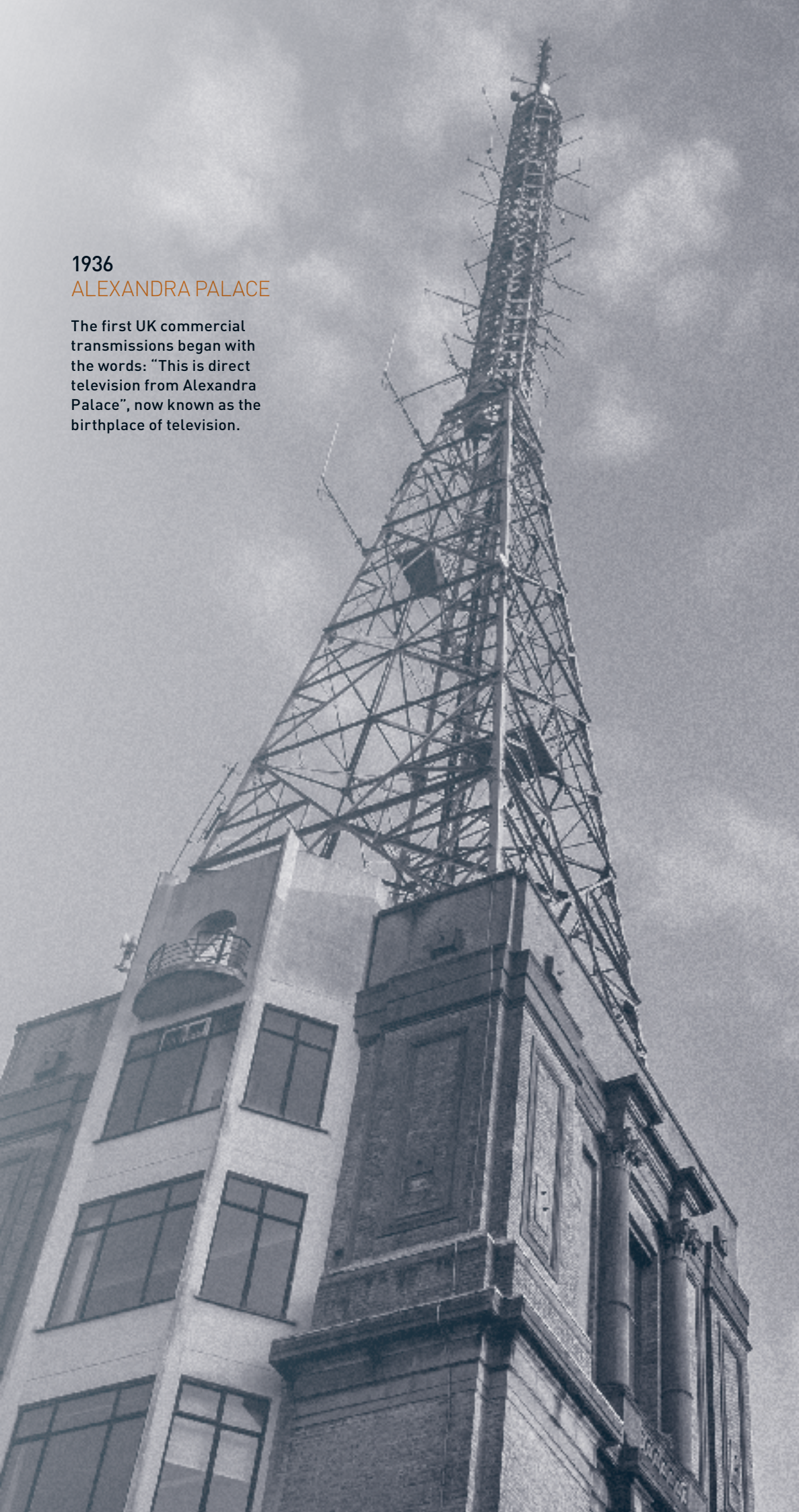
TV (AS A) GUIDE

A BRIEF HISTORY OF TELEVISION AS A GUIDE TO TECHNOLOGY DISRUPTION TODAY



1936
ALEXANDRA PALACE

The first UK commercial transmissions began with the words: “This is direct television from Alexandra Palace”, now known as the birthplace of television.

A BRIEF HISTORY OF TELEVISION

DRAWING PARALLELS WITH TECHNOLOGY DISRUPTION TODAY

In previous years, we have used parallel developments in other industries to (hopefully) bring to life the changes occurring within technology today. Last year, we used cars and horse-drawn carriages in the early 1900s to highlight how coexistence is merely a temporary state during which time new technologies complement before replacing legacy ones. We also charted the history of shipping containerisation in order to convey how modern software architectures would change the scale, speed and scope of technology.

This year we draw on the parallel of television.

WHAT'S INSIDE...

02 EXPONENTIAL CHANGE
NEW TECHNOLOGIES CAPTURE ALL THE GROWTH

04 BEFORE THE CLOUD
ENTERPRISE COMPUTING WAS REMINISCENT OF THE EARLY TV MARKET

06 CONDUIT FOR CHANGE
VALUE CREATION IN NEW AND ANCILLARY MARKETS

08 THE CURRENT ENTHUSIASM FOR TECHNOLOGY STOCKS SHOULD BE CONSIDERED AGAINST THE TEMPLATE OF TELEVISION

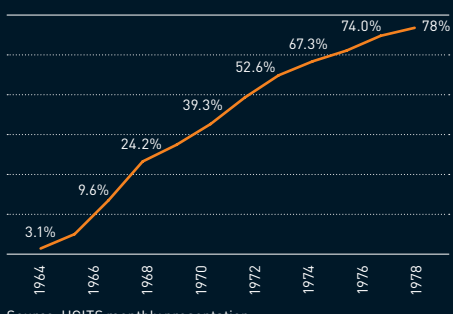
EXPONENTIAL CHANGE

NEW TECHNOLOGIES CAPTURE ALL THE GROWTH

Although the first working television was demonstrated by John Logie Baird in the mid-1920s, it was not until 1936 that the first UK commercial transmissions began with the words: "This is direct television from Alexandra Palace", now considered the birthplace of television. Shuttered for the duration of WWII, radio enjoyed its swansong before TV became mainstream in the early 1950s. TV **adoption** followed a classic S-curve with US household penetration more than tripling from 9% to 34% between 1950–1952, driven by cheaper sets, and popular content. In the UK, the Coronation in 1953 was watched by more people on TV than those that listened to it on radio. Between 1951 and 1954, the number of TV licences in the UK more than quadrupled. By 1962, 90% of US households owned a TV just as **colour** was about to 'do for the TV industry what the LP did for records' (and, in time, what broadband was to do to the Internet) Colour TV sales exploded with US penetration rising from 3% in 1964 to 25% four years later. The same pattern repeated in the mid-2000s when **LCD televisions** emerged to challenge the legacy cathode-ray tube (CRT). In 2003, CRT accounted for c.85% of new television sales in the US but once the LCD price premium fell to c.2.5x in the following year, CRT sales collapsed.

Not only do these different waves of TV adoption support our view on non-linear change, but they are textbook examples of how 'all' the growth is captured by new technology and new vendors. Even though it took until 1972 for colour to lead the market, black and white televisions were being sold at a loss even in the early 1960s resulting in bankruptcies and industry consolidation. Sony introduced the Trinitron in 1968; having only held a modest share of the black and white market, but by 1972 the Japanese had secured 17% of the US colour market and 36% just six years later. Thereafter, Japanese industry dominance ended with the CRT replaced by Korean LCD panel-makers Samsung and LG. And in each wave, consumers did not throw away their older sets – they moved them into spare bedrooms allowing the so-called 'installed base' to create a **fallacious impression of coexistence.**

Percentage of colour TV Household Ownership



Source: UCITS monthly presentation

1953
THE QUEEN'S CORONATION AS A CATALYST

The Coronation proved a key moment for television adoption in the UK with more people watching the event than listening to it on radio.

BEFORE THE CLOUD

ENTERPRISE COMPUTING WAS REMINISCENT OF THE EARLY TV MARKET

Today, many of the same reasons for not throwing away an old TV explain why enterprises continue to run legacy applications. They were expensive. It's a hassle getting rid of them. And they still work. New features and add-ons can extend useful lives and provide a stay of execution, much like an Amazon Fire stick can make a 'dumb' TV smart for a while. However, 'all' of the growth is captured by next-generation vendors much like the experience of colour and LCD TVs. For example, 75% of databases will be deployed or migrated to a cloud platform by 2022 with cloud native vendors such as AWS, Google and Alibaba gaining significant market share. The hybrid cloud is built on such foundations with less than 20% of CIOs expecting to maintain material on-premise estates in the future. Likewise, hopes that cloud workloads will be repatriated – the so-called boomerang effect – as articulated by Michael Dell, is about as likely as CRT televisions returning to our living rooms. According to Gartner, 95% or more of applications that move to public cloud platforms will remain there until modernised or replaced.

Television provides us with another interesting parable in the form of **Radio Rentals**. Founded in 1930 to rent radio sets, the business pivoted into television to participate in the post-colour TV boom. At that time, televisions were expensive, cumbersome, difficult to set up and unreliable, generating demand for TV rental, installers and repairmen all of which Radio Rentals provided. However, once televisions became more mainstream – cheaper, less heterogeneous and more reliable – so the rental model ceased to be relevant. Radio Rentals became part of Thorn EMI and later Granada before TV rental stores were wiped out by high-street retailers such as Currys and Comet.

Before the cloud, enterprise computing was reminiscent of the early TV market. Companies did not need to rent compute, but it was expensive, heterogenous and unreliable, requiring armies of professionals to keep the lights on. Higher costs meant longer useful lives. Furthermore, the need to build, install, maintain and integrate applications became big business. Today, the **IT services industry** is worth in excess of $1trn, equivalent to one quarter of all IT spending and **more than twice the size of enterprise software**. This feels no less anachronistic and ripe for disruption than Radio Rentals which at its peak employed 3,600 technicians and 2,700 skilled installers. The first wave of cloud adoption crushed hardware companies who had to contend with more than a quadrupling of server utilisation and had little to offer hyperscale vendors apart from their profit pools.

The next wave is likely to take its toll on the bloated IT services industry, particularly once the hybrid facade cracks and cloud native applications gain further traction – both of which may be accelerated by COVID-19. With the lifecycle of a piece of custom software said to be around 15 years (about the same lifespan as a CRT television) and given that Oracle's revenue peaked in 2006, this second wave may be imminent.

1930

FOUNDED TO RENT RADIO SETS, THE BUSINESS LATER PIVOTED INTO TELEVISION TO PARTICIPATE IN THE POST-COLOUR BOOM

However, once TV became more mainstream the rental model ceased to be relevant and rental TV stores were wiped out by high-street retailers such as Currys and Comet.

CONDUIT FOR CHANGE

VALUE CREATION IN NEW AND ANCILLARY MARKETS

The final parallel – and the most useful guide for the disruption that lies ahead – is the role played by **colour television** after its introduction in the 1960s. Together with the move from 405 lines to a higher definition 625 'PAL' based system in the UK, the introduction of colour had a profound effect on pervasiveness of television. In the UK, colour was pioneered by David Attenborough then controller of BBC2 which, in 1967 became the first European channel to transmit in colour. By 1969, both BBC1 and ITV had followed suit. Two years later, television had become so ubiquitous that 91% of British homes had a TV set despite nearly one-third of them not having a fridge and more than half being without a telephone.

The new medium required **new content** with nature, gardening and educational shows, such as *Sesame Street*, commissioned to make the most of the new palette. Sport was ideal too; the first UK colour broadcast was from Wimbledon. **Television has enjoyed a symbiotic relationship with sport ever since**, each influencing the other's development.

1969
SNOOKER FIRST BROADCAST IN COLOUR

In the UK, snooker – a sport ideal for exploiting the new colour palette – was 'saved from extinction' by the introduction of 'Pot Black' in 1969 which ran until 1986.

American football overtook baseball as the most popular US sport in part because its format lent itself to advertising – the average NFL game includes just 11 minutes of action and more than 100 commercials. Today , Super Bowl airtime represents the pinnacle of TV advertising with a 30 second slot said to cost over $5m. In the UK, snooker – ideal for exploiting colour – was 'saved from extinction' by the introduction of Pot Black in 1969 which ran until 1986. During that time, snooker became one of the most popular sports on TV while the players such as Alex 'Hurricane' Higgins became household names. Denis Taylor's unexpected victory over Steve Davis in the World Championship of 1985 was watched by an incredible 18.5m people.

THE CURRENT ENTHUSIASM FOR TECHNOLOGY STOCKS SHOULD BE CONSIDERED AGAINST THE TEMPLATE OF TELEVISION

The role played by television in commercialising sport proved just one example of how **far more value was created in new and ancillary markets** than in TV itself. As with aviation, automotive and container shipping (industries we have explored previously) disruptive technologies themselves often only experience short monetisation windows due to rapid adoption and competition. However, their role as **conduits for change** persist and prove far more transformative than early proponents of the nascent technology could possibly have imagined. Television – arguably the 20th century's defining technology – has 'determined what we know and how we think, the way we believe and how we perceive us ourselves and the world around us', almost a perfect description how we might describe the Internet today.

The temptation to write-off the current enthusiasm for technology stocks as 'another bubble' should be considered against the template of television. The late 1990s dotcom bubble was based on a PC centric, dial-up Internet, akin to the 425 lines of black and white content with which radio coexisted happily for decades to come. However, like colour, the Internet of today – **a broadband network** that connects 4.4bn people and 14.2bn devices – is transforming the world in ways that we will struggle to comprehend. Just as TV screens got larger and sharper, so the Internet will get faster and ever more pervasive. In the near future, 5G and Edge Computing should enable a plethora of new applications previously thought impossible such as autonomous vehicles, automated factories, remote surgery and real-time analytics.

While the last economic dislocation allowed us to identify many of the **core technology trends** that have defined this cycle, many of them were too nascent to be immediately disruptive. In 2008/9, e-commerce was just c.5% of US retail sales while only 17% of people had smartphones. 3G – the fastest cellular standard at the time – accounted for just 11% of mobile connections. However, these metrics are very different today allowing **real-world disruption to be significantly ameliorated in the virtual one.** With normal life curtailed for now, people are *experimenting with alternatives* at an accelerated pace. Microsoft CEO Satya Nadella described this process as **"two years of digital transformation taking place in two months"**. Some of the new behaviours will prove short-lived but those that replace outmoded practices will persist. Likening the advent of colour to cataracts being removed from his eyes, one commentator exclaimed, "out we came, from the flickering shadows of black and white into the blinding reality of vivid sunlight". In time, the same may be said about the world post COVID-19 and the changes that it wrought.

Ben Rogoff
July 2020

"Like colour TV, the Internet of today – a broadband network that connects 4.4bn people and 14.2bn devices – will transform the world in ways that we cannot yet fully comprehend."

"Out we came from the flickering shadows of black and white into the blinding reality of vivid sunlight."

Polar Capital Technology Trust plc