



Indistinguishable from magic
*What we need to understand about disruption
and what it means for the workplace*





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Foreword



Anthony Brown
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*In a 1973 essay called **Hazards of Prophecy: The Failure of Imagination**¹, the science fiction writer Arthur C Clarke sets out Three Laws regarding our relationship with technology. Only the third of these is well remembered these days:.*

Any sufficiently advanced technology is indistinguishable from magic.

He was one of the first writers to coin the sort of law that have now become commonplace on the subject of the way our world can be disrupted by technological developments. They include a corollary to Clarke's:

Any technology distinguishable from magic is insufficiently advanced (Gehm's Law) and an adage now almost as well known:

We tend to overestimate the effect of a technology in the short run and underestimate the effect in the long run (Amara's Law)

What each share in common is an implicit understanding that the world is apt to change in completely unexpected ways as a result of disruptive technological developments. They also share the assumption that we are very bad at predicting what the future holds and

that we tend to confuse disruption with innovation.

When we make these errors, we can fall into the trap of thinking that the future will be an evolution of the present.

In reality, genuinely disruptive developments take us in new directions and have unpredictable consequences.

Fortunately, if we understand this unpredictability and the true nature of disruption we can also make ourselves ready for it. Nowhere is this more important than in our working lives and the built environment.

While technology can change very quickly, our skills, company cultures and surroundings are not quite so volatile. So, we must make them malleable.

That has been the core challenge for workplace designers and managers for at least the past three decades and their ability to meet it grows more important by the day.

This White Paper sets out the nature of this particular challenge and explores something about how we are meeting it as a sector. I hope you enjoy it.

Indistinguishable from magic



What disruption means

Many people like to talk about disruption but few of them seem to know what it really means or are perhaps deliberately misusing the term. It's most often confused with innovation and improvement. Better, cheaper, smaller, faster products are not disruptive. Nor are most new ones.

In Clay Christensen's book *The Innovator's Dilemma*², the author draws a distinction between a low-end disruption, which might involve the development of a pre-existing solution or a genuine disruption which creates a new market and so is very difficult for incumbents to serve.

The title of the book derives from the dilemma this creates for suppliers and service providers. Incumbents typically ignore or downplay the disruption because they cannot see it for what it is, or it doesn't serve their commercial interests, or they can't (or won't) follow its lead.

The long-term consequences can be fatal.

This combination of speciation and extinction events is the core

characteristic of disruption. And it's not just suppliers and service providers who can fall into this trap of failing to distinguish between an innovation and disruption. We are all prone to do it, especially when we come to believe that we are where we are because it is where we are meant to be.

The dangers in this mindset for

Incumbents typically ignore or downplay disruption because they cannot see it for what it is, or it doesn't serve their commercial interests

both organisations and individuals was once neatly summarised in a fable by the author Douglas Adams:

"Imagine a puddle waking up one morning and thinking, 'This is an interesting world I find myself in — an interesting hole I find myself in — fits me rather neatly, doesn't it? In fact it fits me staggeringly well, may have been made to have me in it!' This is such a powerful idea that as the sun rises in the sky

and the air heats up and as, gradually, the puddle gets smaller and smaller, it's still frantically hanging on to the notion that everything's going to be alright, because this world was meant to have him in it, was built to have him in it; so the moment he disappears catches him rather by surprise".

Disruption is not the warming of the water in which we sit, but the rays that evaporate it. History is littered with examples of what happens when we ignore this truth. Whole civilisations have fallen for not recognising it or responding to it too slowly.

Firms are now particularly prone to the consequences of disruption. The disruptive force of technology is killing off older companies earlier and at a much faster rate than only a few decades ago, squeezing employees, investors and other stakeholders, according to a recent report from Credit Suisse. It found that the average age of a company listed on the S&P 500 has fallen from almost 60 years old in the 1950s to less than 20 years currently.

A brief history of disruption

Fire

The first and one of the most important technological disruptions came when man learned to harness then generate fire. Not only did this offer people light, heat and security it also allowed them to cook food, which improved our nutrition, health and brain function. Without it, none of the following disruptions would have happened at all.

Agriculture

The foundation of civilisation itself. The thing that changed us from nomadic tribes in search of food, to communities able to feed themselves and diversify. Knowing where the next meal was coming from freed people to do other things.

The wheel

An innovation so pure that it's with us in practically the same form today, allowing us to convert circular motion into forward motion. Progress in every sense of the word.

Writing

The first attempt to store and communicate information. Instead of relying on memory and its inadequacies, we could now keep things we had learned indefinitely and pass them on to each other.

Roads

The real reason Rome could conquer the world was its roads. This not only meant improved logistics and transport for its armed forces, but also accelerated trade, communication and diplomacy. In turn this also acted as a catalyst for culture, wealth and thought.

Printing

There's a reason why the Internet is so often compared to Gutenberg's press. There is a direct parallel with its ability to distribute and democratise information, opening up whole fields of human knowledge and endeavour.

The steam engine

There are many innovations that took place in the Industrial Revolution but none had the impact of the steam engine, mankind's first major leap into automation. Businesses no longer relied solely on people for their success, but also on capital and innovation.

Medicine

We have been innovating in medicine now for centuries and each breakthrough is disruptive. Before immunisation and the development of antibiotics thousands of people died, even from what we now consider minor diseases.

Electricity

The glue of the modern world. Where the steam engine gave us access to power, the harnessing of electricity gave us the ability to distribute it to everybody.

Microprocessor

Early computers were notoriously vast and fragile pieces of equipment. We now carry around more processing power in our pocket than NASA used on the Apollo missions.

The Internet

The culmination of thousands of years of development in information and communications technology. It's sometimes easy to forget it's only been with us for a quarter of a century so profound has been its impact.



The creation of a new consensus

It's not just the firms subject to disruption that can fall foul of its creative destruction. Pioneers can sometimes be evident by the arrows in their back.

One of the most famous examples of this is the story of Hungarian physician Ignaz Semmelweis. While working at a Viennese Obstetric Clinic in the mid 1840s, he noticed that mothers were far less likely to succumb to potentially fatal infections when the medical staff treating them washed their hands.

He found that hand washing was associated with a marked reduction in mortality rates from around 10 percent to as little as 1 percent.

Although, his findings predated the germ theory of disease, which left him without an explanation, in 1847 he published a book in which he proposed that the link was so evident that in future staff should always wash their hands in

chlorinated lime before treating patients.

In spite of the evidence, the medical profession reacted with dismay and completely rejected the idea, not least because Semmelweis couldn't explain the link between hygiene and infection.

His critics remained wedded to the idea that there were many reasons why people could become infected and that cleanliness could not be the primary or sole cause, even in those cases where staff were treating mothers immediately after performing an autopsy.

Semmelweis was removed from his post and driven out from Vienna eventually dying at the age of just 47 from septicaemia. Vindication only came years later when Louis Pasteur published his work on the germ theory of disease, which at last explained why personal hygiene was so important for medical staff.

The story is now often cited as an example of what can happen when people are presented with unacceptable ideas, especially when they challenge their core beliefs. Change comes in time, but sometimes at a cost for the disruptors as well as those being disrupted.

Implications for the workplace

When it comes to work, a deterministic fallacy was exposed by Charles Handy in his book *The Age of Unreason*, first published in 1989. In it he talks about the need to adapt to a world of discontinuous change in which businesses reshape themselves into Shamrock Organisations with three parts containing a core of well-qualified technicians and professionals, a contractual fringe of individuals and other organisations, and a flexible, itinerant labour force.

For many people, careers would

be replaced by portfolio work and they would work twice as hard for half the money.

If this seems incredibly prescient then that's because it is. Handy was way ahead of the curve.

The consequences of clinging to an idea that we are not subject to the forces of disruption came in the central metaphor used in Handy's book.

He tells the fable of a frog, placed in a saucepan of cool water which is slowly heated.

The frog sits there in blissful ignorance, quite comfortable in its surroundings and not noticing how incrementally but radically its environment is changing, until it is too late and it is boiled to death.

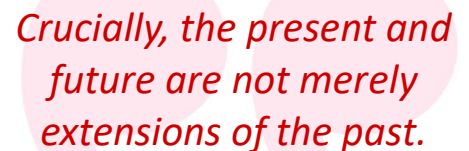
At the core of this and Douglas Adam's fable of the puddle is the protagonist's assumption that they understand their environment and their place within it.

Sometimes, even if we are told something, we may not act on it if it doesn't fit with one of our core beliefs. So, if we told the frog it

was at risk of being boiled to death because the water in which it was sitting was on a hob, the frog might decide to stay put because water is its natural environment and it doesn't understand what a hob is.

This easy rejection of inconvenient ideas as heretical, until there is no choice but to accept them is often described using the idea of The Overton Window. Originally a political theory describing the range of policies that the voting public considers acceptable at any point in time, the idea is now more widely used to describe how former heresies are absorbed into mainstream thinking over a period of time and in response to changing events.

We can see this process at play in the world of work right now. Although many commentators like to talk of the evolution of work and workplaces, we should know that we are in a period of discontinuous change, in Handy's terms. Crucially, the present and future are not merely extensions of the past.



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Left to right: the Church of San Nicolò; the Larkin Building; the Ant Chair by Arne Jacobsen; Central Beheer, Apeldoorn

A history of disruption in the workplace

Pre 20th Century

Office work has existed in some form ever since people started writing on tablets and papyrus. Depictions of clerical staff are common in the Bible and on the walls of pyramids. In the mid 14th Century the Church of San Nicolò, commissioned the artist Tomaso da Modena to create the fresco in the chapter room of the church depicting forty monks of the order hard at it at their desks. The word office itself derives from the famous Uffizi in Florence, created in 1560.

Things picked up after the Industrial Revolution, as is evident from the work of Charles Dickens amongst others and the first swivel chairs were developed by the likes of Thomas Jefferson, Albert Stoll and Peter Ten Eyck.

Early 20th Century

The first widely recognised example of a modern office is the 1904 Larkin Building designed by Frank Lloyd Wright. Shortly after Frederick Taylor introduces his theories of scientific management which applies industrial principles of the division of labour and time and motion to the office.

In its wake the likes of Steelcase and Herman Miller are founded to

create products for the new forms of workplace. In 1939 Frank Lloyd Wright completed his work on the Johnson Wax building including The Great Workroom, an early form of open plan, and all the furniture within. Still truly breathtaking.

In the 1920s and later in Europe the development of new materials such as tubular steel combined with the rise of the Modernist movements and its figureheads such as Mies van der Rohe transformed the world of architecture and design.

In their wake and on the other side of the Atlantic, designers like Eero Saarinen and Charles and Ray Eames designed genuinely iconic products that endure to this day.

Mid 20th Century

While the Eames continued to create groundbreaking designs in a range of new materials, George Nelson introduced the first L-shaped workstation in 1947.

In Europe in the early 1950s a new conception of the open plan office was forming around the idea of Bürolandschaft. In contrast to the open plan bullpens that were now common in the US, the brothers Wolfgang and Eberhard Schnelle developed the idea

based on a rejection of scientific management and a new focus on the needs of individuals and the flow of information between them. Although still open plan, it opened up a new idiom that still distinguishes European open offices from those in the US.

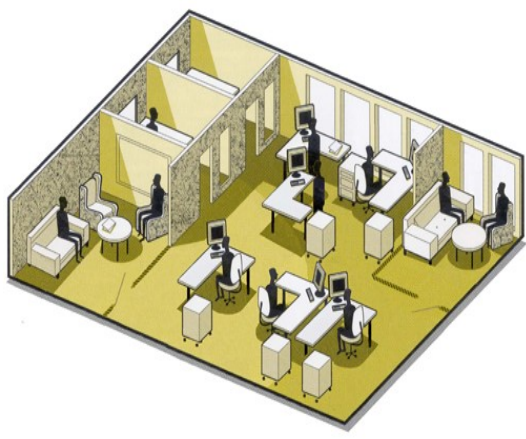
Also in Europe in the 1950s, Arne Jacobsen began to design his own generation of enduring furniture icons for Fritz Hansen.

1960s and 70s

The defining furniture system of the 1960s was Action Office by Herman Miller. Originally launched in 1964, it was updated in 1968 but this time supported by a Manifesto written by its designer Robert Propst which was just as influential as the furniture itself.

Many of the statements about the design of spaces for people are just as relevant 50 years on, even if the furniture now looks anachronistic. It was to form the blueprint for American panel systems for the next few years.

Meanwhile in Europe Herman Hertzberger's designs for the Central Beheer building herald the idea that even a fixed form such as building can have inbuilt adaptability to cope with changing technology and working cultures.



Left to right: combi-office; Herman Miller Aeron; WeWork coworking in New York

1980s

Computers with their large CPUs and CRT monitors start to appear on workstations and in response the desks become bigger and more heavily engineered. Cable management become a major issue and in response Douglas Ball designs the Race system for Herman Miller and Steelcase introduce their Context core unit.

Europe follows suit with a range of solutions including sliding tops. As much attention is paid to the structure of the desks as their surfaces. A similar revolution is taking place with office seating as mechanisms become more complex and five star bases adopted as the norm in response to growing interest in ergonomics for computer users.

The idea of the combi-office, in which people choose between an open plan workstation and an unassigned personal office is an early progenitor of activity-based working. People start using terms like hot-desking.

1990s

The miniaturisation of technology and the Internet change everything. There is a great deal of talk about new ways of working but they remain more talked about than implemented.

The use of laptops and mobile phones begins to drive a reduction in the size of workstation footprints and desks.

In the UK, the most talked about building is BA's new Waterside building which had at its heart a 'Street' with cafes, shops, trees, plazas and road signage. It is an early example of both activity-based working and the idea that workplaces can function like communities or even cities.

Chiat Day's vividly playful New York offices from 1994 designed by Gaetano Pesce becomes the progenitor of creative offices with quirky features. In London a firm called Michaelides and Bednash working around a single shared long table that clearly announced the arrival of the bench desk that was to become the default desk solution in the years that followed.

1994 proves a watershed in office furniture design with the introduction of the Aeron chair, Vitra's Ad Hoc designed by Antonio Citterio and a product too ahead of its time called Kyo from President. All point to the world that was to arrive very soon after their launch.

The 21st century

In many ways the crystallisation of ideas that had formed at the end

of the 20th Century. Work had become uncoupled in both space and time and as a consequence we saw a convergence not only of the places we work, and their design idioms, but an almost inability to distinguish between work time and the other facets of our lives.

Perhaps unsurprisingly wellbeing became as big a concern for firms as productivity, as did the war for talent. A greater focus on empowering people was one of the consequences.

A new way of occupying property also became evident with the growth of coworking as an alternative to traditional property models. Although in essence a development of serviced offices, the coworking phenomenon tapped into a perfect storm of change in the way people worked, globalisation, excessive rents in tech hot spots, organisations still smarting from the 2008 downturn and technological developments that facilitated new models of space.

In design terms, the century started with a clear focus on bench desks in open plan offices, often supported by break out spaces, meeting and team spaces and has evolved into something more sophisticated and adaptable – activity-based working.

Pre-requisites of disruption

Guy Kawasaki was one of the Apple employees originally responsible for marketing their original Macintosh computer in 1984 and is now a self-proclaimed tech evangelist. He has set out a manifesto for creating disruption.

1. Make meaning: Cash may be king but it shouldn't be the only motivation for organisations. Without the creation of meaning, firms are doomed in the modern world. "I believe that if you try to make meaning, you'll also make money."

2. Create a mantra: An organisation should be able to sum up what it does in two or three words. "The test for a mantra is that every employee can recite it."

3. Jump to the next curve Staying on an exiting curve means you will die. The trick is to stay ahead of the curve in what you now do and know when to jump onto the next one. "Don't define yourself in terms of what you already do. Think about the benefits that you provide."

4. Roll the DICEE: Use the DICEE acronym in decision making and service delivery. DICEE stands for: Deep Intelligent Complete Empowering Elegant.

5. Embrace failure

Failure happens but the successful own their mistakes. Accept you'll never be perfect.

"If you wait for this perfect world, the world will pass you by."

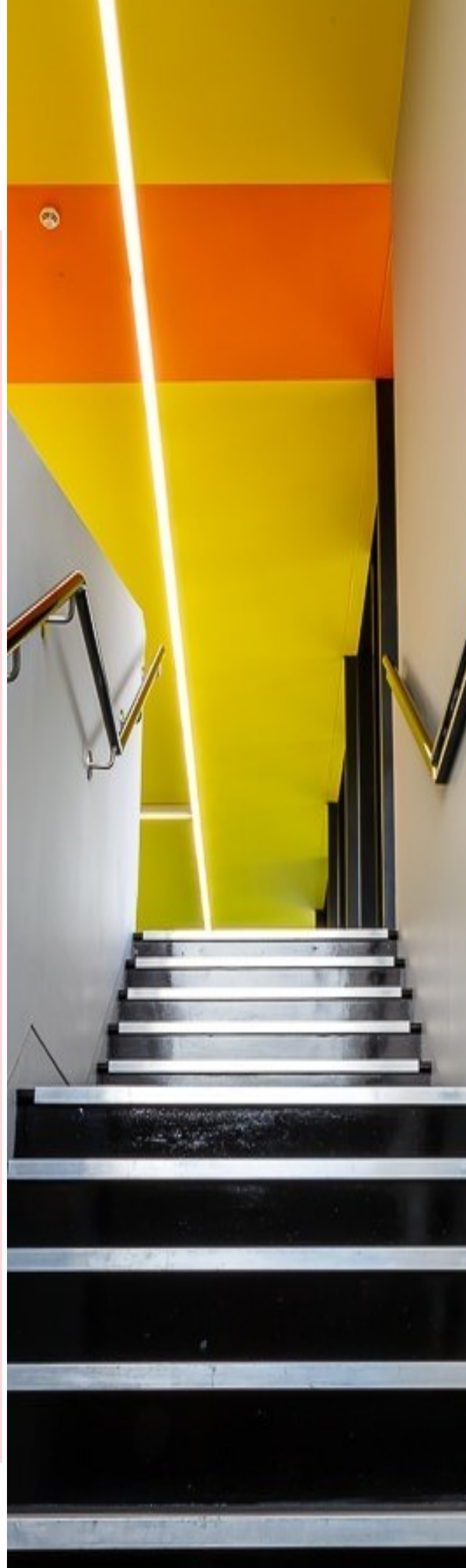
6. Let 100 flowers blossom: Don't assume you know all the uses your customers will find for products. They can teach you what you are producing.

7. Polarise opinions: Apathy is the real enemy, not disagreement. "What you need to worry about is if people don't care."

8. Churn baby, churn: Ask people what they think and take it on board. If they're just naysayers, you'll know.

9. Niche thyself: Identify how you are unique and sell that.

10. Perfect your pitch: Honing your message will ensure you can describe what is unique about you.



Conclusion

The effectiveness and adaptability of a design will depend on how well it resolves the tensions that exist between the physical, digital and cultural layers of the workplace

What next for the way we work?

As we have suggested, the core challenge for the people who design and manage workplaces is how to deal with a world subject to relentlessly disruptive technological and cultural forces within the context of an organisational structure and property that works on a different timescale.

A recent study published by MIT sets out how this can lead large organisations in particular in less than optimal ways. In particular it argues that while corporate transformation and responsiveness might be top of the agenda for CEOs, they are more prone to respond to change rather than pre-empt it. This puts them at high risk from disruptive forces, even though they may be fully aware of them.

The report claims to be “startled to find that the research underpinning the design and execution of corporate transformations is surprisingly thin. As a result, transformations are often guided by beliefs that, while seemingly plausible, are more anecdotal than empirical in nature.”

In the workplace this manifests itself in narratives which exist in a quantum superstate of futuristic and traditional. The effectiveness and adaptability of a

workplace design will depend on how well it resolves the tensions that exist between the physical, digital and cultural layers of the workplace.

The principles behind this complex situation have been known to us for a long time, at least since the 1970s when Frank Duffy first introduced the world to his ideas about the physical and temporal layers of the building – in his terminology the ‘shell, services, scenery and sets’.

The balance between these layers may have shifted significantly in recent years, but the tensions between them continue to determine how well we design and manage our workplaces.

Consequently, the ability to respond to change is perhaps the most important facet of an effective design.

While the nature of work has already changed in many ways, the pace of change has increased even more dramatically over recent years and we still haven’t seen anything yet. Especially when you consider the potential of technological developments such as automation and AI to transform our relationship with work.



About BW: Workplace Experts

BW is a London based fit out and refurbishment expert. It works with occupiers, asset managers and consultants to deliver workplaces with a personal touch.

In collaboration with clients and consultants, it continually strives to create a process that is shaped not only by outcomes, but also by the journey.

With 17 years in the game, it is still as passionate today about making a difference as it was at the beginning.

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