Predicting the unpredictable.
At a time of change, a paper revisiting macro developments impacting on Health and Safety over the past decade to help consider catalysts for future demands.
Summary

The purpose of this short paper is to provide a short, sharp shock that will help stimulate any organisations that have yet to consider positive steps to align their Health and Safety and related functions with their mid to long term corporate strategy and contingency planning.

The impetus for Praxis42 to produce this paper is the realisation that whilst many of our clients rely on us to help them to ensure that their people remain healthy and their premises and property remain safe, we are typically only invited to advise within the parameters of ‘Rumsfeldian known knowns’ – when, in fact, some of the biggest threats to the health, safety, security and wellbeing of our clients’ employees, and their ongoing operations, stem from ‘known unknowns’ and ‘unknown unknowns’.

Moreover, even within the parameters of ‘known knowns’ a combination of ‘hoping for the best’ and budgetary constraints often cause leadership teams to choose not to take action today to prevent issues that are a little too far ahead to have any impact today. As recent, tragic events have proven, just because a potential outcome may be low probability, that does not prevent it from being very high impact.

As a starting point for this exercise, we have reviewed a Horizon Scanning paper published by the Health and Safety Executive (HSE) in 2006 which was designed to consider how Health and Safety matters in 2017 would be impacted by world events and societal trends in the decade leading up to that year. With the benefit of hindsight, we reflect on where its hypotheses differ to the actual situation as we experience and perceive it today.

Our paper then goes on to begin to contemplate some of the macro challenges that the UK Health and Safety sector may have to face during the ten years to 2028. Moreover, it particularly takes a pessimistic, or perhaps prudent, view of how some well-established ‘knowns’ will impact upon our clients from the perspective of our profession.
Introduction

In 2006, the HSE convened a Project Team to scan the not-too-distant horizon. The result was a 114 page document that serves to detail the processes involved, outputs and evaluations of this scenario-building project. It starts with a complex explanation of the methodology involved and goes on to use story-telling and narrative to describe the state of various matters surrounding, and impacting on, Health and Safety in 2017.

In large letters on the first page, readers are instructed not to reproduce any of the report. And, before we go on to reflect on its general content, there is a clear disclaimer that explains how the contents are "not intended to stimulate thought and are in no way predictions of the future. They do not represent HSE views on how the future may develop.” The document is a fascinating read although the exercise seems partly logical and partly whimsical; and the inclusion of the whimsy appears to serve as a device to excuse the fact that this is, quite clearly, a serious, academic and valuable attempt to see ten years into the future from their perspective in 2006; but they’d rather not position it as such in order to prevent being held hostage to fortune.

On one hand, ten years may seem like a long time. For example, when the HSE paper was written, the real proliferation of the mobile phone in the UK as the device into which many practical and entertaining aspects of life was to converge was still a few years off – occurring, as many commentators agree, around 2010. On the other hand, time flies. An eight-year-old elite gymnast today, already working very hard in training for 20 hours a week, dreams of competing in the 2028 and 2032 Olympic games and knows that everything they do today could make that dream a reality; or otherwise. How many organisations are working this hard to make sure they are winners in 2028 and 2032?

Rather than using conventional STEEP, STEEPLE or PESTLE analysis, the group chose the following classifications to inform the scenario building: Culture and Society, Demographics, Technology and Science, Environment, Economics, Politics and Globalisation.
General findings and observations

Culture and Society: The role of the internet and online/digital technologies are obviously changing forms of working life and the blurring of boundaries between work and home – including what the report describes as ‘home/tele working’.

Despite the quaint term ‘tele working’, their view of this has proven to be very accurate. However, as with so many of the report’s estimates for the future, the general direction that the report rightly suggested has been supersized by the pace of change in terms of digital technologies.

The way that the internet and digital channels have developed since the late 1990s is a little like the commercialisation of automobiles around one hundred years earlier. They were originally conceived as an alternative, harder working, more controllable version of the horse and carriage. Their role was to be able to pull ploughs, deliver the mail and take people on journeys which extended beyond their ability to walk, ride or cycle.

Instead, the role of the motorised vehicle has touched and changed almost every aspect of life. Not only has it become the most popular means of transport across the developed and developing world, but it has been the catalyst for radical paradigm shifts in town planning, the environment, conservation, employment patterns, social interactions and the production and supply chain for goods. For all the good it has done, from a Health and Safety perspective it has caused a dramatic increase in accidental deaths, whilst also contributing to obesity and cardiovascular diseases and air, water and noise pollution. And, when they were sitting listening to the BBC on their wireless sets in the first half of the 1900s, or even most of the second half, would people have thought that three middle aged men talking about cars could generate £50 million per year?

Another aspect of Culture and Society picked up in the research was an expectation that the ‘overwhelming majority’ of medium to large employers will have coherent strategies to encourage staff to undertake recreational activities to promote wellbeing. We would suggest this has proved partially correct. In a recent piece published by Praxis42 in support of Mental Health Awareness Week we reported on the ‘Marmite’ status of wellbeing in the UK. This included the following excerpt:

“In late 2016, the Mental Health Foundation (the body behind Mental Health Week) reported that 49 per cent of employees suffering with mental health problems had experienced suicidal thoughts at work. In addition, 45 per cent of them had not told their employers for fear of being discriminated against. This last point is mirrored by the further fact that only 10 per cent of managers felt able to deal with the matter, citing insufficient training.

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Conversely, from a corporate employer angle, we see a gradual change that appears to be on track to become a genuine movement. In our experience, wellbeing is increasingly becoming escalated to the point where it is contributing to the growth in Talent Branding and even making its way onto Board Meeting Agendas. However, it is currently a ‘Marmite’ matter. Some leadership teams really get it, others simply do not.

There is an old story; by way of a question and answer. The question is ‘What is the one thing that can’t be sold on a market stall?’: The answer is ‘Common sense’. Because those who have it don’t need it; and those who don’t have it don’t understand why they need it.’

And so it appears to be with wellbeing. Those leadership teams who actively promote a work life balance and provide wellbeing support and related perks to their talent invariably evangelise about the productivity gains, reduced lost hours and enhanced creativity that they unlock. Meanwhile others, leading equally successful organisations, just switch off as soon as any related terms are mentioned. We think the latter are reaching a tipping point and there are some useful resources around this matter on the CIPD website.

In today’s climate, it’s hard not to notice that numerous work-based practices induce stress. Root causes range from under-funding crises’ through to the simple reality of email on-the-go, and its impact on home and family life – particularly for those who are incentivised by performance related reward and management.

Whilst psychologists and therapists may be able to determine precisely where the divides lie along the spectrum ranging from positive stress to pressure, to inappropriate stress and onto clinical medical health issues, many of us can clearly experience their presence in our working lives. And whether working in a hedge fund or for the minimum wage, we can also recognise how, like many forms of human behaviour, issues at the acceptable end of the spectrum often form the catalyst for a rapid descent to the dangerous end.”

So, the report was perceptive in expecting that, in general terms, the role of wellbeing is becoming increasingly important. However, we see little evidence that ‘the overwhelming majority’ of organisations prioritise this support to employees.

**Demographics:** This section of the report rightly cites ageing and diversity as two areas set to change. Here in 2017, there seems to be a paradox in terms of the age of the workforce. On one hand, we know that we have an ageing population and, ergo, workforce; and also that some are having to retire later, whilst others are choosing to work for longer. According to the CIPD, demographic shifts mean that in 1992, one in five people in employment was aged over 50; today it is more than one in four.
On the other, the rise of ‘Millennials’ (born between the early 1980s and 2000) as a percentage of the national workforce is often reported as being set to increase – with PWC predicting that Millennials will form half of the global workforce by 2020, while in the UK they already account for around a fifth of the population.

A form of polarisation that has occurred since 2006 is well summed up by Facebook CEO Mark Zuckerberg; and the quote which he probably regrets the most. What he said was ‘Young people are just smarter’. What he probably meant was that there is a generation of ‘digital natives’ who have never known a world in which computers (in all their forms) were not at the centre of their lives, their education, their relationships and the majority of their activity during their waking hours. It was, however, Tim Berners Lee, now in his 60s, who, along with Bill Gates of the same age and others like the late, great Steve Jobs who were ‘smart’ enough to make all this happen in the first place.

During the years between 2006 and 2017, the digitisation of many jobs has meant that whilst some older employees have been in positions where they have been lucky to have developed alongside the technologies; those who have not kept up with the changes, often because their daily activity did not include any or much use of technology, have found themselves much less able to adapt; and increasingly marginalised.

Participants in the research understood that racial equality was increasingly becoming positively blurred, with not just black and Asian equality, but an increasingly broad spectrum of mixed race variants. There is also an understanding of the likelihood of large numbers of migrant workers active in the UK. This is something that has almost certainly escalated beyond the imaginations of those involved in the workshops, and become a matter that is now at the centre of political debate and division.

**Technology/Science:** As already outlined, those participating in the research could not have imagined the many variables that were to be impacted by the rise of online and digital technologies and devices. The most ubiquitous and game-changing of these has been the development of the mobile phone as the device that acts as the single, personal and personalised extension of the human body and brain. Many of us now receive much of our information and undertake many of our communications using a mobile phone, both oral and written.
The researchers recognised that developments in medical-related human enhancements would continue; but also showed concern about possible unintended consequences of using emerging technologies, substances and materials.

Whilst the report rightly foresaw these overall developments, some of the actualities of these are interesting to reflect upon. Here are a few:

Two companies are working on so-called ‘bionic eyes’. In the USA in 2013, Second Sight (http://www.secondsight.com/), received government approval to start marketing an artificial eye. This technology uses a camera mounted to a pair of spectacles to transmit data to an implant located in the retina. While not claiming to be perfect, patients have been able to retrieve a level of vision and to identify colours. Three years later in Australia, Bionic Vision Technologies (http://bionicvis.com/) was given over £23 million $23.5 to commence surgical trials in Melbourne.

Stem cell research was in its infancy in 2006 and remains very experimental in humans. However, scientists are increasingly confident that stem cell research can be used to treat a spectrum of medical conditions including Parkinson’s disease, spinal cord injury, stroke, burns, heart disease, diabetes, osteoarthritis, and rheumatoid arthritis.

Over the decade in question, HIV has continued to decline from the height of fear to become a manageable condition in many cases. According to one article, an HIV positive person who commences their drug treatment at age 20 now has a life expectancy of 63.

The University of Dundee has been working on new drugs that focus on types of enzymes involved in major diseases like neurodegenerative conditions and even cancer. This has been achieved by targeting enzymes known as deubiquitylases (DUBs) and so far 90 have been identified. Research leader Dr. Matthias Trost has reported that this is the first technique which fast-tracks the screening of DUBs, which is very useful in finding further targets for the drugs.

Not all ‘scientific’ advances have been about the science. In the case of the initiative to spread defibrillators across the UK so that they could be used by all, it has been about the distribution of the science in ways which enable their usage. Organisations like Community Heartbeat http://www.communityheartbeat.org.uk/starting-your-project have made this possible and affordable; even for small parishes.
Environment: Looking forward from 2006, the participants seemed to have asked themselves more questions about the future, rather than trying to produce any answers in the form of predictions. Reading between the lines, there is a sense that as well as finding it difficult to predict what may happen, there was an inherent fear; as if they were scared to turn over too many stones as they may not want to know what may be lurking under them...

Compared to some changes that have happened since 2006, and not least the propagation of the internet, there are mixed reports about the state of the environment around today; often coloured by political and special interest agendas.

For the purpose of this paper, it has been decided not to expand upon this area because it is difficult to separate the politics and special interest groups’ opinions from the facts. There is clearly a trend towards a decline in most key areas such as the greenhouse gases, air quality, ice cores, rainforests and the condition of the seas. However, it is also true to say that the climate and other factors have consistently changed across epochs.

Economics and Globalisation (two combined): At their most accurate, the researchers foresaw a UK shift away from industry and heavy manufacturing towards services and niche manufacturing. They speak of ‘the knowledge society being based in IT’ and of becoming primarily a service economy.

They also correctly go on to talk about changing work structures including more flexible work, more part time and multiple contracts which seems remarkably prescient since this has mainly happened in the second half of the decade. The report also suggested the increase in what it terms as decentralisation – which, along with all the factors mentioned already, have become what we call the Gig Economy.

Again, within Economics and Globalisation, the impact of digital marketing, the internet and eCommerce has been more substantial than the researchers could imagine. For example, whilst they did predict niche manufacturing, they did not predict that niche marketing would drive this. A good UK example of this is the Cambridge Satchel Company. The company was founded in 2008, in Cambridge, by Julie Deane and her mother Freda Thomas because she wanted to find ways to fund the school fees for her children. Her colourful handmade leather satchels are all based on an original Oxford and Cambridge satchel design and aimed at school children, but met an unexpectedly high demand as a fashion accessory and gained a cult among twenty-somethings. The company opened its own production facility in Leicestershire that produces over 3,000 bags per week which are exported to over 86 countries – with sales in 2013 topping £13 million.
Perhaps surprisingly, since it was only two years off, the researchers made no mention of the possibility of the economic crash which is generally regarded to have crystallised on 15 September 2008 with the collapse of Lehman Brothers. This was the first of a well documented series of failures and near failures of financial institutions in the UK and beyond. The consequent recessive period has become known by the term ‘austerity’ in the UK and is characterised by cuts in public spending, including education and the National Health services; underpinning declining health care and health for some parts of society.

The researchers can be excused for not foreseeing the rise of the various ‘Arab Springs’. These were a series of anti-government uprisings in Arab countries of North Africa and the Middle East beginning in 2010. These were often led by young people who used Social Media to share their ideas and galvanise their generation.

Whilst a few of these uprisings have led to some progress, others have caused geo-political change. Domestic conflicts in Iraq, Egypt, Libya, Yemen and, probably most notably, Syria have led to huge migration across the area and across all of Europe – causing additional social unrest, financial burdens and political shifts. The result of the UK Referendum over whether to remain in the EU or to leave resulted in a vote to leave, with many ‘leave voters’ citing migration, and their results of migration, as a major factor in their decision.

Interestingly, the researchers stated that they feared that if the UK came under financial pressure, which it has, then there could be pressure for companies to seek ways to cut costs – in other words to be less safe. This was heightened by a fear that employers in other countries would take a less responsible approach in order to be more competitive; which in turn would drive this pressure.

However, they also state that an optimistic view would be that the HSE would be seen as an enabler that adds value to UK plc. This has been evident in Praxis42’s work, which increasingly involves promotion of Health and Safety cultures in which people have a positive attitude towards themselves, those around them, the premises and extended environments in which they operate, and the tools and technologies they utilise.

**Politics:** In one of its least accurate comments, the researchers reach the conclusion that there needs to be more cohesion across political silos; including different departments and agencies.

Given that both the Scottish and Welsh Parliaments had been agreed in 1997, UK politics carried on in time honoured, mainly bi-partisan, tradition throughout this period. One notable exception was the creation of a coalition government in 2010, although this did not feel significantly different. Another less notable exception was a referendum in Scotland to test whether the residents wanted to exit the UK. The result was that they did not.

However, two Political shocks of 2016 and 2017 could not have been easily predicted in 2006, because they were even unexpected the night before they occurred. The first of these shocks
was on Friday 24th of June when the UK awoke to find that on the previous day, 51.9pc of those who had voted in the EU Referendum had voted for the UK to leave.

As this paper is produced one year on, the seismic impacts of that vote are only just beginning to become apparent; not least as a major factor in the June 2017 General Election. The ironic truth is that we have a UK Government tasked with managing an exit from the EU, when it is very clear that very few of those responsible for doing so emotionally or intellectually support the decision made by the country.

Another factor at play is that the binary yes/no, in/out question that was put to the people on the ballot paper woefully failed to create a pathway for what happened next. And it seems clear that some were voting against a growing perception of a world in which they were becoming marginalised and disenfranchised. The digitisation and robotisation of jobs, globalisation of employment and the impact of austerity measures had caused many people to want to vote for change; even though they could not be certain what change would look like.

One startling factor was that it became clear that many of those who voted to leave were actually thinking that they were making a protest vote – only to find that they had shifted the UK from the uncomfortable security of being a member state; to becoming an individual nation outside of this well-established trading block.

And now, there seems to be no agreement across any one political party, let alone the combined opposition parties, as to what the (as titled) Brexit should look like. What should be ruled in and what should be ruled out? What should the process be? Should we agree with the planned outcomes prior to negotiations, or does that show our hand? Few would disagree that the UK is facing its toughest test since the end of the last war.

And there are knock-on effects. Other countries in Europe, which may have become increasingly uncertain about the value that they derive from Europe, have gained some confidence in their attitude towards the possibility of exiting; and perhaps the whole project is now doomed to fail.

The second shock happened thousands of miles away in the USA, but sent waves across the planet, and not least to the UK given our ‘special relationship’. Apparent Billionaire Property Developer, TV Game show host and, to many, figure of fun, Donald Trump was elected President. Back in 2006 when the HSE paper was drafted, Trump was busy starting Trump Mortgages – and to say that the researches could have predicted that he would become US President within 10 years would have been unimaginable. Trump Mortgages failed in 2007.

Between them, these two shocks have been shocks because they were heavily counter-intuitive for many politically and academically engaged people. As we move towards the section in this paper where we look to the next ten years, the equivalent of being able to predict that Donald Trump would hold the highest office on our planet, is a bit like us predicting that the race for President in 2028 will be between Kim Kardashian and Bart Simpson...
Looking from a very different political angle, since 2006 the UK Government has used a combination of nudging and encouragement, backed up by the full force of legislation to focus business leadership minds on the importance of Health and Safety in the workplace.

One catalyst occurred in 2007 when the Corporate Manslaughter and Corporate Homicide Act (2007) became law. In the years leading up to the Act, a conviction of manslaughter could only be handed to corporation if a single employee of the company was found to be responsible for the offence and providing the individual was regarded as being of sufficient seniority as to be seen to represent the “mind” of the corporation. As a result, such convictions were rarely upheld; causing general disquiet because it created the impression that culpable corporations were not being held to account.

The Act aimed to reverse this situation by aligning incidents with the way in which the organisation’s activities are collectively managed and organised by its senior management. So rather than needing to identify a single guilty person, the overall management structure and culture could be considered. If convicted, the corporation may be ordered to remedy their breach, or to make its failures public, or be fined an unlimited sum.

Almost a decade later in 2016, this approach was reinforced by the introduction of the ‘Health and Safety Offences, Corporate Manslaughter and Food Safety and Hygiene Offences Definitive Guideline’ by The Sentencing Council. The aim of this set of guidelines was to provide, for the first time, clear guidance on how Health and Safety cases should be sentenced.

Beyond its practical advice, the point of this exercise was clearly to provide a mechanism to persuade company and organisational leaders to take Health and Safety in the workplace more seriously. Depending on whether the glass is half full or half empty, it could be seen as a deterrent. On the other hand, research consistently reveals that organisations which focus on the health, safety and wellbeing of their stakeholders are much more likely to attract, recruit and retain the most talented employees and to be favourably considered when pitching for contracts or soliciting for funding. These outcomes are fully aligned with those of us in the profession who help organisational leaders to ensure that Health and Safety and related matters are adding value to their corporate strategies.

Arguably the most innovative aspect of the new guidelines was the introduction of a direct correlation between not only the seriousness of the breach and culpability of the company, but also their total turnover. This is segmented as follows:

- Micro companies with a turnover of no more than £2 million.
- Small companies with a turnover of between £2 million and £10 million.
- Medium companies with a turnover of between £10 million and £50 million.
- Large companies with a turnover of £50 million and over.
The sentencing guidelines include provision for very large organisations to be handed fines which may exceed the sentencing guidelines in order to achieve a proportionate sentence. As a result of these guidelines, there has been a steep rise in large fines in recent years. In 2014 there were no fines of more than £1 million, in 2015 there were three and in 2016 this rose to 19. Aligned to that, in 2014 the top 20 fines totaled £3.4 million, in 2015 they totaled £13.5 million and in 2016 this rose to an unprecedented £38.6 million. And it is not only the Finance Directors of large companies who are making sure that their Health and Safety leaders are taking advice from experts like Praxis42 to help ensure that they avoid crippling fines. Smaller fines for smaller companies are just as onerous in many respects – for example one local estate agency group was fined £250,000 when a house viewer fell into a well on site at a property that they were marketing. That is the equivalent to 82x the national average estate agents fee (1.3pc) for the national average home (£234,000) – so a major sum to have to deal with; and from which, many SME companies would be unable to recover….

Alongside the increases in fines payable, the gradual culture change that this combination of the Act and the sentencing guidelines have prompted has included an increasingly apparent propensity for courts to hand down custodial sentences. According to one report, in the 42 years between 1974 when the Health and Safety at Work Act came into force and January 2016, 189 immediate or suspended custodial sentences were handed down for Health and Safety offences. It is also reported that during the eight months between February and September 2016, there were 23 equivalent sentences.

Extrapolated, this would equate to 1,656 equivalent sentences over 42 years. This approximation serves to illuminate the way that, in between all the technological developments over the past decade, there has been an increasing recognition from the Government and the Judiciary that companies cannot be allowed to get away with any practices that endanger the health or safety of employees or anyone associated with their activities or premises. This evolution in custodial and suspended sentences has largely been creeping along below the radar, but with 26 week sentences applicable to even ‘low culpability’ offences, this sequence of events is among the most significant developments over the past decade.

As we explain on praxis42.com,

“Health and Safety related compliance and competencies touch every aspect of any organisation’s operations and success. In fact, in the eyes of the law, it subordinates everything else. That’s EVERYTHING else. Brands, profits, assets, balance sheets, contracts, equity whatever… Whether you are the chairman or the cleaner, working in a hostel or a hedge fund, the law prioritises everybody’s Health and Safety above all else.”

It is encouraging to see that sentencing guidelines and their application are rapidly catching up with our profession’s best practice.
Looking forward a decade to 2028...

As the home page on Praxis42.com commences: “Right now, change is the only certainty. The sources, shapes and severity of Health and Safety related risks are changing faster than ever.” And the variables and unquantifiable factors that can impact on Health and Safety at work, and the wellbeing of employees and public alike, include some significant challenges and opportunities.

**Terrorism:** Writing here in early June 2017, within days of the two most recent terrorist attacks on UK soil in Manchester and London, questions around the safety of employees in many sectors abound. How would you feel about going to work in a crowded London bar this evening, or having your son or daughter supplementing their student expenses by acting as a steward at a concert hall or football stadium? Whilst responsible employers all have measures in place to deal with predictable events, how might they legislate for indiscriminate and deliberately barbarous actions of suicidal individuals?

**Brexit:** Another major unknown is the process and outcomes of the UK Government’s mandate to withdraw from the European Union, commonly known as Brexit. Given that the referendum vote was so close, and that the two leading parties were not in favour of leaving, and so many other unknown entities and influences are in play, it is difficult to fathom what the next ten years may look like...

However, it seems unlikely that the withdrawal from the European Union is likely to cause any significant or material change to UK Health and Safety provisions because the sector is governed by the Health and Safety at Work Act 1974 which has nothing to do with Europe. That said, numerous directives have come from Brussels in recent years and it would seem likely that the HSE will be expected to drive such initiatives following the UK’s departure. Since the HSE is an acknowledged world leader, and has been influential in the development of international health, safety and environmental best practice, the sector should be in good hands.

In addition, assuming the UK will continue to trade with EU countries, then we will need to continue to meet their standards. Conversely, increased trade with the USA may underpin some form of lowering of Health and Environmental standards.

**Technology and Science:** Research for this paper reveals an enormous amount of evidence that the major change coming is the transition from ‘Sick Care’ to ‘Health Care’ – by which is meant that instead of waiting until a symptom or a health issue appears and then treating it; the trend will be towards early and consistent identification of risks, and managing early interventions to avoid their development.

One way to picture this is to imagine the dashboard on a modern vehicle which is hooked up to hundreds of sensors throughout all its operating systems. We no longer wait until our brakes or tyres have begun to fail and to endanger the lives of passengers and public... Instead we are
notified by a warning light that we need to take action; and anyone sensible does exactly that. Of course, the increasingly common use of wearable technologies to measure vital signs is just the start of this...

Another, allied trend is what is sometimes referred to as the democratisation of healthcare. Already commonly in use by those of us who use search engines to attempt to self-diagnose, there is a view that in the future this will become much more formalised as part of the way that we work with healthcare professionals to identify and treat ailments.

One manifestation of this which already exists is the HD4 Consult Station produced by Alpha Systems at http://alphasystemsgroup.com/. The idea of this hub is that it can be located in a private space in a public area (such as within a retail outlet within a shopping mall) and individuals can visit and use the interface and various pieces of equipment provided to self-drive an online doctor’s appointment – with a doctor who can be located anywhere on earth. This is an example of what is being termed ‘telemedicine’ and one piece of research conducted in 2015 in France found that the consult station was between 72pc and 91pc as accurate as a traditional visit to a doctor. That said, it perhaps a little-known fact, that the third highest cause of death in the USA is... doctor error.

The trend towards medical self-diagnosis has support from some of the biggest organisations on the planet, but also some individual disruptors. One American women who suffers from type 1 diabetes has built her own artificial pancreas https://openaps.org/. This is a minor exaggeration; but what she has created is a piece of technology which monitors her blood sugar levels between meals and pumps insulin into her body as and when required – leaving her to get on with her life without having to think about her condition. Perhaps the most amazing aspect of this story is that she has created this technology using open-source code, and is thereby able to sell the units for only $150 dollars. That’s medical democratisation and disruption in action.

At the other end of the corporate scale, IBM has been investing in its future-facing healthcare technology called ‘Watson’ [https://ibm.co/2rmQKro]. IBM Watson is described as a ‘question answering technology’; but is being put to use in healthcare to crunch and refine big, big data to recognise patterns which would not otherwise be visible, and which help to unlock causes of diseases and conditions, and thereby help to avoid them.

Healthcare and the internet are most definitely coming together. As one joker put it ‘An app a day keeps the doctor away’.
The rise of the robots and artificial intelligence: Throughout the last century, science fiction offered us many more malevolent robotic manifestations that benign ones. The emerging truth appears to be a strange hybrid of the two in which robots, both in the physical sense and the ‘digital’ sense can be made to do exactly what humans want them to, but the consequences are less easy to control. The overall concern for society and Health and Safety professionals alike, is around the deployment of robots to replace jobs and employment.

To date, the work done by robots has been manifest in two key areas; the first being their use to replace manual operations previously conducted by unskilled or semi-skilled employees, and the second is the use of computers across the full range of work, from enabling huge problems to be solved without human intervention, to the removal of banal administration functions.

And it is in these two areas that the rise of the robots will persist – and probably change society forever and beyond recognition. Physical robotics will increasingly reduce the numbers of manual and semi-skilled jobs. For example, the mass proliferation of driverless vehicles is predicted to be as little as five years away. On one hand, this is predicted to reduce accidents by 90 per cent; on the other it is predicted to destroy millions of van driving, lorry driving and taxi driving jobs. In skilled professions, one example of the way technology will impact employment is within Law firms. Right now it takes about 30 junior lawyers to check through all of the documents involved in a corporate merger of acquisition. It is said that in the near future, one robot will be able to conduct the same work in 30 seconds.

Analysis from PwC (https://www.pwc.co.uk/) suggest that 30pc of UK jobs could be at high-risk by the beginning of 2030, with even higher percentages in other countries including Germany. These risks appear highest in the transportation and storage, manufacturing and retail sectors. The role of education in this scenario is also highlighted with the risk being 46pc for those educated to GCSE-level only, falling to 12pc for those with degrees or higher.

Perhaps one day robot builders will become so realistic that they will turn up late and spend most of the time explaining why they need to charge more than their original estimate.

Society and Work: Here, in the first decade of widely available internet, we are seeing huge change; but surely there is a lot more to come. For example, indicators suggest that the rise of the Gig Economy is such that in the USA, one worker in three is already freelance and by 2020, half will be. In the UK, think tank CRSE estimates that half the UK workforce will be self-employed within 12 years. And whilst there are a few years before these shifts reach these heights, the trends are already underway and gathering momentum.

The shift is due in large part to the rise of digital platforms like Etsy, TaskRabbit, and Upwork which connect demand with freelance operators – whether you need a flat pack wardrobe to be assembled or help with VAT returns. And not all gig workers are parents and pensioners – many are young and in professional roles. For young ‘would-be employees’ there is a real trend towards flexibility, freedom and creativity. Many work remotely from home and choose their hours around other interests.
With estimates that freelance workers can cost as little as 30pc less than employees, questions around employers’ responsibilities for Health and Safety and related matters are already being asked and further work needs to be done to understand the implications.

**Conclusion:** The clues to the shape of the next ten years and the impacts of technological, societal and political developments seem even more difficult to imagine today than they must have seemed ten years ago. This is partly because digital/online technology is changing so quickly and having such as a disruptive impact on all that we do it seems even more difficult to understand what may happen next and what impact it may have on Health and Safety.

In addition, for the first time since the second world war almost eighty years ago, the tectonic plates of geo politics are shifting in ways which mean that aspects of life and our sense of security seem less certain than we have come to expect.

So, even though we appear to be entering a period in which there are even more unknown unknowns than we have encountered in the last few decades, shown below are the six key themes that we believe will underpin changes in Health and Safety and related practice over coming years:

1. **Prevention over cure** – both in the development of healthcare and as a management approach; both aided by predictive technologies.

2. **The Gig Economy** – and its changing impacts on corporate conventions and cultures, and thereby the role that Health and Safety continues to play at their centre.

3. **Robotisation** – and the increasing decline in manual and low skilled jobs, and less predictable changes to professional careers.

4. **Self-diagnosis** – and the changing role of the democratisation of the healthcare sector.

5. **Wellbeing and engagement** – enlightened and progressive organisations continuing to invest in the performance of its workforce by further developing their Health and Safety support.

6. **Big data refinement** – big data is the new oil; it only becomes valuable once refined. All professions, including Health, Safety and Wellbeing, will increasingly harness big data to aid clients’ value generation.