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MacTAGGART LECTURE
(Eric Schmidt, 26 August 2011)

Television and the Internet: shared opportunity

Thank you for that warm introduction.

I understand this is the first time the MacTaggart has been given by someone not employed in Television broadcasting or production. I'm not sure whether that means the bar has been raised or lowered, but I'll do my best!

It's a huge honour to be invited to speak on such a prestigious occasion, especially as an industry outsider. When he spoke here two years ago, James Murdoch described himself as the crazy relative everyone is embarrassed by. I wonder what he'd call himself now. If James is the family outcast, I'm not sure what that makes me. The geek in the corner?... the alien species?... the Android? Don't worry though, I promise I'm not a croak-voiced dalek.

Charles Allen called the MacTaggart 'the longest job application in the industry'. It's very kind of you to think of me, but I'm still fully committed to Google. All that's changed is that Larry now has the keys to the Google Tardis. I promise I'll stop the Dr Who quips soon - although in this case it is pretty apt. We have a private joke at Google that Larry is actually from the future.

I'm especially indebted to Mark Thompson - who gave last year's lecture - for his tips on what makes a classic MacTaggart. The recipe boils down to anger and arch-villains, impossible proposals and insults. I'm not sure about anger, but I'll do my best to come up with the rest.

Mark even identified candidates for demonising - usually a choice between the BBC and Murdoch. I must say how refreshing it is that Google isn't on that list!

But I don't kid myself - I know some of you have suspicions about Google. Some of you blame us for the havoc wreaked on your business by the Internet. Some accuse us of being irresponsible, uncaring, and worse.

Today I'll aim to set the record straight on those points, and demonstrate why we can and should be optimistic about Television's future, if we work together. But first, a little about my industry.

Peter Fincham said this lecture is the closest most TV people get to going to church. Well, I am a tech evangelist from way back, so I'll take any excuse to preach about the Internet.

Why the Internet matters

In less than 30 years, the Internet has grown from almost nothing to more than 2 billion users. It's

available on Mount Everest, and on the South Pole. Half of adults in the EU use it every day. It has become such a profound part of life that 4 in 5 adults worldwide now regard Internet access as a fundamental human right.

Today it's hard to imagine life without it. We take it for granted, but it's worth reminding ourselves just what an incredible force for good it has been.

Without the Internet, a child growing up in a remote village is unlikely to reach their potential, with little access to books and teaching.

Without the Internet, people worldwide couldn't band together so quickly in a crisis, helping raise the alarm and deliver support.

Without the Internet, repressive regimes can deny their people a voice, making it far harder to expose corruption and wrongdoing.

And without the Internet, Europe would lose one of its biggest drivers of much-needed economic growth. In the UK alone, the Internet accounted for over 7% of GDP in 2010 - 100 billion pounds - and that will grow to 10% by 2015. Companies who use the Internet are growing four times faster than those who aren't.

In short: the Internet isn't making inevitable change faster; it has become an engine of change. It has recast the way we communicate. It has transformed the way we learn and share knowledge. It's empowering people everywhere, making the world more open, fairer, and more prosperous.

Just think how far we've already come. I encountered my first computer back in high school. It was enormous and clunky. Today, my smartphone is a hundred thousand times faster than my high school computer, and it fits in my pocket. To relay information to my first computer you had to punch holes in cards. Today, I can just talk to my phone, or point its camera, or even tilt it, and it understands.

When I started working in computer science we had big dreams, but technology couldn't deliver them. I remember being blown away by Douglas Engelbart's famous demo from 1968 where he showed off an experimental prototype - for a mouse! It was utter science fiction to imagine that one day a computer might be able to respond to your facial expression or decipher the nuances of human behaviour.

These represent some of the hardest problems in computer science and today they're being cracked. In the past year alone, we've passed some incredible computer science milestones. In October, Google demo'ed self driving cars which use huge computing power to "see" other traffic and navigate the roads safely. In November, Microsoft released Kinect for XBox, breaking new ground in gesture and facial recognition. In February, IBM's Watson became the first computer to cope with the complex grammar and trick questions to win the TV quiz show "Jeopardy".

Of course, while I'm optimistic that computer science and the Internet are forces for good, I'm not naive. As JFK put it, "I'm an idealist without illusions". There are many challenges we're still grappling to address. For instance: how do we make the world more open while still respecting privacy? How do we empower people without provoking anarchy? How do we ensure technology enriches rather than devalues relationships and culture?

These are important questions, but they aren't new. When the printing press was developed in the 15th century, some worried about information overload. Critics of the telephone fretted about private conversations being overheard. When radio was introduced, concerns were raised about it distracting children from reading.

Such fears seemed perfectly reasonable at the time, but eventually they disappeared as attitudes and technology evolved. I expect the same thing will happen with the Internet. Its benefits are too great and it is too widely embraced to turn away from now.

The Internet is fundamental to the future of TV

So what has all this got to do with Television?

In 2010, UK adults spent as much time watching TV in 4 days as they did using the web in a month. TV is still clearly winning the competition for attention!

Yet, you ignore the Internet at your peril. The Internet is fundamental to the future of Television for one simple reason: because it's what people want.

Technologically, the Internet is a platform for things that traditional TV cannot support. It makes TV more personal, more participative, more pertinent. People are clamouring for it, nowhere more so than the UK.

The team behind the BBC's iPlayer has my utmost respect. I believe it's now used by more than 10% of the UK population every week. It's a great product with a vast range of content, more advanced than any other market. And they've just launched a European version - soon to be global - as an iPad subscription app. I'm sure it'll be a success. I have just one request: please hurry up and make an Android version too!

Of course, iPlayer isn't the only show in town. There are numerous catch-up and on-demand TV services out there, including the most global of them all - iTunes. And YouTube now has long-form content thanks to pioneering partners like Channel 4, who in 2009 became the first broadcaster in the world to put up their full catch-up service. Long-form is the fastest growing YouTube category in the UK both in terms of views and revenues, now with more than 80 content partners.

But more choice is just the beginning, and can backfire if you're not careful. Just remember how it felt in the old days of renting videos. Face-to-face with thousands of movies, picking just one to take home was always a struggle.

That's why a system for recommending content is so vital. It's what channel schedulers have done since the beginning of TV. But traditional scheduling is one size fits all. Sometimes their recommendations suit me, but just as often not.

Online - for those who wish it and grant permission - things could be vastly different. Online, through a combination of algorithms and editorial nudges, suggestions could be individually crafted to suit your interests and needs. The more you watch and share, the more chances the system has to learn, and the better its predictions get. Taken to the ultimate, it would be like the perfect

TV channel: always exciting, always relevant - sometimes serendipitous - always worth your time.

We've already had a glimpse of the power of recommendations to sway viewing with Netflix. Around 60% of Netflix rentals are a result of algorithmically generated recommendations. Another example is Amazon. Their recommendations - like "others who bought this also bought" - are incredibly compelling, and in recent years have accounted for between 20 and 30% of their sales.

But delivering on the promise of personalisation is tricky, both technologically and culturally.

Personalisation requires data: the more the better. As I've learned first-hand, any online service that involves personal data will be a magnet for privacy fears. It will be vital to strike the right balance, so people feel comfortable and in control, not disconcerted by the eerie accuracy of suggestions. This is new territory for your industry, and don't underestimate the challenge.

More generally, doubts have been raised over whether personalisation to this extent is even desirable for society. There's a fear that filters will become so narrow, we'll wind up living in a bubble of our own prejudice. Of course, that would be a bad outcome, but I don't think it'll happen. The best filters - like the best TV channels - will always have an element of serendipity built in by design.

Besides - in practical terms - what's the alternative? Without some form of filtering, we would drown in information. So the real question is, if not personalisation, what kind of filtering should we have? The nanny model where someone else has the power to dictate what you should and shouldn't see? Or the lucky dip model where things are plucked out at random? To my mind, both these alternatives to personalisation are far worse.

I've talked about how the Internet is transforming TV choice. Equally important are changes in how we watch.

I remember the excitement about interactive TV a few years ago - all that drama over pushing a red button. There were a few neat experiences on offer, like playing along with a game show. But on the whole, red button style interaction was pretty limited.

Now we're riding a second, much bigger, wave of interactivity. It's a convergence of TV and Internet screens. This time the interaction isn't happening via your red button - it's on the web through your laptop, tablet or mobile. But most important of all, this time it's social.

For some shows, the online commentary that swirls around them - be it through Twitter or chat forums or blogs - has become a crucial part of the experience. Just consider how the BBC's Question Time is using Twitter to engage audiences. Once you could only shout at the politicians on your screen, now you can tweet your rant to the world.

Adding a social layer to TV shows will increase. Among Google Plus's coolest features are group video chats called "Hangouts". Watching YouTube videos in Hangouts is like being in the same room. While the video plays you can chat over the top, or text notes on the side. Anyone in the hangout can grab the controls to pause, rewind or fast forward, or even skip to a new clip, and it keeps the video playing in sync for everyone.

A social layer is something viewers - or at least a substantial number - clearly want. It's also great for broadcasters. Trending hashtags raise awareness of shows, helping boost ratings. It can be metric for viewer engagement, a vehicle for instant feedback, a channel for reaching people outside broadcast times. It can also provide a great incentive for watching live.

In fact, I don't expect TV viewing will ever switch to be entirely to on-demand. There will always be a cultural pull, for some shows, on some occasions, to watch in real-time. Linear viewing remains remarkably robust - in 2010, over 90% of broadcast TV viewing remained 'live'.

But I sense the default mode of viewing will inexorably shift. Try forcing a 6 year old who's grown up on DVRs to only watch live TV. Once you're used to such things, it's hard to give them up - no pause, no rewind, no choice. Already, in homes with Sky Plus, it's claimed nearly 20% of viewing is timeshifted.

There are hints too of shifts if you look beyond the headline figures, particularly for shows that appeal to a younger demographic. It's said more people watch ITV's hit show "The Only Way is Essex" online than on TV - although I confess I haven't seen it myself. And despite almost every broadcast outlet showing the footage, the Royal Wedding was live-streamed 72 million times on YouTube with viewers in 188 countries.

So, what are the trends to watch? I can sum that up in 3 words: mobile, local and social.

Already, mobile search traffic on Google surpasses that from desktop in some countries. Globally, 40% of Google Maps usage is via mobile. Two hours of video are uploaded to YouTube every minute from mobile devices. Soon, your typical Internet user won't be indoors with a PC; they'll be out and about on their cell phone.

Reflecting this, new genres of online content and services are emerging. If content is king, context is its crown - and one of the most important contextual signals is location. If you search for coffee from your mobile, odds are you're looking not for a Wikipedia entry, but for directions to a nearby cafe.

Social signals are another powerful driver of behaviour. If three of my friends highly rate a TV series, odds are I'd check it out even if reviewers say it's rubbish. We're just at the earliest stage of learning how best to use social signals and other taste indicators to provide more personalised content and services.

And if you think all this is exciting - or frightening - remember, this is only the beginning. In technological terms, we're scarcely at the end of the first act of the Internet age.

Challenge begets opportunity

Now, I get that all this represents a big upheaval for your industry. I know what that feels like. I was there at the birth of microcomputing. I helped Google change direction to develop for mobile first. I didn't get social networking as fast as I should have done.

But if any industry is poised to rise to the challenge, it is yours. Your creative talent is unrivalled. Your independent producers are famed for their entrepreneurial zeal. Your managers have fought hard battles for efficiency, and won. Britain's TV industry has an unparalleled global reputation, including journalism, comedy and drama. You can't turn the clock back - and even if you could, why would you when you have such strengths. The opportunities are ripe for the taking.

Case in point: sales of digital downloads. Apple have over 200 million customers with accounts

tied to credit cards, enabling one-click purchase in the iTunes store. Amazon haven't released their figures but it's got to be a similar ballpark. Thanks to the Internet, it's far easier than ever before for content owners to sell to a global market. And of course, don't forget that the UK is per capita the e-commerce capital of the world.

More generally, think about what on-demand means for traditional business models. Most TV channels seem to practice a drip-feed approach to releasing content. But in an on-demand world that's outdated. Netflix get this. In March they outbid the networks to win exclusive rights to screen the US version of 'House of Cards', and plan to make episodes available in clusters rather than one a week.

Consider too the way first-run airings attract an ad premium. That's a less relevant distinction as viewers shift to watch on their own schedule. If it's the first time you watch a show, it's first run to you, no matter how many times it has been broadcast. As TV becomes more personalised, ad models should adjust accordingly.

Of course, doing this also requires new processes - not least changes in the way TV viewing and ad effectiveness is measured. To that end, Google - and others - are investing in research to better understand how viewers are consuming TV and the web across multiple platforms. In the UK we have recently teamed up with Kantar to create a single source research panel to measure web and TV habits.

There are big opportunities for creative processes as well. For instance, recognise the new freedoms on-demand allows for storytelling. As David Simon, writer of the Wire, put it, "TV is no longer an appointment, it's a lending library". You no longer need worry about your audience missing episodes, they'll watch at their own pace. This frees writers to craft more complex stories, with less time wasted on signposted plot reminders for those who've missed an episode.

And don't underestimate the Internet's potential as a venue for talent spotting. More than 48 hours of content is uploaded to YouTube every minute. To put that in context, it means more video is uploaded in under a month than all 3 major US networks broadcast in the last 60 years. Amidst the avalanche, the next generation of creativity can be, and is being, found.

Perhaps most exciting of all, at least for a technologist like me, are the opportunities to integrate content across multiple screens and devices. Google is exploring this with some of our experimental apps for mobile. For instance, you can use your phone to control YouTube videos watched on a bigger screen, and receive background information on each video while it plays. There are clever mobile apps, like IntoNow, that identify a TV show you're watching from its audio fingerprint and make it easy to share with your friends. And I'm fascinated by the BBC's notion of "orchestrated media" - where the show you're watching triggers extra material on your tablet or mobile, synchronised with the programme.

Lessons from history

Of course, no matter what I say there will always be some who fear the Internet is set to destroy everything. That's nothing new. Almost every invention that has reinvigorated and helped the media industry thrive was at first forecast to destroy it.

In the 1920's and 30's, US newspapers fought a fierce campaign to prevent radio from news gathering, terrified it would drive them out of business. They eventually lost - and it didn't matter, as newspapers retained their influence and continued to rake in profits.

Years later they had a new target. Newspaper editors said, and I quote, "I look upon them as parasites" and "they should handle their own news instead of cashing in on our brains and experience". Sound familiar? In fact, these quotes weren't aimed at Google. They're from 1957, as newspapers complained about TV muscling in on their news turf. Again their fears proved unfounded.

Or how about Hollywood? In 1982, Jack Valenti compared the VCR to the Boston Strangler. The calamity he predicted never happened: by 2005, DVD sales alone accounted for more than half of studio revenues. As Sumner Redstone later put it, home video was "the bonanza that saved Hollywood from bankruptcy".

A decade ago Jamie Kelner lambasted TiVo for letting viewers "steal" TV by skipping ads. It's now looking like DVRs could be a saviour, providing second-by-second ratings and helping broadcast TV compete in an on-demand world.

Take heart from these parallels. History shows that in the face of new technology, those who adapt their business models don't just survive, they prosper. Technology advances, and no laws can preserve markets that have been passed by. Listen to the entrepreneurs, not the lawyers, if you want to revitalise your business.

The onus is thus on you as producers and managers to develop business models that work in the digital age. It won't be easy - but I'm convinced it is possible. In fact, like Sumner and VCRs, I wouldn't be surprised if you look back in 20 years time and say the Internet is the best thing that ever happened to your industry.

If you don't believe me, just consider how attitudes have shifted towards Netflix. Last year, the US TV establishment was skeptical, and in some cases hostile towards them. Chase Carey, COO of News Corp, questioned whether Netflix was giving them 'fair value'. Jeff Bewkes, the CEO of Time Warner compared them to the Albanian army hopelessly trying to take over the world - while Les Moonves, CEO of CBS, was on the fence. A year later and there has been a complete about face. Chase says Netflix provides 'truly incremental value'. Jeff admits he's now fond of them and calls them a 'welcome addition' to the video market. Les praises them as a terrific business partner.

The golden age is coming

In his 2007 MacTaggart, Jeremy Paxman dismissed the notion there was ever a golden age for TV. As a TV watcher, I respectfully disagree. As Jeff Bewkes and others pointed out in Cannes this year, I think we're on the cusp of a golden age now. A vast choice, made manageable by a magical guide, ensuring there's always something wonderful to watch. The option to sit back or lean forward, to watch alone or chat with a community of viewers.

Even more importantly for you, the UK is well-primed to lead the way.

The UK's production talent is unsurpassed. Its pioneering formats have sold worldwide and become global smashes.

The UK is home to one of the world's most competitive commercial broadcasters, Sky, with the courage, ambition and deep pockets to innovate. In 2010 Sky invested almost as much on original content as Channels 4 and 5 combined. Perhaps heeding Mark's call in last year's lecture - or perhaps not - Sky is upping its content investment by more than 50% to 600m by 2014. There's no doubt that they'll be a formidable player in the online TV revolution.

ITV too appear in strong shape as they restructure for the digital age, with profits up 45% in the first half of this year - a tremendous feat amidst economic downturn.

And of course, you have the BBC. Not just the world's best public service broadcaster, but arguably the most creative and technologically innovative of all. After the necessary pruning, the long-term settlement means the BBC can count on what to anyone would be a mouth watering income stream. It has a recognised and admired brand globally - just imagine live-streaming the Proms to 2 billion people! The world is the BBC's oyster.

So what could go wrong? Well, everything. If I may be so impolite (and here's the insult Mark advised I throw in) your track record isn't great!

The UK is the home of so many media-related inventions. You invented photography. You invented TV. You invented computers in both concept and practice. (It's not widely known, but the world's first office computer was built in 1951 by Lyon's chain of tea shops!) Yet today, none of the world's leading exponents in these fields are from the UK.

So how can you avoid the same fate for your TV innovations? Of course there is no simple fix, but I have a few suggestions.

First: you need to bring art and science back together. Think back to the glory days of the Victorian era. It was a time when the same people wrote poetry and built bridges. Lewis Carroll didn't just write one of the classic fairytales of all time, he was also a mathematics tutor at Oxford. James Clerk Maxwell was described by Einstein as among the best physicists since Newton - but was also a published poet.

Over the past century the UK has stopped nurturing its polymaths. There's been a drift to the humanities - engineering and science aren't championed. Even worse, both sides seem to denigrate the other - to use what I'm told is the local vernacular, you're either a 'luvvy' or a 'boffin'.

To change that you need to start at the beginning with education. We need to reignite children's passion for science, engineering and maths. In the 1980's the BBC not only broadcast programming for kids about coding, but (in partnership with Acorn) shipped over a million BBC Micro computers into schools and homes. That was a fabulous initiative, but it's long gone. I was flabbergasted to learn that today computer science isn't even taught as standard in UK schools. Your IT curriculum focuses on teaching how to use software, but gives no insight into how it's made. That is just throwing away your great computing heritage.

At college-level too, the UK needs to provide more encouragement and opportunity for people to study science and engineering. In June, President Obama announced a programme to train

10,000 more engineers a year. I hope others will follow suit - the world needs more engineers. I saw the other day that on The Apprentice Alan Sugar said engineers are no good at business. Really? I don't think we've done too badly!

If the UK's creative businesses want to thrive in the digital future, you need people who understand all facets of it integrated from the very beginning. Take a lead from the Victorians and ignore Lord Sugar: bring engineers into your company at all levels, including the top.

Second: you need to get better at growing big companies. The UK does a great job at backing small firms and cottage industries. But there's little point getting a thousand seeds to sprout if they're then left to wither or get transplanted overseas. UK businesses need championing to help them grow into global powerhouses, without having to sell out to foreign-owned companies. If you don't address this, then the UK will continue to be where inventions are born - but not bred for long-term success.

You also need to get smarter about how to bridge the divide between public and commercial sectors, to get the most from your public sector innovations. The iPlayer is a case in point. It's a great product. It would be even better if it extended to more channels. But despite several valiant attempts, clever lobbying resulted in regulators blocking it - seemingly on the basis that it would be too successful!

I know hope lives on in the guise of YouView. But even if YouView meets its revised timetable of launching in 2012, you'll still have thrown away several years when the UK could have been in the lead - a lifetime technologically.

Friend not foe

While I'm being critical, this is as good a moment as any to address the criticisms levelled at Google I referred to earlier.

One I face a lot is that we're big, scary and trying to take over the world. It takes many forms. In January, Luke Johnson claimed "just as Rockefeller's Standard Oil was an oppressive enterprise that became so powerful it had to be broken up for the public good - so I believe Google must be seriously tackled in the national interest". Earlier, Professor Willem Buiter said that we "should be regulated rigorously, defanged and if necessary, broken up or put out of business". And of course, we're currently the subject of antitrust investigations in both the US and Europe.

Obviously, I don't share these views, although I respect those who feel a debate is necessary. It's only natural that with success comes scrutiny.

That said, it's hard not to perceive an undercurrent of protectionism in some of the attacks. As John Fingleton of the Office of Fair Trading put it: "while lots of people have talked to us about harm to competitors, nobody has articulated to us harm to consumers". That is the key. Consumers are the ones in the driving seat - all we're doing is hitching a ride; and the door is open to anyone.

Online, competition is only ever a click away, and there is more of it than ever. As history has

shown, it's common for once-leading online services to become out-innovated and overtaken. Our rivals are formidable innovators and who knows what new start-up stars will join the fray. As Tolstoy put it, "you've just had time to think 'I have conquered' when you are ready to fall in the ditch".

In light of this, Google's survival strategy is to place big bets on technology trends. Placing big bets might sound risky but given the pace of change, we think it's the only logical approach. Not every bet will succeed, but it's safer to aim too high than too low; to strive for game changing progress than to fiddle at the margins. It's better to launch and iterate; to fail fast and learn from your mistakes, than to spend years in planning and end up miles off the pace.

Unfortunately, one of the downsides of this approach is it can be disruptive. At times we've inadvertently made things worse, by sharing our delight in innovations without appreciating other's discomfort. For that I apologise. I don't think we'll ever stop ruffling feathers - that's an occupational hazard of innovation. But I do hope we're now sufficiently engaged in industry conversations to be sensitive and responsive to concerns.

Google TV is a case in point. When it launched, some in the US feared we aimed to compete with broadcasters or content creators. Actually our intent is the opposite. We seek to support the content industry by providing an open platform for the next generation of TV to evolve, the same way Android is an open platform for the next generation of mobile. Just as smartphones sparked a whole new era of innovation for the Internet, we hope Google TV can help do the same for Television, creating more value for all. We expect Google TV to launch in Europe early next year, and of course the UK will be among the top priorities.

Which leads me to the second barb thrown at us. We've sometimes been accused of living off the back of others' content and not paying our way, by everyone from Michael Grade to Rupert Murdoch. Perhaps the most colourful phrasing came from the Murdoch camp who called us "parasites or tech tapeworms in the intestines of the Internet". But Andy Duncan summed it up most succinctly, saying: "Google takes more ad revenue out of the UK than ITV makes... It isn't fair that it's not reinvesting that back into content and independent film production companies in the UK".

Some have suggested Google should invest directly in TV content. To argue that misunderstands a key point: Google is a technology company. We provide platforms for people to engage with content and, through automated software, we show ads next to content that owners have chosen to put up. But we have neither the ambition nor the know-how to actually produce content on a large scale. Trust me, if you gave people at Google free rein to produce TV you'd end up with a lot of bad sci-fi!

But of course we are helping to fund content. Last year we shared more than $6 billion with our publishing partners worldwide, including newspapers and broadcasters. In the UK, we have invested in deep relationships with Channels 4 and 5 and many other partners to provide catch-up services on YouTube. The result is growing audiences and online revenues, which enhance rather than cannibalise existing viewers.

And we also invest in a variety of other ways that greatly benefit the Television industry.

Over the years Google has invested billions of dollars in capital expenditure on IT infrastructure, with direct benefit to telcos and content owners. For instance, when a UK user clicks to access a Google website, we don't force their ISP to go across the Atlantic to get it. We build data centres

and work with ISPs to help them cache content locally - helping cut transmission costs and allowing content to load faster. This is better for users, and by extension for content owners too.

And don't underestimate the money and brainpower that goes into creating and maintaining our software platforms. We employ thousands of the world's best engineers. What they do looks simple on the surface - believe me, it's not.

Take Search - one of the great intellectual challenges of our time. Last year we tested over twenty thousand improvements to search and launched roughly 500. We handle an endless variety of queries: 15% of the queries we get each day we've never seen before. We face an army of spammers trying to game our results.

In search, it takes constant vigilance, innovation and investment just to stand still. In 2010, Google's R&D spend grew faster than that of any other company worldwide and most of it goes on our core search business. Let's not forget who benefits the most from this - users who get a better search tool; and content owners whose websites are better able to be found.

Of course, like every good rule, there are exceptions. We do on occasion invest to fund content that's groundbreaking in the way it uses our platforms. Just like any technology, it's hard to convince someone to embrace it until they've seen a prototype.

One example of this is Life In A Day, a unique experiment in social film-making, carried out in partnership with Ridley Scott and Kevin Macdonald. The goal was to show the potential of YouTube as a commissioning platform, by creating a feature film entirely from user submissions. We ended up with over 80,000 contributors sharing over 4,500 hours of footage. The film premiered at Sundance in January to rave reviews and even got picked for theatrical release.

But it's one thing to experiment on the sidelines with new content technologies; it's entirely different to do it professionally at scale. We'll never be in your league when it comes to commissioning and creating content - it's not our skill set and it's not our business.

That doesn't mean we don't care about great content - we do. Google's strength is in developing platforms, and we're under no illusions that great content is what makes them useful. So we aim to support the content industries as they embrace the online medium.

Directly funding prototypes is one way we help. More broadly, we're investing in initiatives to equip the next generation of creative talent to push digital boundaries. For instance, the NextUp contest helps promising YouTube talent take their ideas to the next level by offering training and seed funding.

In a similar vein, I'm delighted to announce we are partnering with the UK's National Film and TV School, to help young filmmakers navigate the world of YouTube. The NFTS is one of the world's most successful film and TV schools, producing graduates who have gone on to gain credits on some of the UK's and Hollywood's finest productions. Starting in January we will be investing to support an online film-making and distribution module as part of the school's curriculum.

We're always on the look-out for opportunities to do more of this kind of thing. Ultimately though, the bulk of our investment should focus not on creating content, but on developing platforms. Platforms which offer distribution to a global audience of 2 billion people, free of charge. That's where our strengths lie, and that's where we can make the biggest contribution to the Television industry's future.

Finally, let me address the issue that has generated some of the most vitriolic debate: copyright.

Viacom alleged that "Google made a deliberate, calculated business decision ... to profit from copyright infringement". Anne Sweeney at Disney said "serving up pirate sites when you search

for our shows is something that we find unacceptable".

Let me state very clearly upfront: we respect copyright.

We've taken steps to prevent terms from appearing in search auto-complete which lead to copyright-infringing links.

We've built tools that make it simple for copyright owners to report violations.

And we're rolling out a system to act on reliable takedown requests to remove sites from our index within 24 hours. That's faster than any other web service in the UK. In fact, I can reveal our average response time for removal is 4 hours.

Let's focus on YouTube. I'd hazard a guess that by now most of you have used YouTube for free promotion - sharing trailers and so forth. The power of YouTube as a platform to promote TV content is well proven. Not least by Viacom, who found it so valuable they couldn't resist secretly uploading clips even while they were suing us!

It's important to understand, YouTube is a platform. It isn't practically possible for us to exercise editorial control in the way a TV channel can. If YouTube had to pre-vet every new video - 48 hours every minute - it simply couldn't exist.

So instead, we've worked hard to find technology solutions to give rights holders control over their content, including ways of making money from it. The centrepiece of this is the Content ID system, which cost 30 million dollars and took more than 50 thousand engineering hours to develop.

The way Content ID works is simple. You send us a copy of the video content you own and want to protect. Our system then sifts through the giant pile of videos on YouTube looking for anything that shares the same fingerprint. If a match is found we take whatever action you choose. A few companies want violations taken down immediately, but most prefer to leave it up and sell ads against it. Hundreds of content owners are now making substantial sums from their share of ad revenues on YouTube.

Speaking of revenue leads me to another accusation: that Google wants all content to be free. That's not the case.

We're agnostic when it comes to whether free or paid content models are best. It's up to content owners to decide if they want to charge, and it's up to users to decide if they want to pay. All we want is for content to be accessible to as many people as possible, but that does not mean it has to be free.

This isn't just rhetoric. We've built a range of tools to help businesses control and earn money from their content online. Earlier this year we launched One Pass, a tool that helps publishers erect a paywall for their content. We're experimenting with pay-per-view and other transactional models on YouTube, such as 'click to buy' links. And of course, Google advertising is the ultimate tool for content owners to monetise their work.

That's enough about Google. I hope I've made my point clear. We're not your enemy, and we want to help. We don't have all the answers, but we do have insights into where things are headed. We want to work together and support you in the transition.

Regulate TV with care

By now you're probably wondering who I'm going to single out as the bogeyman. For me, no-one has yet filled that role - although I suggest you keep a close eye on your regulators.

The UK's creative and broadcasting industries have done remarkably well so far, punching way above their weight. Home audiences seem broadly happy with what they're getting; innovation in content and delivery is strong. Whether this has happened because - or in spite of - the UK's broadcasting regulation I'll leave for you to judge.

But the world is changing. TV is no longer purely a domestic affair. Online, any broadcaster can have global reach. Playing to this wider audience needs a new mindset, particularly when it comes to laws and regulation.

Overall, British Television is subject to far more stringent regulation than its counterpart in the US. This means less flexibility and scope for UK companies seeking to compete on the global stage. Even though much of Europe is worse off still, that's irrelevant because your main TV competition - through shared language and similarities in culture - is from across the Atlantic.

I'm not suggesting the UK should mirror US-style regulation. US TV has problems of its own! And I know it may sound counterintuitive to call for lighter regulation when the UK has just been through the hacking scandal, but hear me out.

It's no exaggeration to say decisions made in the next year will determine the long-term health of your broadcasting and content industries for decades to come. If economic growth is the priority of the Government your regulators need to be cautious when making new laws in this space, or risk stifling the growth of your content businesses.

If you want my opinion, here are some suggestions.

First: the Government should put innovation front and centre of their regulatory strategy. TV is going global and transforming in form. This new era, where innovation and speed are paramount, has parallels to the Internet. To compete on the world stage, your content businesses need the freedom and legal framework to behave more like Internet companies. The starting point for every new piece of legislation should not be 'how do we regulate this' but 'how do we protect the space needed for innovation'. Again, listen to the entrepreneurs, not the lawyers, if you want innovation to thrive.

The recent Hargreaves Review of copyright law in the UK is a good example of how you could make some relatively small changes to create the space for new innovation. Putting a little more flexibility into copyright law - without undermining the business of content creators or giving away people's content - would enable new businesses to spring up, adding an estimated 8 billion pounds to the UK economy.

As a direct corollary, I'd urge you to cut back on the micro-regulation that broadcasters face. I appreciate that runs counter to the public mood, but there is nothing more stifling to innovation than having to jump through endless hoops.

Just imagine if Facebook had to endure regulation like you face in TV. There'd have to be separate Facebooks for each region. Staff would need to be spread out - Salford would be an engineering hub. There'd be rulings to enforce diversity of Wall Posts, with quotas for religion and

education. And you could forget about Poking before the watershed. I could go on, but I think you get the point.

One of the most egregious areas is the micro-regulation around TV advertising. Your advertising industry is world leading. It is the lifeblood of the broadcasting industry - except the BBC - and yet doesn't get championed by policy makers. In fact, the opposite.

Take the investigation into TV ad trading. In today's tough climate, with ever more competition for each marketing dollar, it seems the right time to make things easier for ad-funded broadcasters by, for example, removing market-distorting constraints like the CRR rules that so straitjacket ITV.

A similar principle applies when it comes to the use of data, both in advertising and content distribution. Sensible data protection rules are needed that reflect the realities of the digital age. Of course, there are lots of issues around privacy which must be taken into account. User concerns need to be respected and addressed. But it's important not to overreact and prevent those who wish to share data and receive a personalised service from doing so.

By the way, this applies not just at the UK level. Europe as a whole needs sensible data protection laws to ensure, when people willingly share their data, that it can be shared across national boundaries.

Right now, it's the Internet sector at the forefront of the data debate, but as TV spreads its wings online, it won't be long before you'll join us in the fray. Based on our experience so far, I believe the key to any solution is to be transparent with people about what data is collected and why, and give them the tools to control it.

On a broader note, it's vital we keep the Internet open. Openness is a prerequisite for innovation - no-one should have to ask permission to launch a new product online. The more attempts to curtail the Internet's openness, the harder it is for tomorrow's Larry and Sergeys to become a success.

To be clear, I'm not suggesting a completely laissez faire approach is appropriate. Alongside the Internet's benefits, there is content and behaviour none of us want to encourage. From copyright infringement to phishing scams to sexual abuse imagery - none of this is good. But when legislators try to figure out how to minimise the harm of online content, technology solutions rather than laws should be their first thought.

Stifling the Internet - whether by filtering or blocking or just plain turning the 'off' switch - appeals to policy makers the world over. I don't blame them for wanting to apply what seems, in theory, the simplest solution. The problem is things are far more complicated in practice. For every ISP filter there's a work-around. For every blacklist there's a proxy server. And for every well-meaning attempt to limit the bad stuff there is good stuff that gets knocked out too.

Instead, policy makers should work with the grain of the Internet rather than against it. Harness the huge levels of user engagement we have online to find solutions. Encourage online innovators to find new ways for parents to protect their kids. A good example is YouTube's Community Guidelines, setting rules for YouTube content that go further than the law and enable users themselves to identify content that's inappropriate and have it taken down.

Working with the grain of the Internet rather than against it. Allowing the sharing of online data. And ensuring laws allow innovation to flourish. Three big principles that - I think - could help the UK's Television industry to succeed globally.

Let’s work together

To conclude, let me thank you once again for the opportunity to speak today.

If you’d told me 10 years ago that an engineer like me would one day deliver the UK’s highest TV industry lecture, I’d have never believed it!

Perhaps there’s a lesson in that. The computing and creative industries are both on remarkable journeys. Sometimes our paths will intertwine where you least expect. Sometimes there’ll be potholes and false starts. Sometimes - I hope - there’ll be stunning shared success.

To be clear: in this journey Google seeks to be your partner, not your foe. The opportunities are vast, and British television is uniquely well-placed to take them, if we work together. So think big, think global, and think beyond the TV box. Don’t hold back from the journey.

Thank you for listening, and I hope we bump into each other more often as we travel ahead.

ENDS