HOUSE OF LORDS

Select Committee on COVID-19

Corrected oral evidence: Living online: the long-term impact on well-being

Tuesday 17 November 2020

10.30 am

[Watch the meeting](#)

Members present: Baroness Lane-Fox of Soho (The Chair); Lord Alderdice; Baroness Benjamin; Baroness Chisholm of Owlpen; Lord Duncan of Springbank; Lord Elder; Lord Hain; Lord Harris of Haringey; Baroness Jay of Paddington; Baroness Morgan of Cotes; Lord Pickles; Baroness Young of Hornsey.

Evidence Session No. 2   Virtual Proceeding   Questions 15 - 24

Witnesses

I: Benedict Evans, Independent Analyst; Gerard Grech, CEO, Tech Nation; Hanna Johnson, Chief Operating Officer, Public; Professor Helen Margetts, Programme Director for Public Policy, Alan Turing Institute.

Examination of witness

Benedict Evans; Gerard Grech; Hanna Johnson; Professor Helen Margetts.

Q15 **The Chair:** Welcome, everybody. Thank you to our witnesses for coming to help us to understand some of the complexities of the landscape in the technology sector. I am Martha Lane Fox, Chair of the Select Committee.

As witnesses will know, we have been tasked with looking at the long-term implications of Covid, and one theme is clearly the rapid acceleration of digital. We did a piece of work earlier this year looking at what members of the public, expert scientists and academics thought the long-term trends were, and digital obviously popped out as one.

We are particularly interested in people's economic and social well-being. We are not doing a detailed study of the technology sector but are trying to do a detailed study of the implications of the pandemic, and digital is clearly an extremely important theme, so I would very much appreciate it if witnesses could keep that in their minds. We could easily have a very long and interesting discussion about technology, but we are really trying to focus on the long-term implications of Covid.

I remind both Members and witnesses that the recession—sorry, session; recession might be a whole other theme to come to—is being broadcast live and there will be a transcript. Members should declare an interest before speaking, if they have one. Witnesses will have seen that we have some topic areas for discussion. My colleagues are taking different questions, and they may well also have supplementaries of their own. We are very keen to have a free discussion, but I urge people to keep on mute unless they want to speak. If you want to come in on something, it would be very helpful if you could use the raised-hand function, or the chat function if you think I have missed you. I really hope that we can include everybody.

As I say, we are looking at the long-term implications of this pandemic. It is hard to get brains out of the current situation and to really think about that two-to-five-year horizon, so that is where we would very much appreciate your help.

My colleague, Lord Alderdice, will start the questions with a question on individual usage and trends that we are seeing as a result of the pandemic.

Q16 **Lord Alderdice:** Thank you very much indeed, Martha. I reiterate the appreciation that Martha expressed on behalf of the Committee for giving us your time, experience and expertise.

There are two main questions that I want to pick up on. I will focus on the internet. Other colleagues will focus on other aspects of digital and new technology.

Trends have been developing, particularly the increase in the time, and indeed the money, that we spend on the internet. Ofcom, which we have met, along with others, has given us some figures on that. Perhaps you could say a bit about how these trends in our use of the internet have

changed during the pandemic.

Then, looking at the medium term—at two to five years' time—and perhaps at the long term if you can, although that is very difficult, to what extent do you think the pandemic is likely to change our use of the internet in two to five years, or even beyond that if you can speculate in that way? Of course, we are hoping that in two to five years we will get beyond the pandemic, although nothing about that is certain. If you could turn to those two questions, we would love to hear from each of you.

Benedict Evans: I have several observations. The first is very obviously that the pandemic has accelerated everything that we all knew was happening already. A bunch of people, consciously or subconsciously, have been channelling Lenin when he said, "There are decades where nothing happens, and there are weeks where decades happen". We have had one, two, three years of adoption pulled forward into a couple of quarters.

Ofcom has some numbers: at the beginning of the year, 30% to 35% of people in the UK made a personal video call once a week, and in the lockdown it went up to 70%. ONS data on e-commerce overall showed that it was about 20% of UK retail at the beginning of the year, it spiked up at 30% and is now stabilising a bit lower. If you exclude groceries, it was already at 30%, it went to 60% in lockdown, it is now about 40% and it is still trending up a little bit. So there is a big spike up in lockdown, and then it stabilises at a new level that may not be quite as high as it was, but it pulls forward a lot of future adoption. For the high street and retailers in general, there are obviously a lot of questions about what that means for the future of urban centres and so on.

Secondly, there is a lot of forced experimentation. There has been a lot of stuff that we might not have expected to do at all that suddenly we have had to try. Video calls, for example, would obviously have been an event in person. Next, in a fascinating trading statement, talked about doing things straightaway because they had a video call with their supplier instead of saving up to get on a plane to go and talk to their supplier.

Generally when you get a new tool you start by forcing the tool to fit the way you work, so we all print out our emails. Then, over time, you change the way you work to fit the tool and the new way of working. That is obviously what happened with cars and with electricity in the past, and it is now happening with the internet. Everything gets pulled forward, but then we are forced to think afresh about how we would do this.

Thirdly, Stanford does a study every year on how people meet their partners, going back to the 1950s. It is a fascinating chart, because school goes up and then down, work goes up and then down, and church goes down. Online dating has gone from 0% to 40% in 2017—three years ago. It must have been 50% at the beginning of this year and now we have gone into lockdown. Online dating used to be kind of a joke and now it has become a basic part of any single person's life.

My general point is that technology has always been interesting and exciting, but it was not an important part of most people's lives. Maybe you had a computer, but it was not a central part of every aspect of your life. In the last five to 10 years, maybe even the last two to three years, it has shifted to become a central part of everybody's life. Our consciousness of it has shifted to become part of everybody's life, which is partly why there are very different conversations about regulation and the role of the internet in politics, social media and so on. It has shifted in importance from being just one industry to being a central part of everything, which changes a lot of our other conversations. That dating statistic reflects that more clearly than anything else. It is not something that some people do anymore; it is something that anybody might do for any part of their life.

Gerard Grech: I will try not to repeat what Benedict was talking about, which is very on point, but perhaps will give a perspective on four areas as examples of how some of our lives have changed during the pandemic because of the internet.

The internet has had a profound impact on the working environment of some people. According to the ONS statistics, exclusive remote working hit a record high of 38% of the UK population in mid-June. With the virus potentially reoccurring, we might see people staying in that position for quite a while. Facebook, for example, expects half of its employees to work remotely permanently over the next five to 10 years. We at Tech Nation will be shifting to a work-from-anywhere policy for the foreseeable future, the next 12 months, giving up our leases on our offices in Manchester and London. I think that a section of the working population will have to be comfortable with that.

One result of that is that with such a high percentage of the working population now working remotely, digital collaboration is improving in leaps and bounds, both in the sophistication of the tools to facilitate it and in the workers' level of comfort with it. At our company, we use communication tools such as Slack. We have been conducting workshops, where we are very used to using post-it notes, using facilitation tools like Nero. We are seeing people increasingly using these tools and becoming more and more comfortable with that. As that goes on, the economy and society will need to become increasingly digital, and therefore the demand for such skills will undoubtedly increase.

In terms of the statistics over the last six months, we published a report on the growth of advertised roles in digital tech. When we reported in September, we saw that there had been real growth in advertised roles in tech by 36% in June, July and August. That was post-lockdown, and it increased significantly and has not stopped.

On the point about the way we live, many things have happened to us in one form or another, as Benedict said. First, the fitness industry, which is so used to having physical classes, shifted to holding virtual classes on streaming services, both live and pre-recorded. You may be familiar with

an application called Peloton, where you join other people and do exercises together.

Secondly, in the case of banking, in the first month of lockdown 6 million people in the UK downloaded their first banking app, which is roughly 10% of the UK population. These people might previously have been nervous about downloading such an app but had to out of necessity. I think we will see that kind of behaviour continuing.

Thirdly, in the case of play and entertainment, more and more people are homebound, especially with the second lockdown at the moment, so we are turning to digital content providers and platforms, so much so that the film studios have been pushing new releases to streaming services early to capture these audiences. Looking ahead two to five years, which was your question, we see the emergence of the use of VR headsets—virtual reality headsets—which enable you to immerse yourself even more deeply than with a 2D screen. Some projections show that the number of headsets in use may go up to over 1 billion by 2021.

Fourthly, in the case of learning and education, there is no doubt that we have seen a real change in how people are learning with online classes and tutoring. The UK is well positioned in the educational technology space. In 2019, 41% of all European investment in European technology went to UK companies. We believe that that will only increase and that the UK educational tech sector will be worth over £3.5 billion by the end of next year.

These are examples of how the pandemic has really accelerated the adoption of services in all forms.

The Chair: Thank you, Gerard. As Chancellor of the Open University, I am always thrilled to hear about educational tech developments. Putting that aside, Hanna, would you like to give your thoughts?

Hanna Johnson: Benedict and Gerard have spoken about the private sector. Digitisation in the public sector has been a big focus for a long time now, since 2011, with the set-up of GDS. Covid has certainly been a quite forceful accelerant for digitising in a number of areas. Gerard mentioned education and classes taking place online, but there has also been access to doctors and GP consultations. I think that 85% of GP consultations in May were done online. Access to justice has been similar, with the Courts and Tribunals Service doing 90% of its caseload online in April.

When we look at future trends, we also have to look at how deep that acceleration goes. There are surface-level changes—the use of video services to access what you would otherwise access in person is one example—and what that means for trends in the future. Has the pandemic forced us to fix the plumbing? No, it has not. There are still lots of issues that existed before which we need to keep working to fix if we will take advantage of technology in the future and do it in the right way.

What the pandemic has probably done is set those expectations even higher. Our lives have been transformed by technology in the last five years. We have access to all kinds of services in the private sector through our mobile phones, and the same expectation has been growing in public services. Once you can access those services through a pandemic, that extends much more into the future. Has it fixed the plumbing? No, but it has certainly set expectations higher.

The Chair: That is a very important point, Hanna. I know that many of my colleagues have lots of questions about those digital services, and we will come to them a bit later in the session.

Professor Helen Margetts: I agree with everything my colleagues have said. This is a really big shift. There is acceleration, but there is also a seismic shift in the overall relationship between society and technology. It is important to recognise that and realise that we are not, or so I believe, going back to how we were before. There is BC and so on, and we have to think about what that means. We should be thinking about what kind of values we want to have in this new relationship with technology.

When we thought about technology in the past—obviously technology and the internet have been embedded in our institutions and organisations for decades—we have focused on efficiency and how it can save money. Anything else, as Benedict pointed out, has been a bit frivolous. When we think of a crisis, there is still the lingering thought that it is the physical things that matter—it is the buildings, the physical infrastructure—and that the internet is a frivolous add-on, in a way. We have to switch that completely, and I think we already have.

Almost every organisation is reconsidering what resilience means as a value. Digital resilience is right there at the centre. As Hanna pointed out, we have moved in a lightening flash to remote-by-default primary care. In universities, apart the admirable exception of the Open University and some other universities, we have been talking about going online for 20 years without really actually doing it. Obviously we were doing more and more things online, but it was not the default. It used to be that some people joined a meeting remotely, but you were inclined to forget about them on the screen and they were not at the centre of the meeting. Now there is no physical part of the meeting, we are at the centre of the meeting.

I do not think we will go completely back to how we were before. Therefore, we really need to think about our digital resilience and how to protect it. A key part of that will be keeping it safe. We have to think about protecting digital infrastructure—by infrastructure, I include all the people online moderating content and generally managing services online—in the same way as we would protect our water system. There has been a tsunami—as the World Health Organization put it—of online hate during the pandemic. There has been a "misinfodemic" of malicious misinformation. We have to think about how to protect people from those things because, as everyone has pointed out, more people are doing

more things more of the time online, so they are much more exposed to that kind of thing.

Also, on values, we have to prioritise thinking about fairness and equality. Every crisis reveals inequalities that were there already and reinforces them, makes them worse. Here we have digital inequalities taking on that role. For example, I doubt we knew before that between 1 million and 1.5 million children did not have access to laptops or the basic means to get internet access, which is vital for education. As a couple of people have pointed out, for many children during the lockdown that was their only source of information, so that existing inequality is reinforced.

Therefore, looking ahead, we have to think about whether there are such things as digital rights. What is the basic access that people should be able to expect? We might even look at the UN Convention on the Rights of the Child and think about how many of those, in some circumstances, would depend on having basic access to the internet.

The Chair: Thank you very much. Again, I know that other members of the Committee would like to drill down on that resilience point, so thank you for that.

Q17   **Baroness Chisholm of Owlpen:** You have all mentioned changes before the pandemic and how all that has increased. Are we ready for the change? What is required from the Government to make sure that we are ready for what is emerging now, both in the workplace and in social interaction?

Professor Helen Margetts: Building on my last point, one of the things we really have to think about is marginalisation. We have talked a lot over the last 20 years about digital exclusion. If an entire service like primary care is moving to remote by default, you have to start thinking about marginalisation and the people who are completely falling out of the picture.

Inequality ought to be a key focus, because almost every aspect of the pandemic, from the virus itself onwards, is having a bad effect with regard to inequality. Now we have some new aspects. We have, "Can you work from home? Can you not work from home?" There has been nice work by the economist Abi Adams-Prassl, who recently looked at that in detail. There is a direct line between the number of bits of your job that you can do from your home and the likelihood of losing your job. That linear relationship is worse for women, as you might expect, and for all the groups whom such things are normally worse for. Therefore, we have all our current inequalities, and we have some brand new ones, just with the pandemic, and we really need to hone in on those.

Hanna Johnson: As I alluded to in my first answer, the acceleration that has come from Covid has been at quite a surface level, and a lot needs to be fixed beneath the surface in order to set the right conditions, certainly for the public sector, for taking advantage of technology in the future and doing that in the right way.

Fixing legacy technology and moving on to the cloud is a prime example, but there is also interoperability. The *BMJ* had some interesting research into the experience of online consultations. Patients pretty universally found it to be a good experience. GPs did not find it so universally helpful. Some of that stems from how interoperable the video consultation with the GP's software systems is and how those notes from a video consultation can get back into the system. Some of those fundamental issues need to be fixed.

Alluding to Helen's point about fairness, skills need to be built up in the public sector, both in order to work more digitally—that is a work in progress and needs to be continued with—and to understand the impact that some of these technologies have on things like fairness and inequality. It is really important to be able to foresee some of those impacts so that we can mitigate them and build them into the policy-making process.

The Chair: Yes. That, again, is something that I hope we will come back to in later questions.

Gerard Grech: On the government side, investment in digital skills is important, as I mentioned earlier. Obviously the internet is impacting every sector, but it is impacting the knowledge worker in particular. Studies should be conducted into the relevance of and connection between happiness, resilience and productivity. There is a tenfold difference between the impact on our average knowledge worker and the impact on our best knowledge worker, whereas with menial tasks the difference between an average worker in that regard and the best worker is twofold. You can see that there will be people who are happier because they are not commuting. What does it mean for them to work from home? Therefore, studies to address what resilience means physically and mentally is important from the Government's side.

The other thing is the notion of place-based policy and knowing that the physical clustering of businesses coming together is good. There is lots of research showing that businesses can come together and grow very quickly when there is physical clustering. However, we are clearly moving to an age of virtual clustering with the notion of companies being able to set up anywhere, which plays well to the levelling-up agenda of this Administration. That is more and more the case. The more CEOs I talk to, the more I find that they are recruiting people from outside their city, outside their region, and really going for the best talent they can find. The Government need to think about nomad visas and how to enable companies to hire the best people they can find around the world, without necessarily needing them to be physically present here.

Another thing is the conditions for start-up creation. It should be made even easier for people to follow their passions and start their own businesses, as there may be some turnover given that we might be heading into a recession.

Benedict Evans: I agree with what everyone has said. I have a specific and a general point. The specific point, and these are statistics you will be familiar with, is that close to 90% of the UK adult population is online, but only about 50% of people over 75 and only about 70% of people in the C2DE demographic are. The default has switched from, "Early adopters do this, but most people don't" to, "Of course everybody does this". However, remember that a portion of people are still being left behind, whether that is in access to PCs or even in the ability to use a smartphone. Ofcom did a brilliant study three or four years ago on people who only have a smartphone and who are baffled by it and feel unable to work out how to use it and how to engage with it.

To generalise the point, I am not a big fan of phrases such as the seventh industrial revolution or whatever we are at now, but there is a useful comparison to be made with things like telephones, electricity and cars and how the presumption that everyone has a car, or everybody has electricity or, even going back further, the presumption that everybody knows how to read, affected people who did not have those things or who could not read.

As we switch to the presumption that of course everybody is doing this, or of course you can apply for your universal credit on a smartphone, what happens to the people who cannot and who are perhaps most in need of help but who paradoxically also find it hardest to access these kinds of services? Public policy alone is the best place for dealing with that sense of presumptions switching and who is left outside those presumptions.

The Chair: Thank you. We move now to questions from Lord Pickles about the impact on industries, and then we will come back to some of that policy discussion with Baroness Morgan of Cotes.

Q18 **Lord Pickles:** Some of the questions about forward projections of two to three years have been answered. I would like to concentrate on the level of digitisation, the level of artificial intelligence, and the level of robotics and automation across industry. I wonder whether this will be uniform and whether, because of Covid, there will be a desire to get human beings out of the chain and to offer assurance on being Covid secure.

From something Gerard said, I wonder whether there will be a regional dimension to this. It does not really matter where you are if you are online when it comes to putting together something for industry. You can tell from my accent that I am from West Yorkshire, which was famous for textiles. Textiles came because of an area that specialised in it. We will not have areas that specialise. Looking across the piece at where people live, their skills and their socioeconomic group, will digitisation really extend to areas of deprivation, or will it simply make them worse? There will almost be no-go areas for employment.

Benedict Evans: Many of these questions are, in a sense, above my paygrade, as Americans would say.

The Chair: Lean into it.

Benedict Evans: Yes, I will in. I think there is a generalised process of the evolution of technology. You mentioned textiles. If we go right back to weaving, remember that Luddites came from the textile industry. There is always a process in which the current jobs are destroyed and new jobs get created, which over time are generally better. However, as Keynes tells us, in the long term we are all dead, so you have to think about the intermediate friction and pain that results from that kind of economic dislocation.

I do not think there is any a priori reason to believe that the changes we are seeing now would be any different from the changes we have seen in successive waves of new technology over the last 50 years. I read a paper at the weekend on the impact of the automation of telephone exchanges on job prospects for young women. In America in the 1920s, something like 5% of all young, white, American-born women were working as telephone operators—the only people who could get employed as telephone operators—and 20 years later there were no telephone operators because all those exchanges were automated. There is an economic study of what happened to those people and what happened to their job prospects.

We have been here before, and you can point to cases where the results were bad and cases where we wonder what all the fuss was about. Therefore, I do not think you can be specific when talking about technology in total. Instead, I would ask: what happens to particular fields that are more or less susceptible to certain kinds of automation? Clearly robotics changes warehouse work, but on the other hand the shift to e-commerce leads to an explosion in warehouse work and in trucking. Whether that is good or bad is a specific microeconomic calculation. Machine learning will mean that a lot of very, very boring manual clerical jobs will go away because they will get automated. That is a process that has been happening for the last 30 or 40 years as a result PCs and databases.

The challenge will be to unpick this and to see whether there is something specifically different now from all the ongoing creation and destruction of jobs over the last 100 or 200 years, and, secondly, whether that is in specific industries. That goes to your point about regional pressure. One could argue that call centres will have a huge problem, because an awful lot of what was a call centre will go to voice recognition. You could also argue that if you do not have stores you have way more call centres. The call centres do not all need to be in the same place, because maybe people can work from home. There is a lot of complicated reconfiguration. I would struggle to say that that sector in particular is completely screwed.

A final observation. One of the examples I love to give is the Billy Wilder film from the 1960s, "The Apartment", in which Jack Lemmon is a clerk in an insurance company. If you look at the long shots of his office, everybody there has an electromechanical adding machine, a typewriter, and an inbox and outbox in an internal mail system. Everybody you see

in that shot is a cell on a spreadsheet, and the whole building is an Excel file. Once a week someone on the top floor presses "refresh" and the whole building recalculates insurance prices floor by floor from top to bottom. In 1965, the company bought a mainframe, but there were still lots of people working for insurance companies. That sort of transition is the way to think about it, rather than a fundamental step change in employment.

Hanna Johnson: I broadly agree with what Benedict has said about this being a continuance of something that has been in train for a long time.

I will pick up on two points in your question, Lord Pickles, if I may. The first is the regional dimension. If you will indulge me, I will take an anecdote from my memories of being a young civil servant in DCMS. The thought of any of our policy teams being more than 20 steps from a Minister's office was unthinkable, and that London-centric way has been how we have created policy in this country for many, many years.

We have an opportunity now. Guess what? You can have a meeting with a Minister from North Yorkshire, one from Wales, one from the depths of Cornwall. Spreading government functions out across the country could have a really positive effect on how regions and their perspectives are considered in the policy-making process.

Your point about getting people out of the chain is really important, particularly when we look at the digitisation of public services. We need to make sure that we do it in such a way that technology is additive and not reductive. By that, I mean that we need to make public services better and not just cheaper; it is not just about moving a service that was analogue online. To do that, we have to understand where those personal interactions are most valuable and where we can take things online that make things easier for people but we keep the human dimension. It is not about using digital transformation to take people out of the chain completely, but rather about giving them time to focus on where they are most valuable.

Gerard Grech: I will talk specifically about some of our observations, given that we in our company have a national network of people who work with entrepreneurs right across the country.

I made the point earlier that every vertical chain is going through a digital transformation. Let us take the financial services sector. There are clusters around the country that have specialisms in the financial services sector. The Pennines could be well known for lending or business banking, for example, whereas parts of Wales could be quite well known for insurance. I would like to see a doubling down of specialisms so that we connect the dots across the country, so that a company can start anywhere in the country and be able to access specialisms and critical masses of expertise around the country, rather than trying to put all that expertise into one place only.

I note the point you made earlier about the proximity to established places being important. We found that if a place has three universities, for example, it tends to have a certain sector of expertise. If government were to focus more and more on identifying where the clusters of expertise are in each industry sector, it would be better prepared for what may come next. That includes national resilience and making sure that there is liquidity of information on where the strengths lie across the country, rather than just focusing on cities, because these can be right across the country in all parts.

Professor Helen Margetts: The point about cities is important. We are seeing the shape of cities changing, and, again, I do not think we will come back from that. House prices and rents seem to reflect that already, and we are seeing house prices rising out of cities and falling inside cities. As Benedict, and the famous Facebook, said, it is complicated. We need to dedicate a lot of research to understanding that, because it is very difficult to generalise about it.

I would make one point about artificial intelligence and data science. The pandemic has made modelling cool—I never thought that would happen— but it has also highlighted the importance of quite boring things like data flows. When we talk about resilience, we will have to identify the data flows that are crucial to resilience and how we might use them.

I would also point to what I think will be a different way of thinking about artificial intelligence in the future. We tend to have quite a narrow idea of artificial intelligence—that it is about robotisation replacing people and doing things that people can already do. But we may have to find some way of thinking about all sorts of different things at once, which is what human beings are quite bad at. I think this will be a new way of thinking about artificial intelligence. That is what we are thinking about at the Turing institute, anyway.

The Chair: Thank you, Helen. That is very interesting. We are covering such broad topics that I really appreciate the sweeping expertise you are bringing to us.

Baroness Morgan will now ask a bit more about public policy and services, and Baroness Benjamin has related questions.

Q19 **Baroness Morgan of Cotes:** Thank you to all our witnesses so far. It is fascinating.

A couple of times we have talked about the implications of all this for the development of public policy. I want to direct these questions directly to Hanna and Helen, but I do not want to stop the others coming in as well.

I want to push you a bit further on the way our Government should design public policy on the delivery of public services, based on what Helen said about the seismic shift in the relationship with technology and that this is here to stay. I know that some people on the panel have experience of being in government, and I would like you to talk a bit more about how delivery of public services should be designed in the

future.

Is it right that digital by default will be the assumption? How do you design in order to tackle digital exclusion where you know it exists? Would we, as a practical recommendation, say for example that all future policy impact assessments must now look at digital exclusion? Should we assume in future that everyone is online? Benedict mentioned the assumption that everyone is online now, apart from a few who are not, and he may want to come in here. Is that what public policy should assume, or do we assume that we are living in a hybrid world from now on?

People have perhaps become used to having GP appointments online, but over the summer we heard that a number of people are not particularly convinced that they would like things to stay that way. Part of our terms of reference as a Committee is to look at the impact on social contact of increased digitisation. Do we want to accept the changes or go back to more human interaction?

Hanna Johnson: It is a really important area to look at. As we move forward in an increasingly digital world, it is right to think of things as digital by default. However, as you have highlighted, for the time being that does not capture everybody, which is a real problem, particularly when we are talking about public services. You are absolutely right that we should think about this as a hybrid model for quite some time. Services need to be designed so that they reach all the people they need to reach.

Helen raised the point about digital rights earlier in the session. That is something that we should really think about. We need to find a way to make sure that people are protected and can receive the public services that they should, whether through policy impact assessments or not.

On your question about how we design public services for the future, I think we have a lot to learn from technology here. Historically, in government, we have tended to silo ourselves in departments that have been set up. Certainly my personal experience was that the hardest policies to develop and to make progress on were the ones that fell between departmental stalls and had two Ministers responsible, with two teams of civil servants serving their own Ministers. Getting the right political will to make things happen was quite difficult.

I am not saying that all government departments should be abolished tomorrow, but we should certainly move to a way of thinking about policy in which we put the citizen first—a user-centric design as opposed to system-centric design. It is really important to develop that as we put these digital services together. That will also give us space to think about digital rights and how we serve a hybrid world as we move to the future.

It takes time for these things to happen. One of the things I worked on in government was the digital radio switchover, which still has not finished because it takes a lot of time. As much as anyone who listens to digital radio would say that it is a brilliant product, some people are used to

having analogue radio. They have their analogue radio sets and they have analogue radio in their cars. It takes time for people to get to the point where they can switch. Therefore, we should definitely be working towards a hybrid world for the future while focusing on design in a digital future.

Baroness Morgan of Cotes: Thank you very much. I should have also drawn attention to my interest in the register of interests before I asked the question.

Professor Helen Margetts: The first part of my answer is bit academic, because I would say that more research is needed. I am sorry about that.

As one witness pointed out at the beginning, we have a massive natural experiment here, because everything has happened so quickly. As one of my colleagues at Oxford, Trish Greenhalgh, has pointed out, this is the first time since 1945 that you cannot walk into a GP's surgery and see a doctor. She says that for many people that is radical, frightening and difficult, and it is. At the same time, there are lots of benefits, which a lot of GPs are pointing to, one being not having lots of very ill, and potentially infectious, people waiting in a surgery for a couple of hours.

There are clear benefits. We have to take advantage of this natural experiment and do really serious research on the good bits that we want to save—I have spoken to people at the Royal College of General Practitioners, for example, and to people in other places where they really want to do that—rather than snapping back to how it was before. Of course, as Hanna pointed out, it has been partial and incomplete. It has been about telephone and very limited video consultation; it could perhaps have gone much further.

HMRC is an interesting example. It had a big push towards routinising civil servants' use of technology in 2016, when everybody there had the facility to work from home, and during the pandemic it was able to move straightaway to working from home without any loss of productivity. We can learn from things like that about what you need to do in advance. We need to understand the implications of a school closure. We know they are bad, but in what ways are they bad? We need research there.

That leads me to my final point. You mentioned designing public policy and services. This comes back to the data point I made before. We tend to do things in silos, including any use of technology and data science. We tend to build models that are in a silo. We have seen huge attention to epidemiological modelling and to quite a bit of economic modelling. However, we have seen incredibly little modelling that takes account of the economic effects and the state of public health, which we know now are inextricably intertwined. Added to that are things like education, which we know has an effect on the economy through people not being able to go to work and so on. We need multidata-source and multisectoral modelling to be able to design decent public services for the future.

Baroness Morgan of Cotes: Thank you very much. I do not know whether Gerard or Benedict want to come in on this.

Benedict Evans: To clarify, I said "experiment". A lot of the experiments will not stick. We tried doing everything by Zoom, but not everything will be by Zoom. We tried doing every conference remotely, but a lot of that will not work. We will set a new equilibrium. I said that we were breaking habits. Everybody has to look afresh at why we are doing it like this. Is this the right way of doing it? Do we want to get on a plane to New York every Friday to walk around the office and see people, for example? That will probably not happen again.

I have another observation about civil servants working in silos. There is a saying in the tech industry that you do not ship the org chart, but of course everybody ships the org chart. The saying in the car industry is that you can see the org chart on the dashboard, and you can see that the steering wheel team hate the gearstick team and do not talk to the HVAC team. This is a universal problem across every industry. The only thing you can do is try to be aware of it, to see it when you ship, and to think about ways of solving it.

I have a quote from a former DCMS Minister—I am afraid I cannot narrow it down further; there is a big pool of people to choose from—who said that people complained to him about two aspects of government. One is that the Government know too much about them. The other is that they have to enter their information into too many different government websites. So pick one.

Baroness Morgan of Cotes: Thank you. It was not me.

Gerard Grech: There is an expectation among many that public services are as good and as frictionless as services that come from the private sector. I think we have been spoilt in what we have come to expect from services that we use, whether it is online shopping or the consumption of anything, really. There is that deep expectation, especially among millennials. They are only a certain part of the population, but they expect frictionless services, and that will only increase.

Yes, it is an experiment to some extent, but we are building new habits and building resilience in the circumstances. We do not want to be victims of circumstances, but we are building new habits that are very positive for us as a workforce. We might be able to do everything through Zoom, for example, but there are lots of things that you learn about yourself having been forced to do things in this way, and I think that is a positive. Those are the two points I wanted to raise.

Q20 **Baroness Benjamin:** I declare an interest as per the register. It is great hearing from all our witnesses. I found the point that you made, Helen, about the UN rights of the child and digital inequalities particularly of interest and worth exploring.

The point I would like to make—we have all said it this morning—is how it is looking as though more and more people will be using basic services

online. Increasingly, internet services are being aggressively monetised, usually with monthly subscriptions of anything from £7.99 to £9.99 or more. Pretty soon there will be no alternative but to sign up to these subscriptions and be locked into monthly payments, which could add to your budget; for example, soon everyone will have to use third-party software to complete their VAT return and there is no alternative but to subscribe. This could be a trend for other services becoming monetised; for instance, at the moment Zoom is free for basic users but that could change because of its increasing use and popularity.

Should the Government regulate the monetisation of basic online services and other essential services when there is nowhere else to go? It would be good to hear all your points of view. Somebody mentioned banking as well, which could be another way of people having to subscribe to their online banking when all the banks are closed and you have no alternative.

Professor Helen Margetts: That is a really interesting question. Definitely something needs to happen somehow. Things have changed so quickly, Zoom had no idea it was going to end up being so central in so many people's lives. Yes, either there has to be regulation or there has to be pressure on the big platforms. Whereas Zoom has been a success story of the pandemic, the other platforms have not done so well in providing a virtual presence platform. As with any regulation, sometimes it is good to put pressure on the companies. Yes, digital platforms, which are all the time using our data and offering services in return for that, clearly have to up their game in terms of free services. There is still Skype, for example, and WhatsApp—they are doing it to some extent. I do not think it will be necessary to regulate for everything.

For the second part of my answer I would like to go back to Baroness Morgan's question, which I did not answer. We always have to think about those things when there is new regulation, policy or services. This is something I said in my PhD back in the 1990s. It has been true for a very long time that there should be some consideration of the digital when you make policy, legislation or regulation. That is obviously far truer now than it ever has been. Those things have to be considered for any new kind of mandation. I certainly agree with you about the VAT point.

Hanna Johnson: I will rely a little bit on Helen's earlier answer that more research is needed. As she said, things are moving very quickly and the way that services are developing is happening very fast.

Obviously, as a principle, if there is an essential service where there is no other provider, or very few providers, there certainly is a role for government in regulating that. However, deciding what those essential services are and what choices there are in the market is something we need to keep a watching brief on. There are some areas I think are particularly key. Education, as we mentioned earlier, is one of them. In a world where we need online services for education, the disparity we have seen in the pandemic between those in private education and those in

state education and their access to classes online has been troubling. There are certain areas we should particularly keep an eye on.

As I said, it is something we need to continue to study as these services develop to decide what is essential and where there is not enough competition and free access.

Benedict Evans: If I can add something to that, I spend an awful lot of time talking to regulators and competition regulators. One of the primary concerns is: how do you compete when Google is offering that for free? How do you compete when Amazon is offering that for a tenth of the price? How do you compete when there are 10 free video services? How do you charge? Therefore, most of the regulatory concern is actually that you have large companies offering this for free, or for very little money, rather than that you are forcing people to pay. In fact, of course, if you force people to offer it for free, you make it harder for new entrants.

This is a generalised point: there is always a challenge of balancing conflicting regulatory objectives. Do you want more privacy or do you want more competition? Do you want more accessibility or do you want for it to be easier to create new companies? As other people on the call have said, none of this existed nine months ago. Nobody at Zoom thought they were ever going to have a single consumer user in January. One has to be slightly cautious in thinking about how prescriptive one wants to get, given that all of this will have changed again in another six months.

Gerard Grech: Yes, just briefly, I think there are people who are prepared to pay a monthly subscription for not having their data used in the way that they would like to. We should perhaps be more aware of those types of services.

Yes, it is true that more and more things will be based on a subscription. However, a lot of platforms are trying to do their best in offering freemium services, meaning that you get a certain amount for free and then they will encourage you to upgrade once you are using it above a certain threshold. That will not go away and that is the best we have today. There might be new entrants who will come in and will disrupt that model but we very much believe that more things will be based on subscription as more people have access to not credit cards but digital banking solutions, which enable this to be relatively easy. I note that digital banks are making it extremely easy for people to be in charge of their own spending habits and using data to empower the user to be much more informed about what they have access to and what standing orders have been put in place, more so than the established banks, if I am honest. That is a good thing. There are a lot of emerging services from the digital banks enabling people to save more and spend less.

You are absolutely right, there will be a growing amount of API—application programming interface—services, making it easy for the interoperability of these services, but we believe that the user will be

very much in charge of having that visibility of what is connected to their bank account.

The Chair: We are going to change direction now and Baroness Young will ask some more questions about innovation and the future, being in mind again that we are trying to look into our crystal ball.

Q21 **Baroness Young of Hornsey:** Thank you to everybody for their contributions so far. This question is about new technologies or new ways of using existing technology. What is emerging now that we should be aware of, especially when we are thinking about workplaces, how we access services and how we live our lives in two to three years' time? How is the pandemic shaping or likely to shape these innovations?

I would like to start with Hanna. Although this is not necessarily to do with those areas that I have just highlighted, it is a concern to many people. How are supply chains and audits on business-to-business services monitored and how are they reported on, particularly around areas such as modern slavery? Hanna, I know you will be aware the public sector is increasingly having to think about these things. Are there any forms of technology that are emerging as a result of the pandemic that we need to think about in relation to that aspect of public services, but also, for the other speakers, in relation to workplaces and how we will live our lives in two to three years' time?

Hanna Johnson: In the work we do on supply chains at PUBLIC we see a number of companies coming through either to apply to be on our accelerator or to work with us, which have solutions to help companies keep a better track on their supply chains. Suppliers also do not have to complete those compliance processes 20 times for the 20 different people that they work with but instead certificate themselves once and use that certificate across a number of suppliers. Modern slavery is one problem linked to supply chains but there are others and that is where a responsible supply chain comes into play.

You talked about some of the areas of technology that are having a particular impact or that are particularly being used and I will comment on two or three areas. The first is in the way that we can be more predictive in the way we deliver public services. Artificial intelligence—machine learning—is helping to do that. We work with a company called Cera Care. I will declare an interest because we worked with it at PUBLIC on one of our very first accelerator programmes. It is now one of the biggest social care providers in the country. It uses artificial intelligence to match carers to people and their needs more carefully, but also to use predictive technology to work out where those carers might need to be deployed at any one time to prevent certain situations based on symptoms or particular situations that are being reported. The power of predictive technology and artificial intelligence will increasingly have a place in healthcare.

You talk about natural language processing, the use of chatbots and how people interact with government at a national level but also local

government. To use an example from the portfolio we work with, we work with a company called Future, that allows organisations to set up chatbots very quickly using FAQs to interact with their users and their citizens, and, crucially, to do that in 120 different languages. You can type into it in French and get an answer in French, so you use the language that you are most familiar with. That helps increase access to services and also broadens access to services.

You mentioned the pandemic and the increasing use of video consultations. We need to look at the security of some of those services and be very cognisant of how we develop our cyber capabilities and cyber safety around the use of those new technologies to interact with citizens.

Benedict Evans: There are two different ways of thinking about the question. First, I would distinguish between technology and products. As there are new problems, there are new products, that generally apply existing technologies. As new problems emerge out of lockdown and Covid, people create new products. Lots of people are creating remote learning, remote work, remote ordering, e-commerce, food delivery things—those are not new technologies, they are new products or new business models. That is a function of entrepreneurs reacting to new needs and new market requirements.

The most interesting technology that applies to a lot of the things you are talking about is machine learning. I generally try to say machine learning rather than AI because as soon as you say AI people imagine HAL 9000, whereas it is more useful to think of machine learning as a new kind of database, a new way of manipulating data and automating data. That allows you to look for patterns you could not find before. It lets you look for patterns in your data that might indicate that the Chinese are hacking your network or that your supplier is using people who are not being paid properly.

It also means you can put cameras everywhere and put metrics on how often people are going to the bathroom, how hard they are working, whether or not they are looking at the road, whether they are putting things down in the wrong place. Those are all things that we could do with databases 30 years ago in different ways and people wrote a lot about databases, what they meant for civil liberty and what they meant for workplace practices, 30 or 40 years ago. We are getting another wave of that technology, which allows you find problems and gives you new ways of finding problems but also—if you look at what China has been building in the last five years—gives you new ways of making a panopticon. A lot of the Chinese companies that make security cameras boast in their Chinese marketing materials that they have technology that allows you to look for ethnic features and that will allow you to find Uighurs on the street from 100 yards away. They do not talk about that in English but they talk about that in their Chinese marketing materials. That is exactly what you could have done with a database 30 years ago. Indeed, it is what a certain Central European country did with databases in the 1940s.

That is the way I would crosshatch how you think about these problems with the technology. It is not that we are getting radical new technology emerging from Covid, it is that it creates all sorts of new ways that you could use it, some of which we might worry about, some of which we might think are great.

Gerard Grech: Building on the point Benedict is making—the distinction between services and what I would call enablers—one thing to note is that the UK is very well placed in this space when it comes to emerging technologies, but I would call them more industry enablers. Whether it is artificial intelligence or the application of machine learning, robotics, cybersecurity, or the internet of things, these are all enabling technologies that allow industries to help transform themselves and transition to the digital economy. The UK not only accounted for 33% of all European tech investment in 2019 but it was the third in the world for investment in such emerging technology.

It would be right for the Government to work with the private sector as much as possible to continue investing in these emerging technologies to allow new industries either to transition or to establish themselves.

Baroness Young of Hornsey: Very quickly, just in one word—yes or no—can you say whether you think these developments and the recalibrating of old technologies is simply being accelerated by the pandemic and that they would have emerged anyway or whether there are absolutely new things that are happening as a result of the pandemic?

Gerard Grech: I would say they are being accelerated by the pandemic, whether it is the use of robotics delivering or shipping things faster to customers or whether it is the use of 3D printing on a mass scale to produce PPE equipment. These things been accelerated by the pandemic.

Benedict Evans: I agree, this is all about acceleration. There is some stuff that happens faster, there is some stuff that happens slower. In biotech new things are happening; in technology there is nothing fundamentally new, there is just a lot of acceleration.

Hanna Johnson: Yes, I agree.

Professor Helen Margetts: It is a question of reprioritisation. It goes back to the point about resilience. That in part is why a lot of the technologies we are talking about are not very glamorous. They are not the conventional way we think about artificial intelligence. It always was machine learning but we are seeing a return to calling it that and thinking how it might do things such as optimise resources. As Hanna pointed out, that is something we are doing a lot of work on at the Turing. In times of deep scarcity and recession, that will be very important.

I will just point to one thing that has not been mentioned so much. We need to innovate in another area that is not very glamorous: regulation. I mentioned at the beginning that everything bad has moved online to

quite frightening extents—hate speech, misinformation, even modern slavery, new forms of online exploitation. We need to tackle that with a multileveled approach, which in part is about regulation but it is also about putting pressure on the companies that innovate in this area. One thing we did at the beginning of the pandemic was build a classifier for hate speech towards east Asian people—Sinophobia—because there was not one. We will have to innovate in those ways, where you use things such as machine learning to detect bad behaviour and to do something to mitigate it.

The Chair: Thank you, Helen. We have questions now from Baroness Jay, then Lord Harris and finally Lord Hain, so three more groups, and we have 30 minutes, just to warn people, so please keep your answers as succinct as possible. Margaret, your questions fall very well in this section.

Q22 **Baroness Jay of Paddington:** Yes, it follows on very well. Helen, you talked about innovation in regulation. One of the problems that occurs to me is that you have talked, all of you, about things that are very positive about the technology change but you have also mentioned the WHO quote about the tsunami of online harms which has occurred during the pandemic. If you talk beyond the specific regulations—HMRC is one of the things that was mentioned—to a more global perspective about how you begin to influence the global platforms, how you begin to make any sort of regulation that is international when you are dealing, for example, with private companies owned on the west coast of the United States, or not private companies but companies owned in China, how on earth do you begin to have any sort of public policy purchase on those companies? We have seen the rather feeble attempts, for example, of Twitter to put regulatory notices against some of President Trump's assertions since the election in America, but you would not call that specific regulation. In this country—and I think in general in western Europe—we are used to more of a sense of public policy intervening in the use of these kinds of technologies, although we have not had the technologies at the level that we do now. I will start with Helen: how on earth do you begin to innovate in this area?

Professor Helen Margetts: We have to be braver about it. We are very afraid when it comes to regulation and I think it comes back to the earlier cyber-utopian dreams about the internet, which was presented as something that should not be regulated. The digital platforms have far too much power in this space and it is something that we have to do but we also have to put pressure. Yes, they have started to do something now. I know it is little and late but at least President Trump's Twitter feed looks like a cigarette packet now. It is little and late and it comes because there has been huge pressure. The whole Cambridge Analytica scandal at least put pressure on and at least we got change.

I think this is really a point about building regulatory capacity. Almost every market or every aspect of societal behaviour that is regulated is changing with technology, and the whole nature of criminal behaviour and online harm and so on. We have to build capacity for our regulators,

not in actually doing it but in what can be expected of companies. We hear a lot from the companies about it is really difficult to do—take Sinophobia or something such as that. We have to develop the capacity to say it is not that difficult or to understand where things are really difficult to tackle.

It is really difficult, as you point out, particularly on the global scale when almost all these companies are located on the west coast of America, but it has to be done and we have seen it happen. With GDPR, for example, Silicon Valley said the sky was going to fall in and that would be the end of the US economy; that did not happen and the sky did not fall in. It can happen and other European countries are going further in that direction than we have, so there is quite a lot of scope.

Baroness Jay of Paddington: Do you see it as a collective action? You mentioned European countries. I am old enough to remember that the European Broadcasting Union was quite effective in offline broadcasting. Can we do it on our own? We cannot do it as a national Government, can we?

Professor Helen Margetts: It would be very helpful if we were doing it with other countries. Another point here is the whole regulatory landscape and the whole landscape of the companies is geared towards large, strong states where lots of people speak that language. For smaller, weaker states it really is the wild west and we need to tackle those problems.

Baroness Jay of Paddington: Gerard said—I think I am quoting you correctly—that we cannot cling to the social and organisational practices of the past but we have to find new ones. Do you have any ideas about where we can look?

Gerard Grech: It is a delicate balance. On the regulatory point, it is a delicate balance between maintaining competitiveness, especially as we leave the European Union, and investing in new industries and emerging technologies, as I was saying earlier, and making sure that we are showing leadership in how we deal with regulation with technology. A very good example of this is how the Financial Conduct Authority has set up what are called sandboxes. This is a very positive way of enabling innovation to happen in a very responsive environment, to have the regulator involved from the very beginning of that specific innovation, because this is about speed, culture and agility. This is making sure that there is no gap between the innovations that are happening constantly—and that is going to continue—and the regulators maintaining speed and understanding how the emerging technologies will impact socially and on industry.

There needs to be much more of an encouragement with the regulators to get as close as possible to the start-ups and scale-ups which are inventing the future, rather than being left behind and only responding a lot later. I think the UK could present itself as being one of the best places to develop regtech—regulation technology—so that everything is

being mindfully developed rather than developed in isolation or in a siloed way. That is possibly a very good position to take as the UK, given that the US is the US with free market economics and you have the European Union which is dealing with 27 countries. This could be a very specific way for the country to differentiate itself.

Baroness Jay of Paddington: But would that be effective in preventing the harms that the WHO was talking about?

Gerard Grech: If we are more mindful collectively between industry and government, that would lead to a positive outcome. It is how we do this more at scale. I would like to see this from all the regulators rather than just one or two because they are at the forefront of where they are. The Financial Conduct Authority had no choice coming out of the financial crisis to develop such a sandbox and the principle of a sandbox comes from software development. We need to test these things a lot more and encourage and incentivise the regulators to be a lot more responsive rather than reactive.

Baroness Jay of Paddington: Thank you. Do the others want to add anything?

Benedict Evans: This could be an hour-long conversation. I mentioned comparing technology with cars. We regulate cars but actually we do not. That is 50 different things. We can go to General Motors and say, "You need to make your cars safer" but we cannot tell it to solve parking in central London and we cannot tell it to stop 17 year-olds getting drunk and driving down the road in the middle of the night. We are sort of at the stage now where we are saying, "Break up Big Car" and that might be a good idea because Ford might be bullying Renault, but that is not going to stop teenage boys getting drunk and going out driving at night. You have to work out what specific problem you are trying to solve here, because there are 20 different problems.

Then you have to work out what trade-off we are looking at here. If you want more competition in social networks, you have to make it really easy to export your data, but then you have just described Cambridge Analytica. As in all policy, you have to pick trade-offs and sometimes you cannot have everything you want all at the same time. As Helen said earlier, people complained about GDPR but in fact it was the opposite. GDPR has been a fiasco. It was aimed at weakening the position of Google and Facebook but had the effect of basically making it impossible for anybody except Google and Facebook to make any money from online advertising. We have talked about Cambridge Analytica, which I think was a perfect example of a moral panic that always comes with new technology. As we finally discovered, Cambridge Analytica really did not have any effect on anything. It crystallised a realisation of the problem but in fact it played no real role in any elections.

Your starting point has to be a sense that there are 20 different problems and you have to pick them one at a time. The challenge in that from a regulatory mechanics point of view is how you address that question

without ending up with 150 different open cases. How do you create rules that are generalised enough that you do not have 150 cases but not so general that you discover you have accidentally banned Google Maps without realising that that was what you had done? I say that as a joke but Elizabeth Warren's proposal was that if you run a platform you cannot compete on it, which literally means you ban Google Maps. You have to tease apart the complexity and look at how many problems we are going to solve here without ending up with 300 or 400 different problems.

The final point is that unlike most of the previous ways of regulation, we have this conflict between local objectives and local cultures and local ideas about how speech works in particular, with platforms that have to run on a global basis. There was a notorious case recently where somebody libelled an Austrian politician and the Austrian court said, "You have to take this down, not just in Austria but globally". You have an Austrian court asserting the right to say what somebody in California can look at on a Californian website. I do not know the answer to that but I do not think that anybody in Menlo Park knows the answer either. They are sitting there going, "I am a 35 year-old product manager and you are asking me to decide the basis of political speech in Malaysia. How does that work? What am I supposed to do here? Yes, I have responsibility but responsibility to do what exactly and who is supposed to make that decision for me?"

Baroness Jay of Paddington: That is a very interesting and helpful anecdote about the Austrian politician but I think that this is something that has been largely brushed aside, or at least has not been well tackled, by the public policy area and by Governments ,who should be able to make some decisions about this rather than the 35 year-old product manager. Hanna, do you have anything to add to this?

Hanna Johnson: I agree with what the other panellists have said. It is a complex problem. Helen raised earlier the need to innovate in how we regulate. As Gerard has mentioned, the sandboxes that have sprung up are a good way towards that but we need to innovate to regulate, not just to meet the changes in technology now but, as Benedict said, to future-proof and find ways that can respond in the future. A lot of that comes back to the point I made earlier about digital skills and digital engagement in government—people in government understanding what these technologies are, what some of the implications are, how they work, what they might do, and being able to move at the same pace as industry is moving; otherwise, we will be left behind and chasing our tails when services are moving ahead, with unintended consequences, potentially.

Baroness Jay of Paddington: Thank you very much. You have all been very helpful.

Q23 **Lord Harris of Haringey:** Thank you very much—some really interesting material. What you have demonstrated to us is that we are increasingly dependent in all sorts of ways on the internet and new technologies of this sort. Whether you think it is a good thing that half the population are

meeting their new partners through the internet, or that more and more transactions are conducted in that way, does not really matter—it is happening. What concerns me is that because of this concentration in one particular area of communication we are creating a single point of failure.

I would be interested in what you think is necessary, if this is the direction we are going in—and we clearly are—to ensure that these means of communication are resilient and robust against all sorts of challenges, whether they are malign influences or natural or anything else, to keep things going. We are really very lucky that during the first period of lockdown there was not some big, widespread internet outage, because I really do not know what would have happened under those circumstances. What do we need to be doing to make sure that the system continues to enable us to do all these things? Perhaps Benedict might like to start.

Benedict Evans: No pressure. One of the defining characteristics of the consumer internet, going back to the 1990s, is the phrase "permissionless innovation". There was a phrase in the early 1990s—the "information superhighway"—which some politicians may remember having inserted into their speeches. The information superhighway summons up the idea that this is going to be the centralised thing where Disney and AT&T and British Telecom and News Corporation decide what we are going to get and every six months there is a committee meeting to decide, "What is the fun thing for young people this year?" What the web did was completely explode that. You do not need anybody's permission to launch anything on the internet.

Of course, as the cliché goes, the internet was designed to withstand a nuclear attack. The internet is much less a point of failure than a TV network and half a dozen newspapers. It is thousands of companies and thousands of networks. In a sense that is the difficulty in regulating it. That is what makes it difficult to decide what people can say on Facebook, Instagram or Twitter. It is a completely new sphere.

We spent 250 years working out how we think about speech in print, in public, in a public meeting and in Parliament. We have this rich Burkean tapestry of how we think about what can appear in a newspaper versus a book versus a play. Then the internet arrives, gets dropped on our heads in the space of about five minutes and suddenly we have to think about how speech works, how regulation works, how employment law works and whether an Uber driver is a full-time employee, a contractor or what. We have to work it out really fast without any of that 250-year accumulation of consensus. That is why, going back to my earlier point, a 35 year-old product manager in Menlo Park is like, "I didn't go to Columbia Journalism School and get taught what an editor can decide about what appears in a newspaper; I have to work it out myself now". That is why they get, for example, Alan Rusbridger to be on their governance board—"Can we have somebody who has dealt with these problems before, please?"—whatever you think about Alan Rusbridger. There is that sense that trying to work out what you do in a radically decentralised system is actually much more difficult.

The other point I would make is that anybody in Silicon Valley would answer this question with, "Stop telling us to turn off encryption". Encryption is one of the most central security models that they can build. I read in the political pages that every MP in Westminster is on WhatsApp all day gossiping with their colleagues. WhatsApp is encrypted. If it was not encrypted that would mean that law enforcement could look for child sex abuse material on WhatsApp. It would also mean that somebody from China could sit in Parliament Square in a truck and listen to every WhatsApp conversation.

Those are some of the trade-offs that you have to think about. What kind of resilience, accountability and regulation do we want? Do we want law enforcement to be able to look for child abuse on WhatsApp? Yes. Do we want any random person to be able to read all our WhatsApp conversations? No. Pick one, because you cannot have both.

The meta point there is that we spent 250 years understanding those questions in newspapers, in retail and in telephones and we suddenly are having to work out those kinds of questions in technology, in a field we did not all grow up with and that we do not all have that kind of deep, innate understanding of.

Lord Harris of Haringey: That is really fascinating. We could spend another happy hour just pursuing that.

Benedict Evans: Sorry, did I not answer the question? Sorry.

Lord Harris of Haringey: I was trying to pose a slightly different question, although actually I think the answer is very helpful to other things we will be looking at in all this.

You said because it is distributed and was designed to deal with a nuclear attack and so on it is very physically secure. I wonder whether that is true. I do not know whether it is just me and my tech or whether it was more global. Yesterday all my interactions with the internet were very, very slow. It is possible for things to get overloaded. We are reliant on a number of underwater cables to connect Europe to the US and everything else. There are clearly vulnerabilities there. If, for whatever reason, some of this was disrupted, what is the plan B, because we very rapidly stopped using other systems? That was what I was trying to get at, although your answer was very interesting.

Benedict Evans: This is kind of the Huawei conversation. There are two Huawei concerns. The first concern is there are back doors all over the place that are mostly just security bugs the Chinese probably know about and have probably strategically decided not to fix. Could the Chinese use a base station in Parliament Square to listen to phone conversations? Could they use the base station that is near so-and-so's house to listen to their phone conversation? Maybe. It is getting very technical and is perhaps theoretically possible, except if they are using WhatsApp, when they cannot.

The other conversation is that this is just like the electricity infrastructure: if all of our electricity power generation, if all our local substations, were dependent on kit from a Chinese company and therefore explicitly dependent on the good will of the Chinese Government, would we be comfortable with that? We should think of the internet as critical infrastructure in the same sense as the water system, the power system or the radio broadcasting system. The ballistic missile submarine commander was supposed to listen to check whether "Thought for the Day" was on every morning, and if not he was supposed to nuke Moscow. That is where you could situate this stuff. It is critical infrastructure and we should think about strategic ownership of things such as how the fibre network runs and who owns it—in the same way as the Americans always thought that the owner of a TV channel has to be an American citizen or American airlines have to be owned by American companies just in case.

I do not want to get too Cold War about that stuff but it is an issue if we think about what the world might look like in 25 years' time. If there is a Chinese carrier battle group in the North Sea doing freedom of navigation exercises would we want a Chinese company to have built our fibre network? It sounds crazy, but it is also not crazy.

The Chair: I am sorry to interrupt you, Benedict. As Lord Harris said, we could talk about this for two hours but I just want to alert people we have about 10 minutes to go. Do you want to direct a question to one more person? Then we must move to Lord Hain.

Lord Harris of Haringey: I saw Hanna nodding, so I would be interested to know what she was going to say and then I will happily pass it over.

Hanna Johnson: I am nodding vigorously at Benedict's point about critical national infrastructure. It goes back to the conversation earlier about what are essential services. To a certain extent I suppose it extends also to the conversation we had about whether there should be digital rights and how that plays into policy-making.

When you talk about infrastructure or services there are two elements: protection and competition. Where there cannot be competition, there must be greater protection. Taking those elements into consideration, as Benedict has very well set out, when you are talking about protection you are talking about standards, the choice of providers and ownership. Obviously, with competition it goes back to the point we were making earlier about where there is an essential service where there is no other provider and what we then do about it

The Chair: Thank you, Hanna. Yes, really important points. I am conscious that we are skirting over the top of very deep and complex issues. I would urge anyone who felt like giving us some written evidence on these subjects to do so, because then we can consider it and look at it more carefully. I apologise for the slightly superficial way we have to skip through such deep subjects.

Q24   **Lord Hain:** First, to Helen on digital rights. You mentioned the UN rights of the child, which is declaratory. What should we as a group consider in policy legislation for digital rights; for example, to deal with the inequalities you mentioned with 5 million people not online, and you said women were worse hit by all of this?

Secondly, to Hanna, on this hybrid stuff: GP consultations may be easier, you said in your written submission. Should that not free up time for dealing much more with mental health on a face-to-face basis? If we are entering a hybrid GP situation, what other policy implications are there?

Professor Helen Margetts: I mentioned the rights of the child because some of those rights are concerned with education, learning and socialisation, and things that we do consider here—every child has to go to school. There is contradiction there about whether they can get the full educational experience without a laptop. Sometimes the public sector will have to fill the gap. It may not be with regulation; it may be with the provision of laptops, which was talked about during the pandemic but was actually drastically reduced to about a third, which is why so many children remained without laptops.

It is a difficult question to answer because it comes into everything. Take elections, for example: we are a democracy so we have free and fair elections. That is what we expect. But you could argue that advertising technology and all aspects of electoral regulation are completely unable to make that happen because we have not changed our electoral law at all since social media became widespread. There are rights in all sorts of areas that rely on some kind of rethink of the existing laws and regulations, which is what the previous question was about. You cannot do all with one thing. You will not achieve digital rights just with internet access and the resources to access it, but digital rights should involve some kind of right to online access.

It comes back to this question of resilience. If you design your market for having internet access, for example, based on competition, you will not get resilience or universal coverage in quite the same way. So it is a question of using that value to reinform how you do those things.

Hanna Johnson: On the policy stuff it comes back to what we were talking about earlier, about technology being additive, looking at policy problems as a citizen-centric problem rather than a system-centric problem, and finding ways in which technology can add to the way that we treat, in the example you have given, mental health. If that means it reduces workload for GPs on ailments that do not require face-to-face interaction, we should absolutely redistribute that capacity to things where people really do benefit from that.

I would argue that that is not a question specifically about technology; it is more about how government thinks about how it builds policy and how it builds—going to the central question of the Committee's inquiry—a consideration of well-being into the way it does things. I do not think it is specific to technology, but I think that is one way in which you can make

sure that the benefits of technology are additive in policy-making.

The Chair: Does anyone else want to add final thoughts before we wrap up? I will formally close the meeting. I thank all our witnesses so very much. We all knew that this was an important theme to look at. I have been particularly interested in the fact that you all have agreed clearly that this has been acceleration, but perhaps without as much innovation as I had thought. I am interested in your views on that—that these are continued trends as opposed to inventing new ones perhaps. I am very interested to hear about your regional experiences; thinking about hybrid models and how that is going to play out into the future; innovation around regulation; all of the social, mental and physical interactions and the quality of relationship piece that we have barely touched on; and then feeding into the resilience that Toby and others have talked about at the end.

We will do our best to represent some of these views in the work that we do, but I know it will be much better informed and we will certainly have a lot more questions in our minds as a result of all the things you have told us today. Thank you very much indeed for joining us. As I say, if you have other things you would like to make sure we have in our psyche, please do enter some written evidence; we would very much appreciate that. Thank you again.

I will formally close the meeting and I will see my colleagues for a wrap-up in a few seconds. Thank you very much.