 to 20 months for a decade. Once dramatically more expensive than fossil fuels, solar PV and wind energy are now simply cheaper in remote locations. Within a couple of years, solar PV plus battery storage systems will represent a cost-effective alternative to grid connections in city centres, starting in sunnier countries.

With more solar energy per head of population than almost any other country in the world, Australia has the good fortune to be at the forefront of this revolution, bringing lower-cost power to the general population at

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a time when personal finances are under significant pressure. Consumers have no need to invest capital up front, with low-cost rental models being offered by companies such as Sungevity in direct competition to traditional utilities. The implications for old-economy distribution companies are profound. As consumers move off the grid, it will become increasingly challenging to recover network maintenance costs from residential customers. And if grid connection charges are increased, the sooner those customers will opt for battery storage and disconnect entirely.

However, beyond this immediate death spiral, there are more profound effects. Once built, renewable energy has close to zero marginal cost of production. This means that companies and countries can benefit from lower marginal energy costs in key

energy-dependent industries if they time the expansion of renewable energy right. China has been at the forefront in exploring this opportunity. It is already the leading manufacturer of solar PV systems and number two in wind. And in 2013, about 60 per cent of all new generation capacity added in China was renewable. Looking further ahead, both China and the US are developing the next generation of nuclear power, based on the much safer thorium fuel cycle. If low labour costs have been one of the key determinants of economic growth in the twentieth century, surely low energy costs and high levels of technological innovation will mark out the winners in the twenty-first century.

A parallel energy revolution is also unfolding in the motor industry. The world's top 20 motor manufacturers build some 60 million vehicles a year. They have a combined market value of just over US\$1 trillion, or about US\$17,000 a vehicle. Electric vehicles are in their infancy, accounting for just 0.3 per cent of sales in the USA last year. The potential for a dramatic shift over the next decade is substantial, however. Silicon Valley's Tesla Motors launched its Model S to great fanfare in June 2012. Within months, it had been voted 'car of the year' in the USA by a number of key motoring magazines. It also redefined car safety standards, scoring a maximum five stars in every category—a world first. It was awarded an overall rating of 5.4 stars, and broke one of the testing machines in the process. Tesla's market value is now some US\$27 billion, or more than \$500,000 for each of the 50,000 vehicles a year that it currently manufactures.

Unlike the previous generation of EVs, the Model S offers blinding acceleration, world-leading in-car systems, and a range of 500 kilometres, more than enough for 99 per cent of all journeys in many countries. And in a neat demonstration of the disruptive potential of new technologies, Tesla offers long-distance travellers

the ability to refill their cars for free, using its solar-power, rapid charge stations. This is possible, of course, because these stations run off solar power, with a zero marginal cost.

In true Silicon Valley style, Tesla's CEO Elon Musk is motivated as much by transformation of a global industry as by the immediate profitability of his own company. As he said at the launch: "We won't stop until every car on the road is electric." So it was perhaps no surprise to read the recent announcement that "Tesla will not initiate patent lawsuits against anyone who, in good faith, wants to use our technology." Meanwhile, to facilitate and capitalise on the impending revolution in electric vehicles, Tesla is building the world's largest battery plant.

When my 10-year-old came home thrilled to tell me that homework required the use of the online game Minecraft to design a building that would be 3D-printed at school, I knew that a new age was dawning. 3D printing has been around for decades, migrating from the very slow, very expensive machines used for industrial prototyping to today's low-cost, high-speed consumer printers. With technology now available to print not just in plastic, but also in metal, wood-like materials and even chocolate, many industries will be transformed. Expensive tooling, with long set-up times, will no longer be required, and complex parts' supply chains may become obsolete almost overnight. This may not affect high-volume, low-margin products, where mass production will win on price for a long time yet. But for parts that are higher value, lower volume, or products that benefit from point-of-sale customisation, the possibilities are almost endless. What remains to be seen is which business models will win in this new environment, creating both risk and opportunity for many companies.

So what do you do about these revolutions? Firstly, accept the

inevitability of the changes that are coming. If you are tempted to ignore them, look back at the decades of directly relevant technological innovation. Many revolutions result from slow, incremental developments that finally reach a point where something entirely new becomes possible.

Secondly, re-imagine how your industry will work in a post-revolution world. This is more challenging, as you have to ignore the siren call of the status quo. As one example, think of the freedom implied for motor vehicles, once you have escaped the fuel supply chain required to run a conventional car. This is fantastic for remote locations, not to mention people who would be happy never to visit a petrol station again.

Finally, you must back the revolutionaries, and align your business or government with the future, rather than trying to live in the past. As LP Hartley would surely have said: "The future is a foreign country: they do things differently there." Recognise this, and your own organisation will be able to ride the monster waves of innovation that will surge through most industries in the decade that lies ahead. •

Very few businesses can rely on incremental growth to ensure long-term success. The safety of the status quo has been consigned to history by technological innovation and the accelerating pace of change. In Flashpoint, we explore potential disruptions and inflexion points in major industries, and provide tools to help leaders guide and support their teams through this environment.

About Nigel Lake
Nigel is Joint CEO of global advisory firm Pottinger and an entrepreneur with a passion for diversity, innovation, environment and action. He is author of *The Long Term Starts Tomorrow*. Follow him on Twitter at @Nigel_Lake.

Source: The Climate Institute

