

[Press release: Planned roadworks in the North East: summary for Monday 6 to Sunday 12 February 2017](#)

The following summary of planned new and ongoing road improvements over the coming week is correct as of Friday 3 February but could be subject to change due to weather conditions or unforeseen circumstances. All our improvement work is carried out with the aim of causing as little disruption as possible.

A1 junction 56 Barton to junction 51 Leeming Bar

There will be phases of overnight lane closures and full carriageway closures while work takes place to upgrade the road to motorway standards.

There will also be narrow lanes and a 50mph speed restriction 24 hours a day. From Monday 6 to Thursday 9 February there will be a closure north and southbound at Scotch Corner with traffic being diverted up and over the interchange; there will also be a partial closure of Scotch Corner roundabout and a closure of the southbound exit slip road at junction 51.

Then on Friday 10 February there will be a closure of the southbound entry slip, a partial closure of Scotch Corner roundabout and a closure of the southbound exit slip road at Junction 51. Then on Sunday 12 February the southbound entry slip road at Scotch Corner will be closed. All closures will take place between 8pm and 6am.

A1 Blaydon Haugh Viaduct, junction 73 to junction 74, Newcastle upon Tyne

There is a 50mph limit in operation over Blaydon Haugh Viaduct due to the installation of temporary plates over defective viaduct joints. From Monday 6 to Sunday 12 February there will be a carriageway closure southbound. All these closures will take place between 8pm and 6am with a diversion in place.

A1 / A1M Junction 64 to junction 67, Gateshead

There will be various lane and carriageway closures north and southbound for structural repairs, commencing on Wednesday 18 January until the end of February. On Saturday 11 February there will be a carriageway closure north and southbound between junction 65 and junction 66. This will take place between 8pm and 6am with diversions in place.

A1 Morpeth, Northumberland

There will be work ongoing until spring 2017 for the construction of a bypass. There will be various phases of daytime and night time lane and

carriageway closures, with narrow lanes and a 40mph speed restriction in place. On Monday 6 February there will be a carriageway closure northbound, on Tuesday 7 and Wednesday 8 February there will be a carriageway closure north and southbound, and from Thursday 9 to Saturday 11 February there will be a carriageway closure southbound. All these closures will take place between 8pm and 6am with diversions in place. There will also be a 24 hour lane closure on the A66 eastbound between Melsonby and Scotch Corner, taking place until the beginning of April.

A1 Haggerston, Northumberland

There will be convoy working in place north and southbound for resurfacing work. This will take place until the beginning of March between 8am and 4.30pm.

A1 Wandyław to Warrenford, Northumberland

There will be traffic signals in place north and southbound for survey work. This will take place until Thursday 23 February between 8pm and 6am.

A1 Brownieside, Northumberland

There will be lane closure southbound for survey work. This will take place on Monday 6 and Tuesday 7 February between 8.30am and 4pm.

A1 West Moor, Northumberland

There will be a lane closure northbound for survey work. This will take place on Wednesday 8 February between 8.30am and 4pm.

A19 Silverlink, North Tyneside

There will be a 24 hour 30mph speed restriction with narrow lanes for interchange improvement work. The A1058 Coast Road will be closed with a diversion down and under the junction on Monday 6 to Wednesday 8 February 9.30am until 3.30pm.

A19/A66

The northbound A19 to A66 eastbound to westbound slip roads will be closed for routine maintenance work from Monday 6 February to Tuesday 7 February. The westbound A66 to the A19 southbound slip road will be closed Wednesday 8 February to Thursday 9 February. The closures are between 8pm and 6am.

A66 Long Newton, Stockton on Tees

There will be 24 hour traffic signals in operation on the slip road and interchange for construction work. This will take place until the end of February 2017.

General enquiries

Members of the public should contact the Highways England customer contact centre on 0300 123 5000.

Media enquiries

Journalists should contact the Highways England press office on 0844 693 1448 and use the menu to speak to the most appropriate press officer.

Research and analysis: Genetically Modified Organisms: Sainsbury Laboratory (17/R29/01)

Updated: Added the consent letter for this GMO application.

Consent documents for Sainsbury Laboratory, to release genetically modified organisms for research purposes.

Each consent granted includes:

- consent letter (confirming consent and outlining any conditions)
- part A(1): Information required under schedule 1 of the Genetically Modified Organisms (Deliberate Release) regulations 2002
- part A(2-6): (If applicable) Details of related previous releases, including any data, results and risks
- part B: Information about the release application to be included on the public register

ACRE's advice

- [ACRE advice: application for a trial of GM potato \(17/R29/01\)](#)

Press release: Prisons minister visits staff at HMP YOI Winchester to hear

concerns from the frontline

- part of an ongoing tour of prisons to get to the heart of the daily challenges staff face
- Minister Gyimah thanks staff at Winchester for their vital work in delivering major reforms to improve safety and reduce reoffending
- follows £100 million investment in 2,500 extra officers across the estate and specific funding at HMP YOI Winchester to help give offenders the skills to find employment on release

Prisons Minister Sam Gyimah has paid tribute to the vital work of the Governor and staff at HMP YOI Winchester in part of a nationwide tour of prisons to hear concerns from staff on the frontline.

The visit comes as Ministers embark on wholesale reforms to the prison system – including an additional £100 million to bolster frontline staff by 2,500 and a major package of safety measures. Winchester has been allocated an additional £584,000 of funding to help tackle the rise in drugs, reduce violence and improve safety.

HMP YOI Winchester is also building a new industries and education workshop, which will help give prisoners on-the-job skills to prepare them for finding work on release.

Training schemes such as these provide valuable vocational work for offenders and can help to break the cycle of re-offending which costs society £15 billion a year.

Today (3 February 2017) the Prisons Minister sat down with the Governor and prison officers at Winchester to hear first-hand the challenges they face and how the reforms and increased investment is helping.

Speaking after the visit, Prisons Minister Gyimah said:

Prison officers at HMP YOI Winchester do a challenging and often dangerous job and provide support for a range of offenders.

I came to Winchester to thank the staff for their vital work in helping turn prisoners' lives around. Schemes to prepare prisoners for employment on the outside are exactly what we want to see across the estate as we embark upon the biggest prisons overhaul in a generation.

“I want to see all prisons becoming places of hard work and discipline where offenders are given the help they need to turn their lives around.

We are investing £100 million to boost frontline prison staff by 2,500 to improve safety and are already carrying out a comprehensive review of our probation reforms to improve outcomes

for offenders and communities.

The tour of the prison followed a visit to see the work of probation staff at the Hampshire & Isle of Wight Community Rehabilitation Company (CRC) and the local National Probation Service. The CRC provide a Through the Gate service to support prisoners in the run up to, and after, their release from custody.

Staff from the local CRC work with prisoners at Winchester before they are released into the community to provide a network of specialist support services. This includes providing accommodation, employment and debt advice, support in opening a bank account, as well as offering tailored training and education programmes.

Prisoners released as part of the Through the Gate service are then supervised in the community by HIOW CRC, where they are offered a range of support to help their resettlement into the community and reduce reoffending.

Kim Thornden-Edwards, chief of the Hampshire & Isle of Wight Community Rehabilitation Company (HIOW CRC), said:

I am delighted that the Minister took time out of his busy schedule to meet with our staff and people on probation in order to learn more about the service we deliver.

The visit gave the minister the opportunity to see how we work intimately with HMP YOI Winchester to provide a genuinely Through the Gate service, and to also see how we work in partnership with a range of agencies in order to reduce reoffending.

We are committed to supporting people on probation to ensure their rehabilitation and are proud to get the chance to showcase our approach with the minister.

The strong partnerships between staff at HMP YOI Winchester and the local Community Rehabilitation Company represent the wholesale changes that are taking place across the prison system following on from last year's White Paper announcement. This includes giving governors more powers over education, work and health, so they can tailor support to the prisoners in their charge.

The Prison Service is also leading a nationwide recruitment drive to bring in the additional 2,500 prison officers. This week, a new scheme to recruit ex-services personnel into the prison service launched at Newbury Race Course. It will aim to attract the thousands of talented men and women who leave the Armed Forces every year with the right skills, grit and determination to make a real difference to the lives of prisoners. They will use their talent and skills to bolster the frontline and support offenders to turn their backs on crime.

A new, 2 year graduate scheme called Unlocked has also been launched and will

see participants complete a Master's degree whilst working on the frontline.

By having more staff on the ground, staff will be better supported to do the job they came into the Prison Service to do, and spend more time reforming offenders.

[Press release: UK steps up work to protect women and girls from trafficking and provide winter care for vulnerable refugees](#)

The UK is helping migrants return home rather than risk their lives continuing perilous journeys to Europe, and protecting men, women and children in danger of trafficking and sexual violence, Prime Minister Theresa May announced today.

Speaking at the Valletta summit in Malta, which is focused on tackling the migration crisis, the Prime Minister announced a new package of more than £30 million in UK aid to provide desperately needed assistance to refugees and migrants across Greece, the Balkans, Libya, Egypt, Tunisia, Morocco, Algeria and Sudan.

This will include life-saving supplies for refugees facing freezing conditions across eastern Europe and Greece, such as warm clothing, shelter and medical care. The UK has also set up a special protection fund that will provide care and support to women and girl refugees in the Mediterranean who may be cut off from family and friends, vulnerable and at risk from trafficking, violence and exploitation.

International Development Secretary Priti Patel said:

Global Britain is stepping up its support for the most vulnerable refugees who are at risk and need our help. Conflict, drought and political upheaval have fuelled protracted crises and driven mass migration. We cannot ignore these challenges.

This latest support from the UK will help those who decide they want to return home to do so safely, protect men, women and children from exploitation, and ensure that those caught in freezing conditions get the basic help they need to survive.

The support announced today will be delivered by trusted humanitarian

partners such as the UN's refugee agency (UNHCR), the International Organization for Migration (IOM) and the Start NGO network. It will:

- provide 22,400 life-saving relief items including tents, blankets, winter clothes such as hats and gloves and hygiene kits including mother and baby products;
- protect more than 60,000 vulnerable refugees and migrants from physical or mental suffering. This includes emergency medical care including for those rescued at sea, visits to people in detention centres, provision of legal support, and training of frontline workers to better identify, protect and prevent violence and trafficking of women and girls in camps and in transit;
- allow up to 22,000 people to reunite with family members they have become separated from during their journey, to access legal processes such as registering as refugees, or to return home voluntarily where possible, including with advice, facilitating travel and helping with reintegration on their return;
- help countries that might be able to resettle refugees put the infrastructure and systems in place to do so, potentially including countries in Asia and Latin America, as well as providing advice and support to help governments in countries such as Greece, Egypt and the Balkans better integrate refugees into local communities;
- provide more than 1,500 refugees in Egypt, including those fleeing Syria and other conflicts, with urgent health assistance including medical care for those suffering from malnutrition, exposure, dehydration and other life-threatening conditions as a result of their travel, as well as providing 1,000 educational grants to migrant students making it easier for them to cover the costs of getting back in to school and so encouraging them to settle in Egypt;
- monitor standards and conditions for migrants in detention, including support to the Greek government to improve living conditions in closed camps and conducting visits to 14 detention centres and 5 sea ports in Libya to improve sanitation and hygiene conditions, benefitting 10,000 people;
- fund the running of a newly-established migrant centre in Sudan, replicating a successful model in Niger to provide emergency assistance to migrants in transit and enable voluntary returns home when safe.

In addition to renewed efforts to address the migration of people through Libya, the UK is providing new humanitarian support to people inside the country affected by the conflict. This includes trauma kits and training for frontline medical personnel in medical centres; blankets, mattresses and emergency food aid to those who have been forced to flee their homes by the fighting; as well as supporting the UN to improve the efficiency and co-ordination of its response in Libya by seconding expert staff to support this work.

Notes to editors

1. In addition to this new package of £30.3 million, the UK has set up an £8 million special protection fund to keep women and girl refugees in the Mediterranean region safe from trafficking, violence and

exploitation. The humanitarian response inside Libya is a further £2 million, and includes support for the work of the UNHCR and other UN agencies.

2. Overall this brings total UK humanitarian support in response to the Mediterranean migration crisis to more than £100 million since October 2015.
3. In addition to the UK's funding migration for the response in European and North African countries, we have pledged £2.3 billion for the Syria crisis, our largest ever humanitarian response. By focusing support on meeting basic humanitarian needs in the region as well as providing jobs and education, we are helping Syrians stay in the region and close to their homes.

Speech: David Currie on the role of competition in stimulating innovation

It is a great pleasure and privilege to give the opening speech to this conference on innovation economics. I am grateful to King's College and Concurrences for organising such an important conference and for assembling such a dazzling array of expertise and talent. I know that we are in for a fascinating and very instructive day. And I am relieved to be having the first word, rather than trying at the end of the day to make sense of all that we will hear. I note that today is billed as innovation economics for antitrust lawyers. But I suspect that the debate will be at least as much about law as economics, and rightly so.

Let me start with the obvious. Innovation is crucial to our long-run living standards and prosperity. It will also be critical to the long-run wellbeing of the environment and the planet. Avoiding catastrophic climate change while maintaining living standards requires major innovation in ways not yet thought of.

My perspective on the nature of innovation is shaped by modern economic growth theory and the work of Brian Arthur. Modern growth theory, so-called endogenous growth theory, emphasises the importance of knowledge spillovers from sector to sector and firm to firm. Many have contributed to this expansive literature – I and colleagues once made a modest contribution analysing spillovers between the developed and developing worlds to understand better the development process – but the pioneering work of Roemer was seminal. Brian Arthur's classic, 'The Nature of Technology', emphasises what he calls recombinations – innovation very often involves not the invention and application of something new, but rather the combination in a novel way of elements that are already known and in use, often in different fields. Some used to argue that these spillovers and recombinations are easier within large dominant organisations. But all too often such

organisations have a dominant culture that imposes a view and discourages diverse thinking and is closed to ideas from the outside. And so radical recombinations are more likely in open markets with interactions between diverse organisations and individuals. Open markets mean that very many more minds are applied to the challenge of recombination, and those many more minds bring with them many more and diverse ways of thinking about issues and many more and diverse experiences. That is why open effective competition is so important for promoting innovation. And the empirical evidence clearly shows this. It may be that atomistic, so-called perfect, competition (which rarely exists) is not the best structure for innovation, but nor is its opposite, monopoly or duopoly. Open, competitive markets really matter for our future.

That places competition policy firmly in the frame. That is especially so if Robert Gordon is right in arguing in his recent masterly book that fundamental innovations are in the past and that it is a mistake to see fundamental innovation in the current flurry of change. I don't know whether he is right, but he is a very clever and learned man who has thought deeply about these issues over many decades, and it is true that productivity growth has slowed markedly in the US and European countries – one reason for the current UK government's renewed emphasis on industrial policy. If Gordon is right, then that augurs badly for the future of our economies and our planet. And it is incumbent on us in the competition world to ensure that our policies and interventions promote, and certainly do not hinder, innovation, maximising our efforts to promote sustainable productivity growth. Hence the importance of the issues being discussed at this conference today.

Before diving into those issues, let me flag one set of issues that is important for this innovation agenda but which does not figure, or if it does at best undercover, on our agenda today. That is the important interaction between competition law and intellectual property (IP) law. IP law plays a key role in protecting the incentives to invent and invest. But we need to ensure that IP law is not used to exclude in an anti-competitive manner. The rise of Patent Assertion Entities (PAEs), sometimes known in more derogatory terms as patent trolls, may be just one example of this, leading some leading industrial economists to question the efficacy of patents in promoting innovation (Boldrin and Levine, *Journal of Economic Perspectives*, winter 2013). The Federal Trade Commission has recently analysed these entities, distinguishing Portfolio PAEs and Litigation PAEs, the latter group adopting practices seemingly deserving of the term troll. Importantly for our agenda, it found that 88% of patents held by PAEs were in the information and communications technology sectors, and more than 75% of these patents were software-related. This analysis has led the Federal Trade Commission to propose reforms in this area.

So turning now to competition policy, let me start with a challenge. Clearly for innovation what matters is dynamic competition – how the competitive landscape evolves through time. But unfortunately it is much harder to get good measures of dynamic competition. So we have all too readily fallen back on measures of static competition, which are easier to measure and therefore more comfortable to work with. So many cases rely on market structure and

concentration, and that analysis is usually rather static in nature. And when the Competition and Markets Authority (CMA) estimates our impact we tend to quantify detriment in terms of static rather than dynamic losses, because estimates of dynamic benefits are hard to come by and justify. But perhaps we need to work harder. We need to shift away from our comfort zone. And to accomplish this will require adaptations by all parts of the competition institutional framework. Competition authorities will need to work harder with economists to enhance the emphasis on dynamic analysis. And the appeal bodies will need to recognise that these effects are crucial, and may have to accept that the analysis is not as crisp, clear and hugely evidenced but nonetheless has to be weighed appropriately in the light of its importance. We may all need to learn to be roughly right rather than exactly wrong.

We all naturally look online for the major fount of innovation. But that may well be wrong for at least 2 reasons. First, online will not be the answer to some very major issues, such as global warming, though it may be instrumental in reaching a solution. Second, there are very major, non-online technologies that we need to develop to secure our future. I think of the potential development of battery technology that will help to make intermittent green energy supplies part of the mainstream rather than a wayward child that forces the system operator to resort to filthy fossil fuel supplies when the going gets rough, which has happened recently in the UK. I am sure there are many other off-line technologies that will help shape our future and we need to encourage them. That is an important strand in the UK government's emerging industrial strategy with its focus on infrastructure, and particularly the transportation, nuclear and life sciences sectors.

Having said that, online really matters and has become a major focus of competition work, certainly at the CMA. We have fined online sellers for price collusion on Amazon Marketplace, where relevant to today's discussion the collusion was via an algorithm; we have clamped down on resale price maintenance online where we were concerned about consumer detriment; we have discouraged the use of wide most-favoured-nation or price parity provisions in areas such as motor insurance; we have issued a statement of objections to an online sales ban in golf club sales; and, and, and – I could go on. And that is just the competition caseload: in the consumer protection part of our portfolio we have addressed many other behaviours, including around online gambling and app-exploitation of minors, with severe consumer detriment and this intervention has led to changes in company practice not just in the UK but also Europe-wide. And we are undertaking a market study of digital comparison tools, including price comparison websites, because of their importance for consumers navigating the online world.

In addressing online issues, competition authorities around the world are not reinventing competition policy: we are relying on the well-established principles of competition law that apply equally to the online world as to the offline world. The challenge is not to redefine competition law, but rather to apply well-established principles to new circumstances. In this, the careful, evidence-based analysis in which we aim to excel is to the fore.

Let me now come to 2 major issues for competition authorities in the tech/internet space. First, these are typically markets in which network

effects and economies of scale combine to mean that early winners can become seriously dominant. Especially in online markets early advantage based on competitive advantage can tip imperceptibly into dominance and long-term exclusion. At what point does a new entrant's competitive behaviour shift from being a new, aggressive entrant strategy to being an abuse of market power? At what point should the competition authority move from tolerance to concern? These questions pose a dilemma for the competition authority: intervene too early and you suppress innovation; intervene too late and a dominant position is established that threatens open competition and innovation. There is a tipping point: intervention before that may be counter-productive, but intervening after tipping may be futile.

To take a topical example. If a group of individual suppliers decided to sign up to a shared-pricing arrangement, whether on their own initiative or encouraged by a co-ordinator, and then posted inflated prices when demand was unusually high, we might well think of this as a competition problem and seek to strike it down. Of course, we would need to be sure that such an arrangement was not a justifiable response to another countervailing power, and above all that there was some harm to consumers from the behaviour we observed. But if over time that group became too dominant in the market, then it may well be a concern for the competition authority. What I have described is sometimes called the 'Uber dilemma', though that is but one example. Certain taxi apps have entered the market and driven down prices in what was hitherto a generally highly regulated market, arguably regulated in some respects to the detriment of consumers. Their entry can be seen therefore as yielding significant consumer benefit, both on price and quality of service. And those who sign up early are clearly not engaging in any anti-competitive behaviour. But if Uber or indeed another supplier becomes dominant, is there a tipping point beyond which it is almost too late for the competition authority to intervene? In this example, the CMA has sought to intervene early to ensure that regulation does not stifle the innovation, and to promote platform competition by discouraging proposals that would have reinforced the network effect by preventing multi-homing by drivers. This approach may well be needed in other online markets with emerging platforms as they develop. And to be clear: we view taxi apps to be welcomed as a positive force for market opening, but we are alert to market developments that seek to shut down effective competition.

The second issue is this. Most tech companies, facing the competition authorities, argue that there is trade-off between static and dynamic competition. There can be such a trade-off – that after all is the rationale for patents, though I have noted the empirical literature that questions the benefits of patents for innovation. But it can well be the case that reduced static competition leads to less dynamic competition – that, after all, is the tipping issue. Our chief economist, Mike Walker, with Tony Curzon Price has argued that companies often seek to be in an area of both static and dynamic inefficiency, to the detriment of consumers, and giving an important role of preventing this to competition authorities. A possible example is Microsoft, which initially innovated with Windows to the huge benefit of consumers, but then reacted to the entry of Netscape by the anti-competitive move of bundling Explorer with Windows, blocking the potential for Netscape

to become an important piece of middleware. Another are the 'pay for delay' cases, Servier and Lundbeck, pursued by the European Commission. And some argue that Google's dominance in search is self-reinforcing because it gives it an unbeatable position in the data so essential to search, and this dominance might be used to restrict future innovation.

We start today's conference with the major theme of big data, and we have had a preview of some of the issues in Andreas Mundt's interview with Jorge Padilla: Can access to big data represent a barrier to entry? Could refusing a competitor access to data be anti-competitive? Is data a relevant market? Could data be classified as an essential facility? And how does competition law sit with, and interact with, privacy laws? Complex issues which I will not try to anticipate but instead look forward to the debate in the next session.

But there is one aspect of the debate over big data that I do want to touch on: that of the consumer's access to their own data. We are all increasingly aware that, as we operate online, data on our actions are being amassed to very considerable commercial gain. What rights, if any, do we have, or should have, to our own data? Clearly privacy laws restrict how data are used, but whether with sufficient force is for debate. But would markets work better for consumers if they had access to, and even control over, their own data? The answer to this question is clearly relevant to the design of remedies where a breach of competition law is found – itself a very difficult matter to establish. It could also be relevant to the design of undertakings to allow a merger to go forward.

But to make a somewhat parochial point, in the very particular market regime that we have here in the UK, it is very relevant indeed to the design of remedies after our detailed analysis of the operation of a market. For example, the CMA recently concluded a major market inquiry into the retail banking sector in the UK. At the heart of the remedies that were put forward as a result of that inquiry is a common application protocol interface (API) that will provide a standard for digital interactions in this market. We believe this will allow the rise of much more effective competition online. The major problem in this market and in the UK energy market is a large number of inert consumers who are reluctant to devote much time and effort in searching for better deals and therefore end up paying a premium price. In both markets a different approach to the access to data may well provide the answer. In the energy market we already see intermediaries acting on behalf of consumers and searching for the best deal and effecting the switch on behalf of consumers – in effect a shift in market structure with the rise of an intermediary layer of businesses effected by a change in access to personal data. The inert consumer has to make just one effort to get off the sofa and sign up and can then recline once more. If this intermediary sector emerges, there will of course be the need to ensure that they are delivering what they claim. But if that was the regulatory issue, we would be in a much better place than now.

That takes me to the final issue that I would like to touch on in this brief opening – that is, the rise of algorithmic decision-making in the online world. Algorithms are everywhere – online bookings for airlines, hotels, etc;

Amazon and other online platforms; bots buying up tickets in the primary market for shows and concerts, to name just a few. And we at the CMA, like many other competition and consumer agencies, have been intervening in these markets to ensure that the rise of algorithms works to enhance competition, not close it down.

But the rise of the algorithmic economy raises potentially difficult questions for competition policy, which Ezechia and Stucke discuss in their excellent book 'Virtual Competition' (and I look forward to Maurice's comments in the next session). And this may be one area where my earlier Panglossian statement – that the principles of competition law are alive and well and just need to be applied appropriately to different circumstances and evidence – may be questioned. Algorithms can provide a very effective way of almost instantly co-ordinating behaviour, possibly in an anti-competitive way. Where algorithms are designed by humans to do so, this is merely a new form of the old practice of price-fixing. But machine learning means that the algorithms may themselves learn that co-ordination is the best way to maximise longer-term business objectives. In that case, no human agent has planned the co-ordination. Does that represent a breach of competition law? Does the law stretch to cover sins of omission as well as sins of commission: the failure to build in sufficient constraints on algorithmic behaviour to ensure that the algorithm does not learn to adopt anti-competitive outcomes? And what if constraints are built in but they are inadequately designed, so that the very clever algorithm learns a way through the constraints? How far can the concept of human agency be stretched to cover these sorts of issues? I have suggested earlier that the competition tools at our disposal can tackle the competition issues that we face in the new digital world, but perhaps this last issue which I have touched on is one where this proposition is not true. I think we will touch on these questions today, but we will also be debating them for a long time to come. And if we do not find good answers, will that lead other jurisdictions to see merit in the powerful markets regime that we have in the UK, which would allow us to address questions like this through a different, perhaps more appropriate, set of tools? Bill Allan's interview with Concurrences touches on these issues, and I look forward to his remarks in this afternoon's session.

One concluding thought about the future. The father and son team, Suskind and Susskind, in their book 'The Future of the Professions' predict that machine learning will in the next decade or two transform the professions. Algorithms are already taking over the grunt-work in the legal profession. Most professionals say that professional judgement cannot be replaced by a machine, but is this right? Algorithms are increasingly outperforming medical specialists in diagnosis, for example. Could algorithms through learning come to outperform the judgements of competition specialists? Richard and Daniel Susskind suggest yes, but not yet. So I and my colleagues are safe and possibly my successor and her or his successor. But after that, Chairman Bot?

There is, however, one possible hope for us humans. We have seen the steady but spectacular improvement in algorithms, coming to beat humans first at chess, then Go and the latest at poker. Why not competition law and economics? However, there is some evidence that the best machines can be

beaten by older generation machines working in partnership with a human specialist. Perhaps human specialists will continue to be useful provided they embrace the advances in machine learning. What competition agencies can be sure of is that those sitting at the other side of the table will have access to the very best machine learning in our field. We need to make sure that we are keeping abreast of this fast-moving and changing technology.

We will today have a very rich debate which may illuminate some of the issues I have highlighted and some key issues that I have overlooked. I greatly look forward to the day.