2020 Vision – A Post-Truth Society

David Clarke, FRSA

Presented at Rhosygilwen
2nd April 2018

Not being born under a musical planet I never expected to be standing on this side of the stage in Rhosygilwen's magnificent oak hall.

Thank you Glen and Brenda for inviting me to kick off your new series of luncheon talks on the theme of *Twenty-Twenty Vision*. When Glen asked me if I would give a talk about post-truth society I accepted willingly but doubted anyone would actually want to come. I thank all of you for proving me wrong.

I work in the field of information science and technology and I don't normally open my talks with a biblical reading. Today I shall, both because we are assembled here over Easter weekend, and because John 18:38 provides us with an apposite meditation with which to open the talk.

> *Pilate therefore said unto him, Art thou a king then? Jesus answered, Thou sayest that I am a king. To this end was I born, and for this cause came I into the world, that I should bear witness unto the truth. Every one that is of the truth heareth my voice.*
> *Pilate saith unto him, What is truth? And when he had said this, he went out again unto the Jews, and saith unto them, I find in him no fault at all.*[1]

Pilate asked the question "What is truth?" but did not wait upon an answer. Whether he was being sceptical, cynical or sarcastic has long been debated.

If we are to explore "post-truth" then we should think through Pilate's question. What do people generally mean when they talk about *truth*? What does

truth specifically mean to each of you? I look forward to hearing your thoughts when we open up for discussion.

I want to give this talk an alternative title that will explain its scope: *Democracy in a Post-Truth Information Age*. We are going to explore a number of phenomena and issues which may be collected under the rubric of *post-truth*. These include fake news, the interference of foreign states in the elections of other nations, the denial of science, political and social polarisation, ideological extremism, filter bubbles, echo-chambers and the exploitation of private personal information for profit and political gain.

We are going to look at these issues through a technological as well as a sociological lens. How has the Information Age, or more specifically the Internet Age, changed our behaviours. Lastly, we will explore how post-truth phenomena may be impacting our democratic processes.

The EU Referendum and the US Presidential Election of 2016 shook me up. Not because I did or didn't like the outcomes, upon which matter I shall try my hardest not to comment, they shook me up because public discourse was all too often characterised by incredible and unsubstantial claims, by intolerance and invective, and by the tactics of *non-debate*, which is to say dismissing the views of others, while not being prepared to defend one's own views with reasoned argument and supporting evidence.

Society was polarising around highly charged emotional positions. An epidemic of 'fake news' dominated the news – but fake news alone couldn't explain the extreme polarisation.

It became evident to me that fake news was merely the visible tip of a disinformation iceberg. Hidden beneath the water were larger and more insidious issues concerning privacy and the selective promotion and filtering of information by search and social media platforms.

In January 2017 I submitted a paper to St. George's House proposing they convene to discuss the challenge that post-truth poses to civil society and democracy. After a year's research and preparation, a consultation was held in the middle of January this year.

St. George's House[2] is not very well known so I shall provide a brief description of what it is and does. Located within Windsor Castle, St. George's House was founded in 1966 by H.R.H. The Duke of Edinburgh and the Dean of Windsor, to be a place where people can come together to think and speak freely about important issues facing society. It is non-political and not affiliated with Government. It holds about 50 consultations per year on very diverse topics. Consultations involve small groups of people, usually two dozen, who stay at the House for two or three days. The experience is immersive and the discussions highly productive.

The consultation on *Democracy in a Post-Truth Information Age* drew together people from the World Wide Web Foundation, the Electoral Commission and the Electoral Reform Society, GCHQ and Counter Extremism, media companies and media regulators, information scientists, and a number of representatives of civil society organisations and think tanks including The RSA, Demos and Doteveryone. The background paper[3] and reportage[4] from the consultation are available online, with citation links included in this paper.

Following the consultation working groups are now being set up to tackle a range of issues.

Truth and Post-Truth

Before we look at specific manifestations of post-truth online and in society, it will be beneficial to spend a few minutes to define clearly some of the primary concepts relating to truth and post-truth.

Let's start with *post-truth* itself. In 2016 post-truth became the Oxford Dictionary's Word of the Year. This in itself is telling testimony that society has issues with truth. The OED definition is: *'relating to or denoting circumstances in which objective facts are less influential in shaping public opinion than appeals to emotion and personal belief'.*[5]

So post-truth differentiates facts from opinions. Let's define these two concepts. *'A fact is a statement that is consistent with reality or can be proven with evidence. The usual test for a statement of fact is verifiability — that is, whether it can be demonstrated to correspond to experience. Standard reference works are often used to check facts. Scientific facts are verified by repeatable careful observation or measurement…'*[6]

'In general, an opinion is a judgment, viewpoint, or statement that is not conclusive. It may deal with subjective matters in which there is no conclusive finding.'[7] That I am standing before you giving this talk is an objectively verifiable fact. That this talk is interesting and worth listening to is an opinion that some of you may agree with and others may not.

Post-truth as a cultural phenomenon goes deeper than merely distinguishing opinion from fact. In his 2017 book *Post-Truth*[8] Matthew D'Ancona describes it as *'the infectious spread of pernicious relativism disguised as legitimate scepticism'*. Addressing the Holberg Debate[9] in Norway last December, Jonathan Heawood (CEO of the Press Regulatory body IMPRESS) discussed the distinction between cynicism and scepticism: *'The new public sphere is in fact largely defined by a cynical attitude towards information. Sceptics ask questions, but they are prepared to listen to the answers.'* This distinction between scepticism and cynicism is important. Scepticism *'is generally any questioning attitude or doubt towards one or more items of putative knowledge or belief…'*[10] whereas cynicism *'is an attitude or state of mind characterized by a general distrust of others' motives.'*[11]

D'Ancona and Heawood expose a troublesome characteristic of post-truth society. It isn't just a culture in which one person thinks that their opinions are better

than those of someone else, it is a culture where people have stopped listening to the views and opinions of others.

Can this be true? Is that your experience? I don't want to believe that this characterises society today, but I am afraid there was plenty of evidence of it in the 2016 US election and EU referendum.

On 10th January 2017 former US President Barack Obama gave a stirring farewell address in Chicago in which he described with chilling precision the character of a post-truth society: *'For too many of us, it's become safer to retreat into our own bubbles, whether in our neighborhoods or college campuses or places of worship or our social media feeds, surrounded by people who look like us and share the same political outlook and never challenge our assumptions.*

The rise of naked partisanship, increasing economic and regional stratification, the splintering of our media into a channel for every taste… we become so secure in our bubbles that we accept only information, whether true or not, that fits our opinions, instead of basing our opinions on the evidence that's out there.'[12]

If society is becoming more opinionated and consequently more polarised, then how did we get here? What is driving the change? Is it societal or technological factors, or are both in play?

We have defined post-truth as a predilection for opinions over facts, and we have further characterised it as a disregard for debate and contrary opinion. Does this help us answer Pilate's question *what is truth*? I don't think it is as simple as saying truth equates to facts.

I have given numerous talks about post-truth in the UK, US and Asia. On every occasion at least someone in the audience will challenge the very premise that post-truth is an issue. Some say there are no arbiters of truth, that facts are after all mutable and sometimes relative. That calling any news 'fake' is elitist and hubristic.

I beg to differ. We may never be able categorically to prove that something is an absolute or immutable truth, but we can prove the falsity of claims when they simply do not correspond with the evidence.

Commenting on the inauguration of the 45th US President the then Whitehouse Press Secretary Sean Spicer said the inauguration ceremony attracted "*the largest audience ever to witness an inauguration, period, both in person and around the globe*"[13]. The visual evidence of Reuters photographs of the inauguration crowds attending the 2017 inauguration compared with the 2009 inauguration demonstrate the extreme falsity of Spicer's claim. One would have thought a public retraction would have been in order, but instead the President's advisor Kellyanne Conway defended Spicer's claim saying he just was providing 'alternative facts'.

 I find extreme scepticism and arguments that truth is elusive to be an unhelpful distraction when the issue at hand is a plethora of palpable lies.

Science aspires to truth and its method is constantly to review new data, to challenge its own assumptions. Post-Truth culture and post-truth politics do not aspire to truth. Their methodology is to stay on message, never to self-challenge, and wherever possible to drown out opposing views.

The conceptions of truth and post-truth that I offer you are these: *post-truth* refers to ways of behaving that are closed to new or contrary information; whereas *truth* refers to ways of behaving that are open-minded, self-challenging and always seeking out new information.

Falsity

There is a meaningful distinction we need to draw between misinformation and disinformation. *Misinformation* is information that is wholly or partially false. *Disinformation* is misinformation that is deliberately disseminated in order to deceive.

Misinformation generally arises out of carelessness, the errors and omissions arising from inadequate research, fact-checking or source verification. '*The English word disinformation is a translation of the Russian dezinformatsiya, derived from the title of a KGB black propaganda department.*'[14] But disinformation is not confined to the world of espionage. It is practiced by individuals, institutions, corporations, and governments alike. A shorter synonym with an Old English etymology is the word 'lies'. Disinformation is simply lies – statements made with the intent to deceive.

Propaganda requires careful unpacking. Many people associate propaganda with lies but this is not an inherent quality of the word. Last year I spent a week at a cultural heritage conference hosted by the Vatican. On a balmy June evening meandering around the back streets south of The Spanish Steps I stumbled upon this street sign: *Via di Propaganda*[15], which led me to a building signed *Collegium Urbanum de Propaganda Fide*.

The original meaning of the word propaganda was *propagation* – in this case the propagation of the faith.

Today the word's common meaning is '*Information, especially of a biased or misleading nature, used to promote a political cause or point of view*'.[16] Tarnished though the modern meaning of the word propaganda may be, I feel compelled to defend it.

Propaganda has a history as old as human communication. Thucydides account of Pericles' Funeral Oration at the end of the first year of the Peloponnesian War, is a magnificent example of propaganda. It honoured the dead, it affirmed the virtues and identity of the Athenian people, and most importantly it exhorted the living to be resolute in fighting the enemy threatening Athens.

Churchill's broadcasts in the Second World War have similar qualities. My mother lived through the blitz in Sheffield. She saw neighbouring houses in flames and neighbours killed, but what I remember most vividly is how she described being glued to the radio during Churchill's broadcasts, and how Churchill's reassuring

resolve left her in no doubt that tyranny would fail and Britain would eventually prevail.

The essential character of propaganda is not to mislead it is to persuade. Its primary mechanisms are selection and emphasis. When propaganda is done with good intentions it can draw people together and inspire hope. When it is done with evil intentions is can divide people spreading doubt and fear.

The reason I have spent a bit of time exploring propaganda is because people trying to persuade people about things is part and parcel of democratic discourse. As we think about ways to tackle the problems of misinformation and disinformation we must also take great care to protect freedom of speech and to avoid censorship.

Where does '*fake news*' sit within our conceptual landscape. The term 'fake news' is older that one might think, as illustrated by this detail 1894 print from the Library of Congress Prints and Photographs Division entitled '*The fin de siècle [end of the century] newspaper proprietor*'.[17]

Fake News is the most salient manifestation of post-truth. Fake news describes false information that is presented to look like facts or genuine news stories. The concept of fake news includes: (i) playful hoaxes and satirical content; (ii) opinion-based content that may represent the sincere beliefs of its authors, but which nevertheless conveys misinformation; and (iii) many forms of deliberate disinformation. Like propaganda, fake news is an age-old phenomenon. The ease with which online content can be generated and the rising popularity of social media as a go-to source for news has enabled many more people to produce both genuine news and information, and also fake news and false information.

The often sensational nature of fake news stories acts as '*clickbait*' making it possible for the producers of fake news to easily monetise their content through advertising.

The last concept I need to define is *filtered* information. Filtered information is a much more insidious problem. Individual pieces of filtered information may in themselves be factually correct, but if the information is incomplete or taken out of context it can be just as misleading as false information. In authoritarian regimes the state actively filters information through online and media censorship. If you think this is confined to China and Russia then visit the website mappingmediafreedom.org[18] and you will discover examples across the globe, including ones much closer to home.

I don't want to focus on state censorship today because as I see it the world has a much bigger problem on its hands than the controlling practices of authoritarian regimes.

In the last 10 years the entirety of the Internet has become an information filtering system.

All search and social media platforms have been re-engineered to do it and the vast majority of the population welcome it.

It is packaged and presented as 'personalised search' and 'personalised news'. People love it because we are all drowning in data, so filters save us time. The search and social media companies love it because they found that when they feed people content that is similar to what they have already indicated they like then they spend more time on online and click on more paid adverts and ultimately spend more money. This has a name, it's called the *attention economy*, and all the big online companies are doing their best to grab more and more of your attention.

So what's wrong with giving people more of what they already like? Well it is not that harmful if we are talking about pizza or movies. But does the same apply to factual information and news? What about the discussion of social, civil and political issues?

If we give people more of what they like in these domains then the Internet shrinks our world view instead of opening it up. No one set out to deliberately do this, it is an unintended consequence of how search and social media platforms have evolved. The phenomenon is called the *Filter Bubble*.

The Filter Bubble is an effect of Personalized Search. Personalized Search refers to web search experiences that are tailored specifically to an individual's interests by incorporating information about the individual into the search query.

The Filter Bubble promotes confirmation bias by shielding users from information that disagrees with their viewpoints, effectively isolating them in their own cultural or ideological bubbles. Author Eli Pariser described this phenomenon in his 2011 book The Filter Bubble: '*Left to their own devices, personalisation filters serve up a kind of autopropaganda, indoctrinating us with our own ideas, amplifying our desire for things that are familiar… In the filter bubble, there's less room for the chance encounters that bring insight and learning… the collision of ideas from different disciplines and cultures*'.

Pariser wrote these words six years before Obama's farewell speech. How prescient he was.

Down the Rabbit Hole

We have now reviewed the key concepts: truth and post-truth, fact and opinion, misinformation and disinformation, propaganda, fake news and the filter bubble. I'd now like to invite you to join me on a brief journey down the rabbit hole of dystopian disinformation and explore how post-truth issues are manifesting themselves online. To give you a break from my voice I am going to do this through a selection of short video clips.

Down the Rabbit Hole Video Compilation

1. *How Fake News Works*[19] Excerpt from a 2017 explainer video by Wired Magazine describing how some fake news websites are monetised by generating clickbait content associated with politically sponsored advertising topics.
2. *The Fake News Machine*[20] Excerpts from a 2017 CNN documentary presented by Isa Soares. The documentary explains how fake news websites can be monetized, and describes how a growth industry has emerged to generate political fake news during elections. 'Veles used to make porcelain for the whole of Yugoslavia. Now it makes fake news. This sleepy riverside town in Macedonia is home to dozens of website operators who churn out bogus stories designed to attract the attention of Americans. Each click adds cash to their bank accounts. The scale is industrial: Over 100 websites were tracked here during the final weeks of the 2016 U.S. election campaign, producing fake news that mostly favored Republican candidate for President Donald Trump.
3. *The Rise of Social Bots*[21] Excerpts from a 2017 explainer video by the Association for Computing Machinery. With every new technology comes abuse, and social media is no exception. Social bots are can take the form of malicious entities designed specifically with the purpose to harm. These bots mislead, exploit, and manipulate social media discourse with rumours, spam, malware, misinformation, slander, or even just noise. Bots may artificially inflate support for a political candidate; such activity could endanger democracy by influencing the outcome of elections.
4. *Russia weaponized Twitter to sway election*[22] Excerpt from 2017 CNN broadcast presented by Drew Griffin interviewing Dr. Sam Woolley. The interview discusses examples of how socialbots were used as part of a foreign propaganda campaign to influence the US General Election.
5. *Psychological Profiling*[23] Excerpts from 2016 presentation to Concordia Summit by Alexanda Nix, then CEO of Cambridge Analytica. In this presentation Nix explains how CA uses detailed psychological profiling to manipulate voter behaviour. Nix claims to have 4,000 to 5,000 pieces of personal data on every adult in the US.
6. *Personal Data Privacy Breach*[24] Excerpts from 2018 Guardian interview with Christopher Wylie who worked for data firm Cambridge Analytica. Wylie reveals how personal information was taken without authorisation in early 2014 to build a system that could profile individual US voters in order to target them with personalised political advertisements. At the time the company was owned by the hedge fund billionaire Robert Mercer, and headed at the time by Donald Trump's key adviser, Steve Bannon.
7. *What Facebook Knows About You*[25] Excerpts from 2017 BBC Panorama documentary presented by Darragh MacIntyre. Facebook is thought to know more about us than any other business in history, but what does the social network that Mark Zuckerberg built do with all of our personal information? Reporter Darragh MacIntyre investigates how Facebook's powerful algorithms allow advertisers and politicians to micro target audiences, and he questions whether the company's size and complexity now makes it impossible to regulate.

<u>Dystopias</u>

This video compilation presented a tiny selection of how post-truth issues are manifesting themselves online. Artificial intelligent robots; search and social media platforms with thousands of data points on every individual; personal data used to manipulate public opinion and influence voter behaviour. I don't think it is over dramatic for me to say the enlightenment aspirations of the Information Age have produced side effects more akin to a dystopian nightmare.

Thirty-four years ago I was having lunch with Sir Andrew Huxley, who was then President of The Royal Society. Given that we were conversing in the portentous year of *1984* I brought up the topic of Orwellian dystopias. Sir Andrew listened patiently and responded and graciously to whatever facile observations I had made, before pausing to say, '*of course when my brother wrote Brave New World he had a rather different idea of dystopia*'. To be utterly humbled is a tonic experience one can benefit from repeatedly.

Anne Garside is currently teaching a class on *Science Fiction Writers* and shared her lecture notes with me last week. Within them I found the following notes which I shall share with you because, as Anne observed, '*The passage is as relevant to today's world of Fake News as when it was written.*'

> *[Ray] Bradbury was responsive to the culture of his times. He was familiar with Aldous Huxley's Brave New World, published in 1932, and George Orwell's 1984, published in 1949. Those two books can be read as a mirror image of each other. Huxley's dystopian world depends on controlling the masses through their addiction to mindless pleasure—Orwell's by psychological conditioning, the manipulation of information ("doublespeak"), and by police control and torture. Although the means of control are different, the end result is the same—a totalitarian state with a subservient population. Social critic Neil Postman contrasted the worlds of the two books as follows:*
>
>> *What Orwell feared were those who would ban books. What Huxley feared was that there would be no reason to ban a book, for there would be no one who wanted to read one. Orwell feared those who would deprive us of*

information. Huxley feared those who would give us so much that we would be reduced to passivity and egotism. Orwell feared that the truth would be concealed from us. Huxley feared the truth would be drowned in a sea of irrelevance.

Thank you so much Anne for sharing these insights, they shed much light on our analysis of a post-truth society.

Big Brother may not have come to be in the form of an authoritarian surveillance state, yet over the past few years we have witnessed the complete destruction of privacy. Our smart-phones track our every movement and all our communications, through our searches and the content we post online they track our thoughts, feelings and affiliations. A digital trace of every moment of every day.

Authoritarian regimes could never have dreamt of building a surveillance infrastructure on the scale or sophistication of that which has emerged through social media and smart phones. Unscrupulous companies like Cambridge Analytica have found ways to harvest our private data and utilise this infrastructure for profit and political gain. A report on the BBC two days ago stated that the US State Department '*wants to start collecting the social media history of everyone seeking a visa to enter the US*'[26].

We still don't know the full extent of how our private data is being used or will be used in the future.

Orwell gave us Big Brother and Huxley gave us Soma. In *Brave New World* soma is the pleasure-giving addictive drug used for escapist relief from life's little challenges and disappointments. Ex-Facebook President Sean Parker has described how Facebook is deliberately designed to be addictive, and that getting '*Likes*' literally produces dopamine in the brain.[27] From a Guardian article by Olivia Solon:

[Parker] 'explained that when Facebook was being developed the objective was: "How do we consume as much of your time and conscious

attention as possible?" It was this mindset that led to the creation of features such as the "like" button that would give users "a little dopamine hit" to encourage them to upload more content. "It's a social-validation feedback loop … exactly the kind of thing that a hacker like myself would come up with, because you're exploiting a vulnerability in human psychology."[28]

I shall now attempt to recap the key issues affecting democracy in a post-truth information age.

The Internet democratised the world of information. It levelled the playing field between citizens and institutions, and it gave a voice to many previously marginalised individuals and communities.

The Internet also changed where people go to find news and general information. There has been a steady migration away from libraries and traditional sources toward content delivered via web search engines and social media.

As web search engines and social media became the primary 'go-to' source for news and general information, the public has become less conscious of the origin and provenance of information, who creates it and whether it is trustworthy.

A paradox of the Information Age is that while we have access to many more and diverse sources of information, it is getting harder to distinguish fact from opinion and truth from lies.

Search engines and social media act as information filters. Filters have become essential as we sort and sift through vast amounts of information. Search has also become personalised: filters now evaluate both what we look at and the person who is looking. A search for 'movies' won't just retrieve the cinema listings, it will filter by what's on at the closest cinema to where you are now. A search for products will remember and filter by all your past searches and purchases.

Over the past decade personalised search has spread from the world of online shopping to become an inherent design in all major search engines and social media websites. What worked well for shopping becomes problematic when applied to how we search for factual information.

Personalised search can distort our view of reality, creating a personal filter bubble that reinforces our existing beliefs while limiting our exposure to new ideas and contrary viewpoints.

Personalised search operates imperceptibly and without our conscious consent. Its influence is effectively subliminal: we have little awareness of and even less control over the data that is collected about us and how it is used to filter our access to information.

Conversely, advertisers can pay to use this data to influence the information we retrieve. Political campaign managers in the USA and the UK described micro-targeted messaging via social media as decisive in recent elections.

Propaganda is persuasively presented information, whether true or false, that is intended to influence people's beliefs and behaviour. Propaganda has negative connotations, but it is nevertheless a manifestation of free speech and democratic discourse.

Cyber-propaganda, however, presents new problems, such as 'socialbots', which impersonate humans and automatically generate thousands of artificial messages in support of or opposition to candidates and causes. Socialbots distort human democratic discourse and have influenced recent elections.

Democracy relies on a well-informed public. In a post-truth society people's access to objective and trustworthy information is compromised and civil society breaks down as people polarise within their bubbles of affiliation and confirmation bias.

I would like to live in a society that is open-minded, fact-loving, search savvy and truth seeking. To this end we need to hold our political leaders, businesses and institutions accountable to adopt truthfulness as a core value, to respect data privacy and in plain and simple terms to not deal in lies.

We need an online information commons that is non-partisan and beyond the reach of individual commercial interests - a digital equivalent of the public library. The very same information infrastructure that is currently being exploited for profit and political manipulation could be used to support democratic discourse, to open minds and debate ideas.

We opened this talk with Pilate's question '*What is truth?*' How shall we end it?

Wistfully with TS Eliot: '*Where is the wisdom we have lost in knowledge? / Where is the knowledge we have lost in information?*'

Or in consideration of a polarising society perhaps we should invoke John Donne's affirmation of the connectedness of humanity: '*No man is an island, entire of itself; / every man is a piece of the continent, / a part of the main.*'

Possibly we should look to Edmund Burke and remind ourselves this isn't just someone else's problem, we are all involved and we can all make a difference: '*The only thing necessary for the triumph of evil is for good men to do nothing.*'

Despite painting such a dark and dystopian vision of a post-truth information age I must now reveal my true colours. Truly I am an optimist. I believe in human progress, in the spirit of the enlightenment.

There are things that are really broken in our information systems, there are vested interests who must be challenged and there are wrongs to be righted. But I would rather be working to fix a broken Internet than not have an Internet at all.

References

[1] *King James Bible*. 1611. John 18:37-38

[2] https://www.stgeorgeshouse.org/

[3] https://www.stgeorgeshouse.org/wp-content/uploads/2017/10/Background-Paper.pdf

[4] https://www.stgeorgeshouse.org/wp-content/uploads/2018/03/Democracy-in-a-Post-Truth-Information-Age-Report.pdf

[5] https://en.oxforddictionaries.com/word-of-the-year/word-of-the-year-2016

[6] https://en.wikipedia.org/wiki/Fact

[7] https://en.wikipedia.org/wiki/Opinion

[8] D'Ancona, Matthew. 2017. *Post-Truth*, London: Penguin

https://www.penguin.co.uk/books/1114599/post-truth/

[9] Unpublished transcript available on request

[10] https://en.wikipedia.org/wiki/Skepticism

[11] https://en.wikipedia.org/wiki/Cynicism_(contemporary)

[12] http://www.latimes.com/politics/la-pol-obama-farewell-speech-transcript-20170110-story.html

[13] https://www.theguardian.com/us-news/2017/jan/22/trump-inauguration-crowd-sean-spicers-claims-versus-the-evidence

[14] https://en.wikipedia.org/wiki/Disinformation

[15]

https://www.google.co.uk/maps/@41.9045098,12.483044,3a,37.5y,19h,90t/data=!3m6!1e1!3m4!1sOSq-DrPRBsniPHMyt-7i1A!2e0!7i13312!8i6656

[16] https://en.oxforddictionaries.com/definition/propaganda

[17] https://www.opendemocracy.net/john-blewitt/nothing-new-about-fake-news

[18] www.mappingmediafreedom.org

[19] https://www.wired.com/video/here-s-how-fake-news-works-and-how-the-internet-can-stop-it

[20] http://money.cnn.com/interactive/media/the-macedonia-story/

[21] https://cacm.acm.org/magazines/2016/7/204021-the-rise-of-social-bots/fulltext

[22] http://edition.cnn.com/videos/politics/2017/09/20/pro-trump-twitter-accounts-weaponized-russia-us-election-ebof-pkg-griffin.cnn

[23] https://www.youtube.com/watch?v=n8Dd5aVXLCc

24 https://www.youtube.com/watch?v=FXdYSQ6nu-M

25 http://www.bbc.co.uk/programmes/b08qgbc3

26 http://www.bbc.co.uk/news/world-us-canada-43601557

27 https://www.theguardian.com/technology/2018/mar/04/has-dopamine-got-us-hooked-on-tech-facebook-apps-addiction

28 https://www.theguardian.com/technology/2017/nov/09/facebook-sean-parker-vulnerability-brain-psychology