

Shaping our Global Future

Derek Brown

References for Print Edition

Reference material can be accessed at the [Postcards from Scotland](#) web link

The footnotes provided show where more information can be found on issues. Where information is of a factual nature, I have normally sourced a report from a responsible organisation, such as the United Nations. Where I show different opinions, sources give context for those views. I have quoted a lot of on-line journalism that gives certain opinions. I do not always share these views, but respect both the right of these writers to their views and their journalism. Really, the references provide their own map and I hope they will be a useful research tool, allowing a deeper perspective to emerge.

Page 11: Sentence, ‘Hugh MacDiarmid, the early twentieth century Scottish poet, suggested that a Scottish moment could be a universal moment.’

This idea is shown in the poem, [Scotland Small?](#) McDiarmid (1994) shows how the particular (in this case the beautiful things he observes in nature in Scotland) reveals something universal.

Page 15 – 16: Sentence: ‘The study, led by Professor Nick Bostrom, looked at how likely it was human beings would survive as a species until 2100.’

Nick Bostrom’s [Existential Risk Study](#) can be found on-line. It is worth looking at this study. It is an academic piece and some other reading may be required.

Page 17: ‘The Seven Wonders of the Ancient World celebrated great achievements of human culture – particular buildings, statues or gardens that were amazing to see around the time historians typically refer to as the ancient Greek period (preceding the Christian period).’

¹ In researching this section, I drew on a number of websites which are easily found, including [UN Museum](#), and [History.com](#). Some sites reconstruct the ancient wonders visually, which can show how impressive the structures were.

Page 17: ‘The people who compiled the list of ancient wonders may not have known about the Great Wall of China (sometimes called the eighth wonder), or the cultural achievements in South America.’

The [UN Museum](#) website notes two prominent writers, Antipater of Sidon and Philon of Byzantium who wrote different versions of the lists and describes the process by which a single list emerged.

Page 20: After ‘Angry Birds’

Paul Kendall, [‘Angry Birds: The Story Behind the I-Phone Gaming Phenomenon’](#), *The Daily Telegraph*, February 2011 – tells the story of how the game came into being. We discuss it in more detail in the section on electronic gaming.

Page 20: After ‘Avatar’

[Avatar](#) is a film directed by James Cameron. Information can be found at its website. It has a gaming dimension to the narrative.

Page 20: After ‘Aliens’ Walter Goodman, [‘Aliens \(1986\)’](#), *The New York Times*, July 1986, reviewed the film as it was released.

Page 20: After ‘Super Mario’

The Super Mario platform game was launched in 1983 and went on to become an international success. In 1985 a sequel was produced, and a useful starter [article](#) about it is found on Wikipedia. I have compared a film and a video game for effect to show how gaming has evolved so rapidly. Of course, the experiences of films and gaming are very different and the massive popularity of Super Mario is not captured in the point I have sought to make.

Page 21: ‘We may also enter an era of super-rich and ultra-poor, even more so than now.’

Patricia Cohen, [‘Oxfam Study Finds Richest 1% Is Likely to Control Over Half the Global Wealth by 2016’](#), *The New York Times*, January 2015. This article provides a useful summary of the growing issue of the gap between rich and poor, to which more treatment is given in later section.

Wonder 1: The International Space Station

Page 23: ‘My first global wonder is the International Space Station (ISS).’

In researching the material on-line that is available for people on the ISS, I found that there is a huge amount. [NASA](#) itself is the best source of information, but you can get good material from other sources, such as [You Tube](#), where the on-line tour by Sunny Williams can be seen – it is worth watching. [Wikipedia](#) is also worth viewing for overview information.

Page 23: ‘The space station is the size of a football stadium – over a hundred metres long, around 80 metres wide and 20 high.’

NASA publishes a detailed list of [facts and figures](#) which reinforce this point about size. It also provides a great number of interesting images.

Page 24: ‘It orbits earth in just over 90 minutes and travels at a speed of over 17,000 miles per hour to do that – over 250 miles above us in space.’

[‘How the Space Station Stays in Orbit’](#), Skylights website, shows a fascinating short film which shows the orbit of the space station.

Page 24: ‘Canadian astronaut, Chris Hadfield, embodies this work.’

A number of You Tube films capture [Hadfield’s reflections](#) on his time in ISS.

Page 24: ‘Human beings like to set and achieve goals. In doing so we look forward positively to the future and think about what we want to accomplish.’

Derek Divers, TED talk, [Keep Your Goals to Yourself](#). For anyone who has ever tried to lose weight, or set themselves the goal of running a marathon, this TED talk explains the psychology of goal setting and why we sometimes fail to reach them.

Page 24: ‘This is part of how we build our sense of self-worth and improve the circumstances we find ourselves in.’

Caroline Casey, TED Talk [Smart Goals Guide](#). Casey's talk about overcoming visual impairment and human spirit is genuinely inspirational and shows the power of believing in your own self efficacy (ability to transform your circumstances).

Page 25: 'In AD 84 Roman soldiers travelled north towards the area west of Aberdeen, where I am sitting now, writing this book.'

Agricola's invasion of Scotland and victory at Mons Graupius is documented on the [BBC](#) website, and also on the [Education Scotland](#) website.

Page 25: 'Writer Kenneth White has written eloquently about how Roman soldiers must have seen the place as a savage, cold land at the very edge of existence.'

Kenneth White (1998) "White Land! then as they moved up country till they finally saw the white peaks of the Grampians above their heads..." White's poetry is a greatly under-recognised Scottish cultural achievement. He provides a perspective on global connectedness that is much more profound than the typical materials you find on globalisation or environment.

Page 25: 'Almost a thousand years later, in 1000CE, a young Viking called Leif Erikson journeyed west past Scotland from Norway, aiming for land he hoped to find beyond Greenland, now known as Newfoundland.'

Erikson's Journey is documented in various sources: the [MNC](#) website; [History.com](#); [BBC](#); [World History](#) also has good maps. It paints a picture of the Viking exploration of the North Atlantic and Arctic regions.

Page 26: 'She was attempting to be the first woman aviator to cross the Atlantic in a solo flight.'

Amelia Earhart's Journey is documented in various sources: [History 1900s](#) and at a website devoted to the aviator: [Amelia Earhart.com](#).

Page 27: We staged conferences for young people from around Scotland.'

The [Inspiring Enquiring Minds](#) project was funded by Scottish Government from 2005 – 2009. The web archive can still be viewed.

Page 27: 'Chris Hadfield, and a number of astronauts and cosmonauts, attended one conference and spoke to student delegates'

The [Universe Today](#) website has an interview with Hadfield, who attended one of the conferences and spoke at it. He had the hardest handshake of any man I have met. Astronauts are obviously very tough.

Page 28: 'They talked about how being together in space, surveying earth from above, broke barriers between nations and raised awareness of their shared humanity.'

In the article ['Interview with an Astronaut'](#), Nicola Gutteridge, I Science website, March 2012 this view is expressed in the interview by Colonel David Scott, 'And yes, all of us have formed lasting friendships with cosmonauts. I believe that astronauts and cosmonauts share a common bond which circumvents any political ideology.'

Page 28: 'There had been times when has seemed close to war.'

There is a useful historical article on this, ['John F. Kennedy and the Cuban Missile Crisis'](#), on the BBC website.

Page 28: ‘The USSR had the first space flight; the USA landed the first man on the moon.’

The [Royal Air Force](#) website has material useful in research; [history.com](#) presents an American view of the Space Race, but is worth reading. The NASA website has an interesting article, [‘United States-Soviet Cooperation During the Cold War’](#), by Russian Space Scientist, Roald Sagdeev, which was published as part of a magazine to celebrate its 50th anniversary.

Page 29: ‘The human race shouldn’t have all of its eggs in one basket, or on one planet.’

[‘Steven Hawking: Mankind Must Conquer Space or Risk Extinction’](#), *The Guardian*, August 2010 – the Press Association article refers to an interview that Professor Hawking did with the [Big Think](#) website.

Page 30: ‘These include things like water purifiers, prosthetic limbs and baby formula food.’

The [NASA](#) website devotes some attention to spin off technologies it has developed as part of scientific research undertaken to take forward space exploration. It also has published a [magazine](#) that can be downloaded. It also has information on an app that can be downloaded.

Challenge 1: Global War

Page 32: ‘Sometimes a nation can become powerful through war. In World War II, a group of countries came together to stop Nazi Germany becoming dominant.’

In a 1939 [public broadcast](#), Neville Chamberlain explains to the nation why he is declaring war on Nazi Germany. This broadcast is part of the BBC archive.

Page 33: ‘There are over two hundred recognised countries in the world, 193 of which are current members of the United Nations (UN).’

The United Nations website publishes a list of [member nations](#) and [criteria](#) by which a country becomes a member, which explains why some countries and not others are part of the organizations.

Page 33: ‘People have gone to war throughout history over the very idea of nationhood and identity and continue to do so, as the struggle of the Kurdish people in Turkey, Syria and Iraq shows.’

Richard Hall, [‘We’ve Been Here Longer than a Thousand Years: Kurdistan’s Fight for Nationhood’](#), *The Independent*, February 2014. The issue of nationhood is bound up with people’s sense of their own identity. People can have deep emotional connections with places and with the idea of their country’s heritage. These ties are not discussed in this book due to space. What is explored instead is the extent to which a global perspective, or identity will be as important to human beings in the future as a sense of nationhood. The idea of national identity can lead us to celebrate what is great about being from a particular place – our cultural distinctness. An internationalist perspective does not jeopardise this sense, but asks us to question what we share culturally with people from other nations. My argument is that developing an internationalist perspective is a source of hope for the future.

Page 33: ‘Israel, for example, is not recognized by over thirty countries.’

The BBC website’s [Israel Profile](#) is worth reading. The [Israeli Government](#) lists 159 countries with whom it has diplomatic relations. [Wikipedia](#) also publishes a list of countries which do not recognise Israel.

Page 34: ‘The recent conflict there killed around two thousand people.’

The BBC report gives a breakdown of the recent [Palestinian and Israeli conflict](#) as of August 2014.

Page 34: ‘The USA won independence from Britain in 1760. When some southern states tried to withdraw from the union in 1860, a civil war ensued for four years. During the war, each side had its own government – the Confederacy government sat in Richmond for most of the civil war whilst the Union’s capital remained in Washington DC.’

The [Civil War Trust](#) website gives information about this.

Page 34: ‘The nationhood of the most powerful country was in doubt just 150 years ago.’

The BBC website [article](#) on the civil war dead is a good starting point for research. [The Civil War Trust](#) gives detailed information.

Page 35: ‘But Steven Pinker, distinguished psychologist and scholar, argues in a recent book *The Better Angels of our Nature* (2011) violence in human societies has declined with time.’

Pinker (2012)

Page 35: ‘Indeed in a TED talk on the subject he argues we ‘are probably living in the most peaceful time in the history of our species.’

Steven Pinker’s TED talk, [The Myth of Violence](#) cites the United Nations statistics. It puts death in conflict into a wider historical context.

Page 35: ‘He puts the warring tendency of humans down to a deep instinct to attack others in order to protect what we ourselves have. War has undoubtedly helped technological development – before the civil war the USA was mainly agricultural, and through war became industrialised.’

This web [article](#) from Encyclopedia.com is a useful starting point for research.

Page 36: ‘Two died on the boat and 21 hit the ground.’

Jeremy Gilley’s TED talk, [One Day of Peace](#) shows the horror of war and the human potential to forge peaceful relations.

Page 36: ‘To improve the fighting quality of separate states without having the means of preventing war is a road to universal destruction.’

Russell (1984) published this book when Europe was on the brink of the Second World War. It is a book of history and ideas and gives a comprehensive overview and analysis of human progress up to that point in time.

Page 37: ‘In some cases children are made to kill their relatives so they can never return home’

The [Peace Direct](#) website is full of up to date information about child soldiers and campaigns on this issue.

Page 37: ‘Sierra Leone emerged from a brutal civil war with international support, including a peace keeping force, which was deployed to disarm militia groups.’

Various websites hold information on child soldiers. The [BBC](#) report on Sierra Leone is interesting. The [Daily Mail](#) article on Mariatu Kamara is as well.

Page 37: ‘A UN report from 2000 quotes a teenage girl from Sierra Leone: ‘I’ve seen people get their hands cut off, a ten-year old girl raped and then die, and so many men and women burned alive ... So many times I just cried inside my heart because I didn't dare cry out loud.’

[UNCRC](#) report. [War Child](#) holds important information.

Page 38: ‘The M23 is listed in the annex of the last UN Secretary-General’s report as a party that recruits and uses children.’

The [Child Soldiers International](#) website is worth researching.

Page 38: ‘On the internet you can find many clips which show the plight of children fighting for armed groups.’

[NBC](#) website is one example – there are a number of short films about conflict in the Congo. This is a good starting point for research.

Page 38: ‘The study of peace [draws] on politics and international relations, economics, development; gender, media, environmental studies; history; war and conflict studies; education, anthropology, law, ethics and theology to name only a few.’

The [Oxford University Peace Studies](#) network gives information on the academic discipline of Peace Studies and its interdisciplinary nature.

Page 39: ‘asserts ‘No state shall by force interfere with the constitution or government of another state.’

Immanuel Kant, [‘Perpetual Peace’](#) can be found on-line.

Page 39: ‘In the turbulent mountain region between Pakistan and Afghanistan, a 23-year-old peace builder has founded a network of peace activists – a brave band of young people whose mission is to halt the spread of religious extremism and rescue their peers from recruitment into militant organisations.’

[Peace Direct](#) Website tells this story of Gulalai Ismael.

Page 40: ‘The International Day of Peace is commemorated on the 21st of September.’

It is worth looking at the website for the [International day of Peace](#), which provided important background.

Page 40: ‘It came about as the result of Jeremy Gilley’s work, who thought, ‘There was no starting point for peace. There was no day when humanity came together. And if we united and inter-culturally cooperated then that might shift the level of consciousness around the fundamental issues humanity faces.’

Jeremy Gilley, TED talk, [One Day of Peace](#)

Page 40: ‘In 2008, on the first International Day of Peace, there was a 70 per cent reduction in violence in Afghanistan, as both sides respected the day’

[Peace One Day](#) website

Wonder 2: The Olympics

Page 42: ‘The Olympic Organisation’s website claims there were athletes from 204 Olympic Committees (nations of the world) and over 10,000 athletes.’

The [Olympic Organisation](#) website provides a wide range of information about the games.

Page 43: ‘Academic, Maurice Roche, defines the Olympics as one of a number of mega events: ‘large-scale cultural (including commercial and sporting) events, which have a dramatic character, mass popular appeal and international significance.’

Roche (2000)

Page 43: ‘The five interlocking Olympic rings, (the Games emblem) symbolise the interconnectedness of the five continents and show their universalism.’

The [Olympic Organisation](#) website

Page 44: ‘Our hope is if young people can learn to respect each other on the field of play, they may transfer this to other parts of their daily lives.’

This quote was found in a statement by Jacques Rogge on the [UNICEF](#) website.

Page 44: ‘He writes: ‘the child reconstructively assimilates the social world into which it is born and which it grows up. Complimentary to the construction of the social world, there is a demarcation of the subjective world, the child develops its identity by becoming qualified to participate in normatively guided interactions.’

Habermas (1987)

Page 45: ‘Look at how well Molly is behaving!’

Paul Bloom, [‘The Moral Life of Babies’](#), *The New York Times*, May 2010

Page 45: ‘This, along with other things, such as the stories parents tell children, establishes a code of behaviour for the child that will affect his/her interactions with others.’

Graeme Paton, [‘Parents Who Shun fairy Tales ‘Miss Chance to Teach Common Sense Morality’](#), *The Telegraph*, March 2011

Page 45: ‘This is a homespun version of the ancient, golden rule or ethic of reciprocity: treat other people as you would have them treat you.’

Princeton University [website](#) holds a readable article on the subject and its historical context.

Page 46: ‘Humans are taught this rule in many ways from childhood, yet repeatedly break it as they go through life – which may be a positive sign to some extent.’

Eleanor Doughty, [‘Children Should be Taught to Break Rules, Says Head Teacher’](#), *The Telegraph*, November 2014. This article shows the positive learning that comes from rule breaking.

Page 46: ‘This kind of evidence strongly suggests that children’s beliefs about morality are at least partly shaped by the value systems of the society in which they are brought up.’

Dr Robin Banerjee, [‘Moral Behaviour’](#), Open University website. This article makes the point that there can be cultural factors which shape the ethical norms which shape our actions. The environmental factors lead to different viewpoints about values. I have included this to show something about why human rights have not yet been universally adopted and the reasons why we may struggle to get to the point where they are.

Page 47: ‘Most human lives hang somewhere in that balance. It is no surprise really that cultural factors affect moral responses of young people.’

Jordan K. Turgeon, [‘How Facebook and Social Media Affect the Minds of Generation Next’](#), *The Huffington Post*, August 2011

Page 47: ‘But, as global communications improve, young people may become more susceptible to influence on their values through the media.’

[‘Twitter and Facebook Could Harm Moral Values, Scientists Warn’](#), *The Telegraph*, April 2009

Page 47: ‘Indeed Carol Craig’s book, *The Great Takeover* shows the potentially negative impact advertising and materialistic values have on people’s lives.’

Craig (2012)

Page 47: ‘There are lots of things we could be paying attention to like relationships, caring, meaning, community service, duty, spirituality, learning, development, fairness, equality, tradition, respect for nature. But materialist ideas take over.’

Carol Craig, TED talk, [‘Enlightenment in the Age of Materialism’](#)

Page 47: ‘Moments in which we recognise we are part of something bigger – a complex, diverse and large human race – can help define us as individuals. In many modern societies, it has become unacceptable to put people down or deny their dignity, whether on grounds of race, religion, sexuality, or capability. Being aware of and respecting difference underpins modern citizenship.’

[‘Developing Global Citizens Within Curriculum for Excellence, An Exploration of Identity and Discrimination’](#), Education Scotland, Portlethen Academy Case Study, Page 27

Page 48: ‘Paralympic cyclist, Neil Fachie, is a visually impaired athlete who embodies human achievement.’

Henry Hepburn, [‘Neil Fachie’](#), *Times Educational Supplement Scotland*, February 2013

Page 49: ‘International sport is always tied to politics. It’s inescapable.’

Zoe Nikakis [‘Olympics, Culture, Commerce, Hype’](#), *University of Melbourne, Voice*, July 2012

Page 49: ‘An article in *The Economist* in 2013 highlighted the massive costs and also how they tend to attract the interests of politicians who see them as a vote winner.’

[‘Castles in the Sand’](#), *The Economist*, July 2013; [‘Why Would Anyone Want to Host the Olympic Games’](#), *The Economist*, September 2013

Page 49: ‘Another article in the *Washington Post* in 2014 argued corruption can cause costs to spiral and focused on Greece, whose economy collapsed after hosting the games.

Soraya Nadia McDonald, [‘When it Comes to Hosting the Olympics, More Cities are Saying, ‘Hold that Thought’](#), *The Washington Post*, May 2014

Page 50: ‘Interestingly, the Greek economic collapse has led to a political imperative developing in the country to tackle the kind of economic injustice we will explore in a later chapter.’

John Henley, [‘Greece’s Solidarity Movement: It’s a Whole New Model and It’s Working’](#), *The Guardian*, January 2015

Page 50: ‘Thinkers such as Noam Chomsky question whether the alliance of corporate funders sits easily with the high ideals of the Olympic movement.’

Noam Chomsky, [‘In these Times, Somebody Else’s Atrocities’](#), The Noam Chomsky website

Page 51: ‘Athletes as young as 12 are using performance-enhancing drugs in the hopes of emulating their idols, research shows.’

[‘Athletes as Young as Twelve Say They Use Performing Enhancing Drugs’](#), *The Guardian*, July, 2014

Page 51: ‘Research by University of Oslo scientists has established muscles can retain advantages given by anabolic steroids decades after the point at which they were taken.’

Tom Fordyce, [‘Drug Cheats in Sport Could Benefit for Decade, Scientists Find’](#), BBC website, October 2014

Page 51: ‘In short, many successful athletes could have used drugs at an early stage of their development, experience long term benefits yet this will never be detected. In fact, some scientists argue drug use is widespread.

Jeanette Y. Wyck, [‘Performing Enhancing Drugs, A New Reality in Sport’](#), Pharmacy Times website, March 2014

Page 51: ‘Recent allegations surrounding a number of prominent athletes, including 58 from Russia, have furthered this suspicion.’

Ben Rumsby, [‘Russian Athletics Chief Quits IAAF After Doping Allegations’](#), *The Telegraph*, December 2014

Page 52: ‘I want to tell you that we respect you, we are proud of all of you and, above all, we love you.’

Alan Abrahamson, [‘Remembering Nelson Mandela’](#), 3 Wire Sports website, December 2013

Challenge 2: Terrorism

Page 53: ‘Towers collapse as planes crash into them; people emerge wounded from wreckage of underground stations; rows of linen wrapped corpses lie riddled with chemically induced infection.’

In this section I refer to the Twin Tower attacks in New York which can be read about on the [New York Times](#) website; the 7-7 Bombings in London which can be researched on the [BBC](#) website; and the alleged attacks by the Syrian government on sections of their own population which can be seen on the [Al Jazeera](#) website – the article referred to a [UN Report](#) which can also be seen if you are interested in further research.

Page 54: ‘It is easy to believe terrorist acts affect others miles away, but, terrorism may threaten us all.’

Nick Bostrom’s [Existential Risk Study](#) can be found on-line.

Page 54: ‘It’s what we do with anger that counts. In such a case, is rioting so wrong?’

Darlana Cuhna, [‘Ferguson: In Defence of Rioting’](#), *Time*, November 2014

Page 54: ‘I think the time has come for us to consider, in light of our experiences, in this day at home, whether the methods we have employed so far are adequate.’

[‘Mandela Speaks About Political Protest’](#), BBC website, 1961. This film documents an important moment in 20th century history, the point at which Mandela concedes the necessity of violence in the South African context.

Page 55: ‘By contrast, the bombings of al Qaeda were less about a spontaneous reaction to injustice, and more part of a global, strategic campaign based on an ideology.’

Vidya Venkat, [‘Charlie Hebdo Cartoons Are Bigoted’](#), *The Hindu*, January 2015: the article is really about the Charlie Hebdo attacks but contains a deeper critique of Western ideologies that have arguably led to acts of terror. It creates a sense of context not always appreciated in the west.

Page 55: ‘The similarity that exists in each case is in the root cause: a perceived sense of injustice; a wrong to be righted.’

Myriam Francois-Cerrah, [‘Is the Charlie Hebdo attack Really An Attack on European Values?’](#), *The New Statesman*, January 2015.

Page 55: ‘On November 11th, 2001, newspapers reported Osama bin Laden ‘has for the first time admitted his al Qaeda group carried out the attacks on the World Trade Centre in New York.’

David Bamber, [‘Bin Laden, Yes I Did it’](#), *The Telegraph*, November 2001.

Page 56: ‘Terrorists want to make their enemy feel unsafe in their homes, towns and cities, so they threaten families and children – turning civilian areas into warzones.’

Adam Withnall and John Lichfield, [‘Charlie Hebdo Shooting: At Least 12 Killed As Shots Fired At Satirical Magazine’s Paris Office’](#), *The Independent*, January 2015.

Page 56: ‘When Malala Yousafzai was fifteen a gunman boarded her school bus in Pakistan, shot her in the head and left her to die.’

Malala’s story is widely documented. Her [website](#) gives important information.

Page 56: ‘Malala survived and subsequently addressed an audience of 500 young people at the United Nations in New York.’

The [Independent](#) newspaper helpfully published the full text of Malala’s address.

Page 57: ‘Residents in Chibok, in a remote corner of Nigeria’s...’

The Guardian, [Nigeria](#)

Page 57: ‘...an imminent attack from Boko Haram...’

The Guardian, [Boko Haram](#)

Page 57: ‘...at least 300 schoolgirls had been carted away at gunpoint...’

The [Guardian](#) article is in the form of a question and answer piece, which is helpful

Page 58: ‘They protect people who are not taking part in the hostilities (civilians, health workers and aid workers) and those who are no longer participating in the hostilities, such as wounded, sick and shipwrecked soldiers and prisoners of war.’

The [International Red Cross](#) website gives information on the Geneva Conventions which establish the rules of law within war.

Page 58: ‘This last point is important given recent admissions in the USA that authorities used waterboarding, a form of torture, on terror suspects at Guantanamo Bay.’

Kathleen Hennessy, [‘We Tortured Some Folks’](#), *The Los Angeles Times*, August 2014

Page 58: ‘For many, this was a terrible admission by the President of one of the leading countries and it lessened the USA’s moral authority in the eyes of commentators.’

Editorial, [‘Prosecute Torturers and their Bosses’](#), *The New York Times*, December 2014

Page 58: ‘If national leaders do not respect Geneva Conventions they can be tried for war crimes. Former Liberian leader Charles Taylor was convicted by an international court.’

Owen Bowcott, [‘War Criminal Charles Taylor to Serve 50 Years in Prison’](#), *The Guardian*, October 2013

Page 58: ‘Former Serbian leader, Slobodan Milosevic died before his trial concluded.’

Victoria Ward, [‘Serbian War Criminals: Slobodan Milosevic Profile’](#), *The Telegraph*, May 2011

Page 59: ‘Following World War II and investigations of the holocaust and mass exterminations in concentration camps many Nazis were convicted for war crimes.’

BBC, Nuremberg Nazis on Trial: Albert Speer, [You Tube](#)

Page 59: ‘Conflict becomes terrorism when ordinary civilians become targets. But, in reality, things are rarely so black and white.’

[‘Iraq study estimates war-related deaths at 461,000’](#), BBC Website, October 2013. This article shows the impact on ordinary civilians of war in Iraq. There are unintended consequences in war.

Page 59: ‘But, there is clearly a point at which the lines between them become blurred.’

Peter van Buren, [‘Obama’s Itchy Trigger Finger on Drone Strikes, What Happened to Due Process’](#), *The Guardian*, February 2014. The article raises some challenging questions about the use of assassination and drone strikes by the USA in its conflict with al-Qaida.

Page 59: ‘Especially as in recent times, western nations have explicitly conducted a ‘war on terror.’

Gideon Rachman, [‘America’s Drone War is Out of Control’](#), *ft.com*, December 2012

Page 60: ‘Human rights were to ensure, ‘freedom, justice and peace in the world.’

The [UN Declaration of Human Rights](#) is given in full here

Page 60: ‘Human rights were born out of the need to protect the individual from the abuse of state authority.’

Wallace and Martin-Ortega (2013) provide a comprehensive introduction to international law and is used in undergraduate courses to help students orientate themselves in the area. It charts an emerging area of law.

Page 60: ‘They are endowed with reason and conscience and should act towards one another in a spirit of brotherhood.’

The [UN Declaration of Human Rights](#)

Page 60: ‘Mark Pagel in his TED talk argues the development of the ‘social technology’ of language was crucial to our development.’

Mark Pagel’s TED talk, [How Language Transformed Humanity](#). This gives a good sense of human evolution, as regards linguistic development.

Page 61: ‘At other times the Commissioner has criticized nations for human rights’ violations.’

Nick Cumming-Bruce, [‘For UN Leader on Human Rights, Finish Line Looks Blurry’](#), *The New York Times*, August 2014. The feature on the outgoing commissioner, Navi Pillay, shows some examples of this. All of Pillay’s briefings to the UN Security Council can be seen on its [website](#).

Page 61: ‘At a briefing to the UN Security Council, Commissioner, Navi Pillay, challenged countries, ‘Short-term geopolitical considerations and national interest, narrowly defined, have repeatedly taken precedence over intolerable human suffering and grave breaches of and long-term threats to international peace and security.’

[The Guardian](#) article features this speech in detail.

Page 62: “The will of the people shall be the basis of the authority of government; this will shall be expressed in periodic and genuine elections which shall be by universal and equal suffrage and shall be held by secret vote or by equivalent free voting procedures.’

The [UN Declaration of Human Rights](#)

Page 62: ‘Many countries do not allow their populations to vote, despite signing the declaration.’

[Wikipedia](#) gives a list of all countries by form of government. The [globalissues.org](#) website has interesting information on this.

Page 62: ‘The Economist Intelligence Unit reports annually on the progress of democracy. In 2013 there were 25 full democracies, 54 flawed democracies, 36 hybrid regimes and 52 authoritarian regimes.’

The Economist Intelligence Unit reports can be found on its [EIU Website](#).

Page 62: ‘So, we need to keep raising people’s awareness of human rights.’

The [Human Rights Watch](#) website

Page 63: ‘Owen Jones counsels against seeing these figures in isolation, but rather as part of wider movements or social trends.’

Owen Jones, [‘Every Great Individual Stands on the Shoulders of Others’](#), *The Guardian*, January 2015

Page 63: ‘Trust the little voice residing within your heart.’

Ghandi’s speeches can be found on-line at various sites including [mkghandi.org](#).

Page 63: ‘Governments sometimes use the term ‘terrorist’ to label people who are fighting oppression. Malcolm X is one example from the USA.’

Malcolm X is profiled by the [BBC](#) on-line.

Page 64: ‘Nelson Mandela, celebrated internationally for his stance against oppression, was labelled a terrorist by the South African government.’

Nelson Mandela is profiled by the [BBC](#) on-line.

Page 64: ‘The Dalai Lama is also seen as a terrorist by Chinese authorities today.’

Tanya Brannigan, [‘Dalai Lama’s Prayers for Tibetans “Terrorism in Disguise” Says China’](#), *The Guardian*, October 2011

Page 64: ‘One person’s freedom fighter can be another person’s terrorist.’

Lintkova (2009), ‘The difference between a terrorist and a freedom fighter is a matter of perspective: it all depends on the observer and the verdict of history.’

Page 64: ‘Mahatma Ghandi’s protests against British rule in India exemplify non-violent civil action.’

The [BBC](#) website profiles Mahatma Ghandi.

Page 64: ‘Chemical terrorism could be a real danger in future.’

Nick Bostrom’s TED talk, [On Our Biggest Problems](#)

Page 64: ‘The same person could send a thousand letters thereby affecting a whole country. Ricin poisoning attacks have worked this way in the past.’

The [BBC](#) website has a question and answer report on Ricin The [globalsecurity.org](#) website gives a history of Ricin poison attacks and other weapons of mass destruction.

Page 65: ‘The Unabomber did something like this in the USA in the 1990s, with letter bombs.’

David Johnston, [‘On the Unabomber Track: The Overview’](#), *The New York Times*, April 1996

Page 65: ‘A UN Report of 2013 raises some important questions about whether drone strikes, such as those carried out by the USA in countries like Pakistan and Yemen are legal.’

[UN Report of the Special Rapporteur on extrajudicial, summary or arbitrary executions](#), September 2013

Page 65: ‘This is despite the fact the Obama administration believes such actions are a legitimate response to dealing with a terror threat posed by individuals.’

Matt Sledge, [The Toll of Five Years of Drone Strikes, 2400 Dead](#), *The Huffington Post*, May 2014

Page 65: ‘The true test of our devotion to freedom is just beginning.’

Mandela (1995)

Wonder 3: Genetic Engineering

Page 67: ‘The two strands of this spiral stairway are strands of the sugar deoxyribose.

Winston (p459, 2010)

Page 68: ‘An elaborate biochemical structure built out of simple components.’

[DNA](#), BBC Bitesize.

Page 68: ‘Most of our genetic make-up – 99 per cent to be precise – we share with other humans, but there is some variation to allow for difference to exist between individuals.’

Roger Highfield, [‘DNA Survey Finds All Humans Are 99.9% the Same’](#), *The Telegraph*, December 2002

Page 68: ‘These differences are essential for our survival.’

Anne Gibbons, [‘Bonobos Join Chimps as Closest Human Relatives’](#), *sciencemag.org*, June 2012

Page 68: ‘In developing awareness of this code, scientists realised they might be able to use it to find cures for diseases or to affect the make-up of crops, for example.

Rebecca Boyle, [‘How to Genetically Modify a Seed, Step By Step’](#), Popular Science website, January 2011: this article shows the way in which Monsanto scientists are working through the development process for GM crops. The article refers to a different policy context in the USA, where GM crops are widely grown and used in food production. This is different from the context in Europe, where environmental objections have stalled the development of the technology. The article is positive about GM and the actions of the company Monsanto.

Page 69: ‘These developments happened in parallel to the cloning of the first sheep (Dolly) in Edinburgh in 1996.’

The BBC [reported](#) the birth of Dolly, February 1997.

Page 69: ‘We are directly designing the future of this planet.’

Paul Toot Wolpe, TED talk, [It’s Time to Question Bio-Engineering](#)

Page 69: ‘We have the ability now and maybe the moral obligation to repair some of the damage.’

Stewart Brand TED talk, [The Dawn of De-Extinction: Are You Ready](#)

Page 70: ‘There are genuine concerns about the ethics of cloning when it comes to humans.’

Leon R. Kass and James Q. Wilson, [‘The Ethics of Human Cloning’](#), *AEI Press*, 1998

Page 70: ‘Some even find it a revolting prospect. A UNESCO report from 2004 gives a good overview of the issues.’

[The Ethics of Human Cloning](#), UNESCO, 2004

Page 70: ‘There is hope genetic research may yet help us find a cure for various diseases including cancer.’

Richard Alleyne, [‘Hereditary Diseases Could Be Eradicated Before Birth By Genetically Modifying Eggs’](#), *The Telegraph*, August 2009

Page 70: ‘Public debate on GM food and medicines has been heated, leaving non-scientists confused at times.’

Anion Shah, [‘GE Food Media Coverage’](#), *globalissues.org*, June 2001

Page 71: ‘Those involved in agribusiness could also develop GM animals for food production purposes.’

Scott Gotlieb and Matthew Wheeler, [‘Genetically Engineered Animals and Public Health’](#), *BIO*, July 2011

Page 71: ‘Bizarrely, our animals can eat GM, but we can’t.’

David Baulcombe, [‘It’s Time to Rethink Europe’s Outdated GM Crop Regulations’](#), *The Guardian*, March 2014

Page 71: ‘In 2012 a survey, reported in *The Guardian*, indicated the British public were less worried about GM crops than in the past.’

Adam Vaughan, [‘Public Concern Over GM Food Has Lessened, Survey Shows’](#), *The Guardian*, March 2012

Page 72: ‘GM foods are either the ‘most likely source of a new green revolution or (alternatively) as a disaster in embryo.’

Economist Blog, [‘Frankenfoods Reduce Global Warming’](#), *The Economist*, March 2013

Page 72: ‘This is one reason why scientific advances can be difficult for lay people to understand and this not only creates a barrier for people, it also undermines trust, making it less likely the wider public will support those who argue genetic engineering has the capacity to solve some of the world’s problems.’

Editorial, [‘GM Foods: Modify the Argument’](#), *The Guardian*, June 2013

Page 73: ‘... in vehement protests by ordinary people about genetically modified crops.’

Winston (p25, 2010)

Page 73: ‘GM foods are sometimes referred to as ‘Frankenfoods’ in the media – alluding to Frankenstein’s monster, a famous literary symbol of science going too far.’

Tim Worstall, [‘How Those GM Frankenfoods are Going to Murder us All in Our Beds’](#), *The Telegraph*, September 2012

Page 73: ‘But how might food change?’

Rebecca Boyle, [‘How Science is Changing Your Thanksgiving Feast’](#), *Popular Science*, November 2010: the article shows the situation in the USA where the environmental opposition has not been able to stop widespread GM production.

Page 73: ‘You may be reading this, thinking you’d never put a genetically modified hamburger made in a laboratory in your mouth, but those who argue in favour of GM crops there may not be enough food to go round.’

[‘The World’s First Lab-Grown Burger is Eaten in London’](#), BBC website, August 2013

Page 74: ‘The amount of food consumed by a cow for us to ultimately turn into burgers, for example, makes meat expensive in terms of money and use of natural resources.’

Matt McGrath, [‘Beef Environment Costs Ten Times As Much As Other Livestock’](#), BBC, July 2014

Page 74: ‘Genetically modified crops can be designed to survive in harsh climates, such as sub-Saharan Africa, where there is little water. Or they may survive in coastal conditions where salt resistant crops are required.’

David Rotman, [‘Why we Will Need Genetically Modified Foods’](#), MIT Technology Review website, December 2013

Page 74: ‘In the next 50 years we are going to have to produce 70% more crops than we do today.’

Michael Specter’s TED talk, [‘The Dangers of Science Denial’](#)

Page 75: ‘Monsanto quite overtly positioned GM as their means of achieving that goal, and it was quite a clear battle-plan that they had an aggressive patenting regime, patenting technologies and genetic material.’

Tom Chivers, [‘Genetically Modified Foods: Saving Lives or Lining Corporate Pockets? \(Or Both\)’](#), *The Telegraph*, June 2013

Page 75: ‘With our identities largely constructed around consumption, the economic system exploits the very crisis that it creates by proffering its various goods as solution.’

Hanlon and Carlilse (p55, 2012)

Page 76: ‘This is partly a reaction to commodification of food and actions of large food corporations and supermarkets.’

Small (2013)

Page 76: ‘Nobel Prize winning biologist, Norman Borlaug said in 2002:’

[‘Norman Borlaug: Humanitarian Hero or Menace to Society’](#), *The Guardian*, April 2014

Page 76: ‘If we try to go back to low yield agriculture, we would have no option but to clear more land.’

Marc Morano, [‘Organic Farming Will Level Our Forests’](#), CSN News, May 2002

Page 77: ‘...it’s a bit like vaccination, in that a tiny bit of viral DNA is put into the plant genome, and you can’t do that with selective breeding.’

Tom Chivers, [‘Genetically Modified Foods: Saving Lives or Lining Corporate Pockets? \(Or both\)?’](#), *The Telegraph*, June 2013

Page 77: ‘Though a recent article on the Worldwatch Institute website argues organic farming worldwide could still be the solution.’

[‘Can Organic Farming Feed Us All?’](#), Worldwatch Institute website

Page 78: ‘The economic and financial aspect of how big business operates should not be ignored, just as Big Pharma controls medicine supplies for profit, and Big Oil controls energy supply for profit, so Big GM Food will do likewise with regard to GM food.’

Ben Spencer, [‘Opposing Frankenfoods Will Turn the UK into a Museum of Farming’](#), *The Daily Mail*, January 2014

Page 79: ‘It is the balance of evidence—not least on the implications of inaction—rather than the certainty of outcomes that should inform our judgments.’

Ian Goldin and Pascal Lamy, [‘Overcoming Short-Termism, A Pathway for Global Progress’](#), *The Washington Quarterly*, Summer 2014

Challenge 3: Disease

Page 81: 'It has been devastating for various countries, mainly in Africa.'

You Tube holds an [Al Jazeera report](#) on Uganda web article.

Page 81: 'AIDS is a 'pandemic' – it is spread throughout the world and not confined to one area.'

The [WHO](#) website figures show the extent of the AIDS pandemic.

Page 82: 'AIDS is transferred via body fluids of people who have the virus. For example, you can get AIDS through contaminated blood transfusions or unprotected sex.'

[News Medical](#) website gives information on transmission of HIV/AIDS.

Page 82: 'According to latest figures, life expectancy is just 48.9 years – one of the lowest in the world.'

[Avert.org](#) website has a report on Uganda from which this information is taken.

Page 82: 'Reports show it is making progress in getting to grips with AIDs.'

The Kingdom of Swaziland [UNAIDS 2014 report](#) shows progress in treatment and lower HIV incidence.

Page 83: 'Uganda appeared to have tackled AIDS, achieving remarkable results.'

Josh Kron, ['In Uganda an AIDS Success Story Comes Undone'](#), *The New York Times*, August 2012

Page 83: 'A UN Commission Report in 2012 stated: 'In Uganda, the national average adult HIV prevalence reduced from a high of 18.5 per cent in 1992 to about 5 per cent in 2000 due to, among other reasons, strong political leadership, open approach to combating the epidemic and a strong community response.'

The [Uganda AIDS Commission Report \(April 2012\)](#) is available through the UN AIDS Organisation.

Page 83: 'This supported an earlier 2005 WHO report.'

Charles Wendo, ['Uganda Leads the Way in HIV/AIDS Treatment'](#), WHO, 2005

Page 84: 'Annie Lennox argues 'every mother and every child in the world has the right to access to good nutrition and good medical care.'

Annie Lennox TED talk, ['Why I am an HIV/AIDS Activist'](#)

Page 84: 'What is really important is; can we reduce that death toll?'

Peter Singer TED talk, ['The Why and How of Effective Altruism'](#)

Page 85: 'AIDS spreads through sexual activity and affects some groups in society more easily than others. This has led to certain groups, such as homosexuals being demonized as they are more at risk.'

[World AIDS Day](#) website

Page 85: ‘In 2012 film maker Dylan Gray made a documentary which explored the story of how large pharmaceutical companies have exploited medicine patents to drive up profits and the consequence this had for millions suffering from diseases in poorer nations.’

Dylan Gray, [‘Big Pharma’s Excuses for the Monopolies on Medicine Won’t Wash’](#), *The Guardian*, February 2013

Page 86: ‘It is easy to believe companies put profits before humanitarian concerns.’

This BBC article, [‘Cheaper Drugs for Africa?’](#) explores the issue and then provides comments from the public, showing the debate.

Page 86: “Pharmaceutical companies are doing more to help people in developing countries obtain the drugs they need, according to the latest Access to Medicines Index.”

[Access to Medicines Index](#), Access to Medicines organisations website; Sarah Brosely, [‘Big Pharma Ups Its Game in Providing Drugs to People in Poor Countries’](#), *The Guardian*, November 2012

Page 86: ‘Distribution of medicines by government agencies in some countries which have need of medicine has also affected the supply of drugs.’

Zeba Siddiqui and Aditya Kalra, [‘Poor Patients in India Facing HIV/AIDS Drugs Shortage’](#), Reuters, September 2014

Page 86: ‘Corruption by officials is also a problem.’

Two articles paint a picture of corruption in the Ukraine: Ari Shapiro, [‘Corruption in Ukraine Robs HIV Patients of Crucial Medicine’](#), *NPR*; Lucy Ash, [‘Ukraine’s Youngest HIV Campaigner’](#), *The Guardian*, April 2013.

Page 87: ‘Virulent diseases are more likely to occur as the human population expands, the gap between rich and poor widens, and the risk of bio-terror grows.’

Larry Brilliant, [‘The Age of Pandemics’](#), *Wall Street Journal*, May 2009

Page 87: ‘It may become even harder for large sections of the population to access health care and medicines they need.’

The [WHO](#) website reports on this issue in the context of South Africa.

Page 87: ‘Michael Specter remains positive, ‘In the rich world, some of the diseases which threatened millions of us just a generation ago no longer exist, hardly.’

Michael Specter TED talk, [‘The Danger of Science Denial’](#)

Wonder 4: Telecommunications

Page 89: ‘We are now more empowered than ever because of new technology.’

Peter Diamandis TED talk, [Abundance is Our Future](#)

Page 89: ‘It also claims by the end of 2014 there will be seven billion cell phone subscriptions world-wide.’

The United Nations [International Telecommunications Union](#) report (2014)

Page 90: ‘She defines cyborg: ‘an organism to which exogenous components have been added for the purpose of adapting to new environments.’

Aber Case, TED talk, [We are All Cyborgs Now](#)

Page 90: ‘In future we will have access to super computers which may outstrip human capacity for thinking.’

[‘Caspar Henderson, Superintelligence by Nick Bostrom and A Rough Guide to the Future by Jame Lovelock – Review’](#), *The Guardian*, July 2014. Bostrom’s book shows that artificial intelligence is a threat to human survival, a topic which is not covered in this book.

Page 90: ‘In the late nineteenth century, Polish exile, Joseph Conrad wrote one of the finest novellas in the English language – *Heart of Darkness*’

Conrad (1988)

Page 91: ‘One of these is called Coltan.’

[War Child](#) website

Page 91: ‘If we use these electronic devices then we are consumers of tantalum, even if we do not know what it is, where it is from, or what exactly goes into its production.’

Fatima Najm, [Is Your Mobile Phone Soaked in Congolese Blood?’,](#) *The Express Tribune*, October 2010

Page 92: ‘Mines are run by armed groups which control workers by force and employ children as cheap, exploitable labour.’

Carl Gibson, [‘How the i-Phone Helps Perpetuate Modern Slavery’](#), *Huffington Post*, Business, September 2014

Page 92: ‘In a TED talk Bandi Mbubi tells why he became a refugee from the Congo. For him the phone may be a ‘symbol of an interconnected world, but it leaves a bloody trail.’

Bandi Mbubi, TED talk, [Demand a Fair Trade Mobile Phone](#)

Page 93: ‘In these events, ordinary people documented their experience through reportage and photojournalism, often captured on mobile phones, and then broadcast to the world via social media.’

Evgeny Morosov, [‘Facebook and Twitter are Just Place Revolutionaries Go’](#), *The Guardian*, March 2011

Page 93: ‘Skeptics point out that regimes are effective at using technologies to spy and subvert.’

Professor Ramesh Srinivasan, [‘Taking Power Through Technology in the Arab Spring’](#), *Al Jazeera*, October 2012

Page 93: ‘In some cases state monitoring of citizens’ internet use has led to arrest and punishment of people, whose actions were considered to be seditious.’

[‘Iran Arrests 11 Over SMS Khomeini Insults’](#), *The Express Tribune*, September 2014

Page 94: ‘New capabilities of leadership are required, able to manage public expectations, uncertainty, rapid change, and an increasing complexity of issues.’

Ian Goldin and Pascal Lamy, [‘Overcoming Short-Termism, A Pathway for Global Progress’](#), *The Washington Quarterly*, Summer 2014

Page 94: Insert footnote after ‘the recent referendum on Scottish independence.’

Mark Shepard, [‘Is the ‘Yes’ On-line Tsunami Finally Paying Dividends’](#), *What Scotland Thinks* website, September 2014. In this book devoted to global issues from a Scottish perspective I have not devoted space to consider the referendum. But I point readers to some authors who have commented on it.

Page 95: ‘In 490 BC Pheidippides ran 25 or so miles from Marathon to Athens to inform people of the city they had successfully defeated the Persian army in battle. He promptly died from his effort.’

Athens Marathon [website](#)

Page 95: ‘In the 1800s, Napoleon’s semaphore system allowed messages to be relayed between Paris and the ‘fringes of the country in a matter of three to four hours.’

[‘How Napoleon’s Semaphore Telegraph Changed the World’](#), BBC website

Page 95: ‘In 1844 Samuel Morse sent the first coded message through an electric telegraph between Baltimore and Washington – the first instantaneous message transmitted over distance.

[Samuel F. B. Morse](#), Encyclopaedia Britannica

Page 96: ‘Jamie Drummond even thinks we can use social media to ‘crowd source the world’s problems.’

Jamie Drummond TED talk, [How to Set Goals for the World](#)

Challenge 4: Human Population Expansion

Page 97: ‘One argument we have heard is GM crops may be important in because of the number of people there will be on the planet.’

Lots of interesting information on population can be found at the [Population Matters](#) website.

Page 97: ‘...“there was a golden age; but now men are many and things are few and misery is man’s lot.”’

Vidal (1993)

Page 97: ‘Especially when UN projections for population growth by 2100 suggest there will be many more human beings in the world, unless there is a catastrophe.’

United Nations Department of Economic and Social Affairs, [Probabilistic Population Projections](#) (2012 Revision)

Page 98: ‘In 2002 Jean-Francois Rischard, former Deputy of the World Bank, used international research to highlight twenty global problems.’

Jean Rischard (2002)

Page 98: ‘The evidence Rischard drew on came from an international team of scientists.’

Third IPCC Report, 2001, [Summary for Policy Makers](#)

Page 98: ‘A quick way of getting your head around the nature of the global human population as it stands is through the 100 People Organisation.’

[100 People Organisation](#) statistics give a sense of what the world would be like if it were a village.

Page 99: ‘This shows Vietnam has caught up. As for poverty, there is much less poverty in Asia than in the 1970s.’

Hans Rosling, TED talk, [The Good News of the Decade](#)

Page 99: ‘But, as population expands to a critical point, our capacity to control our environment may be overwhelmed by the sheer volume of people we need to sustain.’

Jay T. Stock, [‘Are Humans Still Evolving?’](#), EMBO, July 2008

Page 100: ‘More people living longer creates a need for different kinds of care for the elderly than in the past – and much more of this care is needed.’

Joshua M Wiener and Jane Tilly, [‘Population Aging in the USA: Implications for Public Programmes’](#), International Journal of Epidemiology, 2002

Page 100: ‘As Rischard pointed, the number of cities of over 5 million people is projected to grow considerably over the next generation.’

Rischard (p6, 2002)

Page 100: ‘... Stephen Emmott...’

Emmott (2013)

Page 100: ‘... says humans are the source of the greatest threats to our survival.’

Steven Emmott, [‘Humans, the Real Threat to Life on Earth’](#), *The Guardian*, June 2013

Page 100: ‘A *Guardian* article by Chris Goodall disputes some of Emmott’s statistics and presents what he claims is a more balanced view.’

Chris Goodall, [‘Steven Emmott’s Population Book’](#), *The Guardian*, 2013

Page 101: ‘In fact, UN figures show 1.2 billion people live on less than \$1.25 per day (classified as Extreme Poverty).’

UN Report on [Millennium Development Goals](#), 2013

Page 101: ‘And, how should we work as an international community to tackle poverty and hunger for the increasing number of poor people?’

Emma Seery, [‘Widening Gap Between Rich and Poor Threatens to Swallow Us All’](#), *The Guardian* Blog, January 2013, The Guardian

Page 101: ‘The third option is that we just accept the growing gap between rich and poor and the inequalities this leads to.’

[‘Rich and Poor Divide Increasing Says OECD’](#), BBC website, May 2013

Page 102: ‘We don’t know yet how to build a society which is environmentally sustainable, which is shareable with everybody on the planet, which promotes stability and democracy and human rights and which is achievable in a timeframe which is necessary to make it through the challenges we face.’

Alex Steffen, TED talk, [Alex Steffen Sees a Sustainable Future](#)

Page 102: ‘It is perhaps unsustainable to level the poor of the world up to levels of consumption of the rich.’

Sam Roberts, [‘Gap Between Manhattan’s Rich and Poor Is Greatest in US, Census Finds’](#), *The New York Times*, September 2014

Page 102: ‘There is probably not enough to go around, given population projections. Phil Hanlon and Sandra Carlisle suggest that in future we will all have to consume less.’

Hanlon and Carlisle (2012); also see the After Now [website](#) for articles and films.

Page 102: ‘Many people think that there are major economic consequences in allowing this gap to exist.’

Tracy McVeigh, [‘Inequality ‘Costs Britain £39 Billion A Year’](#), *The Guardian*, March 2014

Page 102: ‘One Millennium Development Goal is to ensure global environmental sustainability.’

UN Report on [Millennium Development Goals](#), 2013

Page 103: 'Britain imports 240,000 tonnes of pork and 125,000 tonnes of lamb while exporting 195,000 tonnes of pork and 102,000 tonnes of lamb. Why?'

Caroline Lucas, [*'Stopping the Great Food Swap, Relocalising Europe's Food Supply'*](#), 2001

Page 103: 'This is one of the hardest things we've ever done in human history. And we have to get it right in our first and only try.'

Jonathon Foley TED talk, [*The Other Inconvenient Truth*](#)

Page 103: 'Despite our triumphs, a billion people go to bed hungry.'

Michael Specter TED talk, [*The Danger of Science Denial*](#)

Page 104: 'You can end up feeling depressed by the challenges facing humanity. However, Robert Winston speaks for many when he says 'I don't believe we're doomed.'

Robert Winston, [*Bad Ideas @ The Science Gallery*](#). You Tube

Wonder 5: CERN

Page 106: 'This requires chilling the magnets to -271.3°C – a temperature colder than outer space.'

Richard Gray and Nick Collins, ['Peter Higgs Wins Nobel Prize'](#), *The Telegraph*, October 2013

Page 106: 'In the 1950s a theoretical physicist at Edinburgh University, Professor Peter Higgs, came up with a theory which went some way to explaining the first few milliseconds after the Big Bang and the beginning of the universe.'

[CERN](#) Website

Page 106: 'He wanted to explain how the universe managed to go from being infinitely small to infinitely big in such a short timescale.'

[BBC](#) article on Higgs winning the Nobel Prize

Page 106: 'He proposed there must have been a particle, roughly 180 times bigger than a proton, that would have existed for milliseconds and then disappeared.'

Karl Tate, ['Cosmic Inflation: How It Gave the Universe the Ultimate Kick Start'](#), Space.com, March 2014

Page 107: 'Last year, scientists at CERN successfully identified a HIGGS Boson type of particle, thereby proving fifty years of theoretical science had real value.'

Paul Davies, *The Goldilocks Enigma: Why is the Universe Just Right for Life*, Mariner, 2007, Page 178; Nick Collins, ['What is the Higgs Boson?'](#), *The Telegraph*, October 2013

Page 107: 'As a result of CERN experiments, scientists believe human knowledge has advanced. In 2013 Peter Higgs and his colleague, Francois Englert, were awarded the Nobel Prize.'

Denis Overbye, ['Physicists Find Elusive Particle Seen as Key to Universe'](#), *The New York Times*, July 2012; Paul Rincon, ['Higgs Boson Like Particle Discovery Claimed at LHC'](#), BBC, July 2012

Page 107: 'So why bother doing such work?'

['The Public and Particle Physics'](#), *CERN Courier*, September 1998

Page 107: 'Robert Winston gives a good response when he writes '... of the ten greatest inventions of the last fifty years none of those inventions were goal orientated. Nobody set out to design the laser. Nobody set out to design a microchip that would actually change the way we communicate... And so we have to recognise that it is basic, non-goal orientated science that is important.'

Robert Winston, [Bad Ideas @ the Science Gallery](#)

Page 108: 'One goal was to resolve a scientific problem relating to how laws of physics operated at the beginning of time. There is no way for us to know if this will lead to practical applications.'

This [letter to the New York Times Editor](#) by a chemist, Ayusman Sen, from the University of Pennsylvania in 1984 reveals the issue clearly.

Page 108: ‘But sometimes science produces spin off developments, by-products of the main goal. Tim Berners-Lee, a British scientist working at CERN, developed a system for scientific communication across the world.’

[BBC](#) profile on Tim Berners Lee

Page 108: ‘Perhaps people should think about the power of the internet and how it has transformed their lives when they question the value of pure scientific research.’

David Kaplan, [The Multiverse and Particle Theory](#), You Tube

Page 108: ‘On the other, humanity has particular goals it needs scientific minds to address – such as Millennium Development Goals.’

Robert Winston, [Bad Ideas @ The Science Gallery](#). You Tube

Page 109: ‘The collisions start in October. Until then, at least, we're not all doomed.’

[‘The Large Hadron Collider: End of the World or God’s Own Particle?’](#), *The Independent*, September 2008

Page 109: ‘When the collider experienced delays some scientists postulated that mechanical problems could be because it was sabotaging itself from the future.’

Dennis Overbye, [Large Hadron Collider Being Sabotaged from the Future](#), *The New York Times*, January 2010 (featured on Red Ice Creations website)

Page 109: ‘As far as we know, neither of these scare stories was true.’

Eben Harrell, [Collider Triggers End of World Fears](#), *Time*, September 2008

Page 110: ‘This could be the only part of the story that's left, or we could open a whole new realm of discovery.’

Paul Rincon, [Higgs Boson Like Particle Discovery Claimed at LHC](#), BBC, July 2012

Page 110: ‘Robert Winston accepts science has produced technologies worrying to the public.’

Robert Winston, [Bad Ideas @ The Science Gallery](#). You Tube

Page 110: ‘They believe science is out of control.’

Dan Jones, [Immoral Advances: Is Science Out of Control?](#), *newsscientist.com*, January 2009

Page 111: ‘One recent example is the Measles, Mumps and Rubella vaccine which one vocal medical researcher claimed was dangerous to children’s health. Scientists and politicians failed to get their case across in a confusing media campaign.’

Rebecca Smith, [Andrew Wakefield – The Man Behind the MMR Controversy](#), *The Telegraph*, January 2010

Page 111: ‘As a result some parents chose not to have their children vaccinated and many contracted diseases as result.’

Amelia Hill, [Measles Outbreaks Hit 18 Year High As Effects of MMR Scandal Are Felt](#), *The Guardian*, February 2013

Page 111: ‘Some of these illnesses can prove to be fatal.’

[MMR: Q & A](#), BBC website, April 2013

Page 111: ‘We need to find ways of communicating more effectively with people who are not scientists and to recognise the ethical limits of what we are doing.’

Robert Winston, [Bad Ideas @ The Science Gallery](#). You Tube

Page 111: ‘Think about the logging of vast areas of rainforest for export in South America, or Malaysia;...’

[Politics UK](#) website; William Neuer and Andrea Zarate, [‘Corruption in Peru Aids Cutting of Rainforest’](#), *The New York Times*, October 2013

Page 111: ‘... the effect of chemical pollution on fish populations;...’

[Human Impacts on Marine Environments](#), Science and Learning website (New Zealand)

Page 111: ‘... and the amount of species being lost globally as the human population grows...’

[World Wildlife Fund website](#)

Page 112: ‘Perhaps, we need to find different ways of educating people about the science that part of their lives – and through school curricula emphasize the relationship between science and citizenship.’

Holden and Hicks (2007)

Page 112: ‘In fact, it is difficult to blame science for some of the uses that we have made of it. It was a non-scientist that ordered the dropping of the atom bomb, after all.

[‘1945: US Drops Atomic Bomb on Hiroshima’](#), BBC website

Challenge 5: Future resources; Conserving Our Habitat

Page 113: 'All of these accelerate the demand for more energy.'

Emmott (p39, 2013)

Page 113: 'This places further pressure on the planet's resources. We eat more and use more water and energy. There are also consequences for other species. The World Wildlife Fund estimates between 2000 and 10,000 species are lost every year.'

[WWF](#) website

Page 114: 'Expert on sustainability, Jonathon Foley examines how the planet's resources will have to stretch to meet the needs of a growing population, arguing certain things we are accustomed to having today may become luxuries in future.'

Jonathon Foley, TED talk, [The Other Inconvenient Truth](#)

Page 114: 'No question. And it rivals climate change in importance.'

Jonathon Foley, TED talk, [The Other Inconvenient Truth](#)

Page 115: 'The majority of the 9 billion people on Earth will live with severe pressure on fresh water...'

The Guardian, [Water](#)

Page 115: '... within the space of two generations as climate change...'

The Guardian, [Climate Change](#)

Page 115: '... pollution ...'

The Guardian, [Pollution](#)

Page 115: '... and over-use of resources take their toll, 500 scientists have warned.'

Fiona Harvey, [Global Majority Faces Water Shortage Within Two Generations](#), *The Guardian*, May 2013

Page 115: 'Control over water could become a frequent cause of international conflict, particularly where there is a history of antagonism.'

Rischarde (p84, 2002)

Page 116: 'A number of popular species, including cod and haddock, are in danger of extinction. Fish farming can also create other problems such as disease.'

E. Huff, [Fish Farming Makes Diseases More Virulent](#), *Natural News* Website, December 2009

Page 116: 'We need to an international approach to the problem of conserving fish and to ensure their fishermen understand and respect agreements about when and how much to fish.'

Karl Mathieson, The Guardian, [Can New EU Legislation Protect Fish Stocks?](#), *The Guardian*, December 2013

Page 116: ‘Interestingly, the updated European Union Common Fisheries policy emphasises conservation of stocks by fishermen.’

House of Commons [Report for MPs on Common Fisheries Policy](#), 2014 – 2022

Page 116: ‘From the fishermen’s point of view, policy making has to reflect their views as well and make sense to them.’

Fiona Harvey, [‘MEPs Vote to Ban Discards in Historic Reform of Fishing Policy’](#), *The Guardian*, February 2013

Page 116: ‘Environmental groups like Greenpeace place responsibility for overfishing at the door of large industrial fishing companies.’

[‘The Fishing Laws that Need Fixing’](#), Greenpeace, December 2012

Page 117: ‘The average person in the United States uses around 80 – 100 gallons of drinking water EVERY DAY and most of that ends up in the sewer to keep the sewer system functioning properly.’

Carl Hensman, [‘We Have Better Things to Do with Clean Water than Flush it Down the Toilet’](#), Bill and Melinda Gates Foundation website, March 2013

Page 117: ‘So, your poo is part of a mounting global problem.’

[‘The Enormous Problem of Human Waste’](#), *Asia Sentinel*, July 2012

Page 117: ‘Waste water pollutes natural water supplies if not carefully treated. So too does industrial pollution. Poor sanitation leads to disease such as diarrhoea, which kills around 760,000 children each year.’

[Diarrhoeal Disease](#), *World Health Organisation*, April 2013

Page 118: ‘The third response is the position of more optimistic advocates for science. According to this view we can invent our way out of problems through improved technologies and communications.’

Nicholas Thomson, [‘Terrible News About Carbon Dioxide and Climate Change’](#), *The New Yorker*, May 2013

Page 119: ‘There are 98 oil producing nations in the world, but of those 65 have already passed their peak.’

Rob Hopkins TED talk, [Transition to a World Without Oil](#)

Page 119: ‘The price drop is partly due to battles for market share among oil producing nations and different policies on production by countries like USA (which is importing less oil) as well as a slow-down in the global economy, which led to falling demand for energy.’

[‘Why the Price of Oil is Falling’](#), *The Economist*, December 2014

Page 119: ‘If we are committed to reducing carbon emissions, we cannot continue to burn more and more oil.’

BBC, Scottish Independence, [‘Academics Back Higher North Sea Oil Estimate’](#), August 2014

Page 120: ‘If you look fifty years into the future, the baseload energy drivers will be: fusion, fission, solar.’

Steven Cowley, TED talk, [Fusion is Energy’s Future](#)

Page 120: ‘This could be our best century ever, or it could also be our worst.’

Jonathon Foley TED talk, [The Other Inconvenient Truth](#)

Page 121: ‘Over the next decade or so, depending on how rising new powers behave, these norms will be strengthened or eroded. And that will make the difference between war and peace in the 21st century.’

Fareed Zakaria, [‘Our New International Tension is Global Norms Vs. National Interests’](#), *The Washington Post*, April 2014

Wonder 6: Electronic Gaming

Page 122: 'For him, explaining gaming to those who have no interest in it is difficult.'

Charlie Booker, ['Why I Love Video Games'](#), *The Guardian*, December 2009

Page 123: 'End result: for all the talk of just how many trillion units Modern Warfare 2 has shifted, games strike around half the population as utterly inaccessible: a peculiar situation for a mass-market industry.'

Charlie Booker, ['Why I Love Video Games'](#), *The Guardian*, December 2009

Page 124: 'To that extent, it symbolises the electronic revolution: it proceeds at pace; offers great opportunities – but if you don't keep up, you may be excluded.'

['Dads Can't Keep Up with Their Techno Sons'](#), BBC website, August 2003

Page 124: 'From the rudimentary tennis game Pong, played on early consoles, and arcade platform games, like Space Invaders, gaming evolved in tandem with available technology.'

['History of Gaming'](#), International Centre for the History of Electronic Gaming

Page 124: 'Now, we download them to phones or consoles – or play on-line. Charlie Booker's film, *How Videogames Changed the World...*'

Brooker (2013)

Page 124: '... shows the transformation in technology and the impact games had on people as they developed to their current sophistication.'

Keith Stuart, ['How Videogames Changed the World – Some Thoughts'](#), *The Guardian Games Blog*, December 2013

Page 125: 'Some consoles have been developed to facilitate group and family interaction, to address the perception that gaming was antisocial – the Wii exemplifies this best.'

Rob Crossley, ['Revolution: the Story of the Wii'](#), *Computer and Video Games*, November 2012

Page 125: 'The Entertainment Software Association reported US consumers spent \$21.53 billion in 2013 in America alone.'

[Entertainment Software Association](#) website.

Page 125: 'Gaming has also affected 21st century cinema. Film character Lara Croft began life in video games.'

This is a short book and space is tight. Had there been more room, there would have been discussion of depictions of women in electronic gaming. The article, ['10 Most Offensive Portrayals of Women in Gaming'](#), shows the kinds of sexualised depictions that exist in games. There would also have been space devoted to the issue of 'Gamer Gate', which concerned allegations of misogyny running through the gaming industry. An article that explores this is by Jessica Valenti, ['Gamer Gate is Loud, Dangerous and a Last Grasp at Cultural Dominance by Angry White Men'](#), *The Guardian*, October 2014

Page 125: 'Avatar included an element of strategy and role play in a scenario that seemed to have been drawn from the world of gaming.'

[Avatar](#) website

Page 125: 'In future, there may be more and more interactive experiences that combine both media. Interestingly, gaming makes more money than films.'

The increasing commercial power of games over films is suggested by David Konow, '[GTA V on Track to Make More Money than this Summer's Movies](#)', *TGDaily*, September 2013

Page 126: 'Kids watch Batman at the cinema and then go home and play the game on a console.'

[Batman](#) Website; [GameSpot](#) reported sales of 6 million copies of the Batman: Arkam City game in February 2012; [Box Office Mojo](#) reported worldwide takings of \$1 billion in July 2012;

Page 126: 'Some people even consider gaming a sport.'

Rheana Murray, '[What's it Like to Be a Video Game Athlete on a College Scholarship](#)', ABC News website, November 2014

Page 126: 'Colleges are starting to give E-sports scholarships and E-sports tournaments are held with million dollar prize pots and large on-line audiences...'

Simon Parkin, '[Call of Duty World Championship 2014, How On-line Gaming is Becoming a Spectator Sport](#)', *The Guardian*, March 2014

Page 126: 'But the emerging world of professional video game competition – or eSports – is serious business. This year's Call of Duty tournament has a prize purse of \$1m...'

The article links to the [Gamespot](#) website for its source material

Page 126: 'Elsewhere, last year's prize pot for the fantasy-themed League of Legends championship – arguably the most popular online game in the world today – was \$2m...'

Again, the article links to the [Gamespot](#) website for its source material

Page 126: 'The Economist's Babbage blog recently commented:'

Babbage, '[What Makes Video Games addictive?](#)', *The Economist*, February 2014

Page 127: 'The video game industry is among the fastest growing sectors of America's economy and generated \$25 billion in sales in 2011.'

Joseph Hilgard, Christopher R. Englehardt, and Bruce D. Batholow, '[Individual differences in Motives, Preferences and Pathology, in Video Games, the Gaming Attitudes, Motives and Experiences Scales](#)', *Frontiers in Psychology*, September 2013

Page 127: 'Some studies...'

D. Gentile, '[Pathological Video Game Use Among Youth Ages 8 to 18: A National Study](#)', National Centre for Biotechnology Information (USA), June 2009

Page 127: “The benefits of gaming, however, should not be overlooked. Games have been used to train people to type, to overcome phobias, develop motor skills, teach problem solving, release tension and even exercise.’

Margaret Rhodes, [‘Ben Fry Makes Your Sweaty Fuel Band Runs Look Gorgeous’](#), Fact Company website, February 2014

Page 127: ‘A brand new study suggests they might help those with dyslexia learn to read.’

[‘Video Games “Help Reading in Children with Dyslexia”](#)’, BBC, February 2013

Page 128: ‘Peter Hitchens wrote a *Daily Mail* article on the subject:’

Peter Hitchens, [‘If the Devil Had to Invent a Game, It Would Be This One’](#), *The Daily Mail*, August 2013

Page 128:’ In *The New Statesman*, Member of Parliament, Tom Watson responded:’

Tom Watson, [‘Grand Theft Auto 5, A Giant Targeted Missile of Satire’](#), *The New Statesman*, September 2013

Page 129: ‘In 2009, the BBC reported a dispute between Tom Watson and another MP Keith Vaz, about the game, Modern Warfare II:’

Rory Cellan-Jones, [‘Vaz v Watson, Modern Warfare II’](#), BBC, November 2009

Page 129: ‘The big issue is violence.’

[‘Grand Theft Auto 5 Torture Row’](#), *The Daily Mail*, November 2013

Page 129: ‘But The Independent recently reported on a long term US study on effects on young people of playing violent games.’

[‘Long Term US Study Finds No Links Between Violent Video Games and Youth Violence’](#), *The Independent*, November 2013

Page 130: ‘It should also be said, though, that a body of academic research compiled by academic Karen E. Dill and others over the short period of gaming suggests a correlation between gaming and tendency towards addiction and violence.’

Dill (2009)

Page 130: ‘However, videogames are popular with youth and have many characteristics that make them excellent teaching tools.’

Karen E. Dill, [‘The Influence of Gaming on Youth, The Implications for Learning in the New Millennium’](#), OECD

Page 130: “Although the existing evidence does not offer conclusive answers to questions regarding the effects of different uses of technology on the social development and behaviour of young people, it indeed indicates that its potential harmful impact cannot be overlooked.’

[‘Learning in the 21st Century: Research, Innovation, Policy’](#), Centre for Educational Research and Innovation, OECD website, 2008

Page 130: 'Jane McGonigal gave a TED talk on how gaming is a means to promote democratic attitudes.'

Jane McGonigal, TED talk, [Gaming Can Make a Better World](#)

Page 131: 'Some people worry when big business targets young people...'

[How Marketers Target Kids](#), *Media Smarts*, Canada's Centre for Digital and Media Literacy

Page 131: '... and contributes to a materialistic culture that can adversely affect them.'

[Waking Up to the Problems with Materialism](#), Centre for Confidence and Wellbeing, Scotland

Page 131: 'There are also concerns games can contain the imaginations of young people, rather than release them.'

Nick Collins, [Video Games Can Alter Children's Brains](#), *The Telegraph*, October 2011

Page 131: 'The influence of gaming in the contemporary world was shown in the Wikileaks scandal.'

The [WikiLeaks](#) website is worth noting for all sorts of information; Some on-line news outlets devote whole sections to WikiLeaks: [The Telegraph](#); [The Guardian](#)

Page 132: 'In this view he is seen as a whistle-blower.'

Editorial, [Edward Snowden: In Defence of Whistleblowers](#), *The Guardian*, June 2013

Page 132: 'Others see him as a traitor to his country.'

Jeffrey Toobin, [Edward Snowden is No Hero](#), *The New Yorker*, June 2013

Page 132: 'A 2014 *New York Times* article alleged spies were using people's personal data from apps, like *Angry Birds* (a gaming phenomenon downloaded around two billion times, by the equivalent of a quarter of the human population).'

James Glanz, Jeff Larson and Andrew W. Lehren, [Spy Agencies Tap Data Streaming from Phone Apps](#), *The New York Times*, January 2014

Page 133: 'A recent IPSOS international poll showed how this could happen. More than half of 16,000 people surveyed world-wide did not check terms and conditions before signing up to web products, such as games.'

[Global Trends Survey](#), IPSOS MORI, April, 2014

Challenge 6: Climate Change

Page 134: ‘In 2002 Jean-Francois Rischard’s published a book called *High Noon*, based on work of the International Panel for Climate Change.’

Rischard (p66, 2002)

Page 135: ‘Some experts claim the world is getting unnaturally hotter due to human activity – and that climate change is a global crisis.’

Nafeez Ahmed, [‘A User’s Guide to Civilisation and How to Save it’](#), Pluto Press, London, 2010: the chapter on climate change can be downloaded freely – it shows the extent of political interference in the IPCC process

Page 135: ‘When Al Gore...’

Al Gore, TED talk, [Al Gore’s New Thinking on the Climate Crisis](#)

Page 135: ‘... produced the film *An Inconvenient Truth*...’

Davis Guggenheim, *An Inconvenient Truth*

Page 135: ‘... in 2006, there was a strong reaction from many in the scientific community who disagreed with him.’

Examples of critical reaction to Al Gore include: Stefan Lovgren, [‘Al Gore’s “Inconvenient Truth” Movie: Fact or Hype?’](#), *National Geographic News*, May 2006; Paul Brennan, [‘31000 Scientists Debunk Al Gore and Global Warming’](#), *Newsmax*, May 2008; Amanda Peyser, [‘Al Gore’s Global Warming Rhetoric Put on Ice’](#), *New York Post*, February 2014

Page 135: ‘In September 2013, following another report by the IPCC, environmental commentator, George Monbiot blogged:’

Fifth IPCC Report, 2013, [Summary for Policy Makers](#)

Page 136: ‘The message is familiar and shattering: ‘It’s as bad as we thought it was.’

George Monbiot, [Climate Breakdown](#), monbiot.com, October 2013

Page 136: ‘The most recent IPCC report appears to have consolidated scientific consensus on the matter.’

Fifth IPCC Report, 2013, [Summary for Policy Makers](#)

Page 136: ‘Getting scientific agreement is a difficult enough step, but getting politicians to do something about it is much harder.’

Richard McNider and John Christy, [‘Why Kerry is Flat Wrong on Climate Change’](#), *The Wall Street Journal*, February 2014

Page 136: ‘There is some evidence that governments interfere to ensure its findings do not damage their economic interests, such as fossil fuel emissions.’

Nafeez Ahmed, [‘IPCC Report Diluted Under Political Pressure to Protect Fossil Fuel Interests’](#), *The Guardian*, May 2014: the article shows the extent to which the final IPCC report was changed to reflect various governments’ concerns

Page 136 – 137: ‘Some scientists feel that the alliance of corporate and political interest is stifling the research.’

Jolene Crichton, [‘Brian Cox: Scientists Give False Sense of Debate on Climate Change’](#), *From Quarks to Quasars* website, September 2014

Page 137: ‘How can you persuade the human race to put the future ahead of the present?’

Nick Cohen, [‘The Climate Change Deniers Have Won’](#), *The Observer*, March 2014

Page 137: ‘People block out problems from their day to day lives – taking a ‘We’ll deal with it if and when we have to’ attitude.’

Jennifer McDermott, [‘In 83 Speeches Senator Sheldon Whitehouse Pushes for Climate Change Action’](#), *The Huffington Post*, December 2014

Page 137: ‘A mixture of apathy, self-interest and confusion seem to be the biggest barriers.’

Shannon Hall, [‘Why People Resist the Notion of Climate Change’](#), *Universe Today* website, February 2014

Page 138: ‘Until there is a really compelling case for changing how we live, putting the environment first just won’t be a high enough priority. It is easy to understand why politicians think there is too much to risk in telling us to radically change our behaviour.’

Stefanie Spear, [‘Senate Votes 98–1 That Climate Change Is Not a Hoax But...’](#), *Eco Watch*, January 2015

Page 138: ‘They are elected for a few years whereas the actions needed to achieve sustainability may not bear fruit for thirty years or more. It is also difficult for politicians to see past the next election because we demand immediate answers from them.’

Senator Sheldon Whitehouse, [‘The Price of Ignoring Climate Change’](#), *Reuters*, June 2013

Page 138: ‘The candidate or party promising to lower petrol prices, or increase available family budgets will usually defeat the politician with the best plan for a sustainable environment in fifty years.’

David Horsey, [‘Climate Change Deniers Live in Ignorant Bliss As Seas Keep Rising’](#), *LA Times*, August 2013

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Dan Vergano, [‘UN Climate Report Debated Amid Rollout’](#), *National Geographic*, September 2013

Page 138: ‘Perhaps our lack of appropriate action is storing up even bigger problems for our descendants.’

David Biello, [‘400 PPM: Carbon Dioxide In The Atmosphere at Prehistoric Levels’](#), *Scientific American*, May 2013

Page 138: 'I certainly take this view and believe there should more focus on such issues in school.'

['Keep Climate Change Lessons in Curriculum Urge Petitions'](#), BBC website, April 2013

Page 138: 'Some writers, like Steven Emmott see little hope for humanity.'

Emmott (2013)

Page 140: 'And we could arguably be among the last generations able to do anything to stop the long-term devastation of our planet.'

Ian Goldin and Pascal Lamy, ['Overcoming Short-Termism, A Pathway for Global Progress'](#), *The Washington Quarterly*, Summer 2014

Page 140: 'We have ethnic minority tensions, nuclear proliferation, oil spills, environmental disasters, famine, endangered species, global warming – my fourth graders solved global warming in a week.'

John Hunter TED talk, [Teaching with the World Peace Game](#)

Page 140: '... become involved in political process.'

Jan Eichhorn ['Young Voters and the Referendum – a Legacy'](#), *Centre on Constitutional Change*

Page 141: '... to engage fully in such processes.'

'Andrew Mycock, ['The UK Isn't Ready to Lower the Voting Age'](#), *The Guardian*, October 2014

Page 141: 'Scientists have a culture of collective distrust...'

Naomi Oreskes, TED Talk, [Why We Should Trust Scientists](#)

Wonder 7: The UN Declaration of the Rights of the Child

Page 142: 'One of the most important Global Wonders is the 1959 Universal Declaration of the Rights of the Child.'

[Universal Declaration of the Rights of the Child](#), 1959, UNICEF website

Page 142: 'It subsequently led to the UN Convention on the Rights of the Child in 1989.'

[United Nations Convention on the Rights of the Child](#), 1989, UNICEF website

Page 142: 'Commissioners for young people exist in UN countries.'

[Scotland's Commissioner for Children and Young People](#) website

Page 143: 'In some respects these edicts on children were a continuation of the Universal Declaration of Human Rights, established in 1948.'

[Universal Declaration of Human Rights](#), 1948, United Nations website

Page 143: 'Universal Children's Day takes place on November 20th.'

United Nations [Universal Children's Day](#) website

Page 143: 'It refers to the state and condition of a child's life, to the quality of those years.'

UNICEF website, [Definition of Childhood](#)

Page 144: 'In 2012 it delivered its first guilty verdict, against Thomas Lubanga, leader of the Union of Congolese Patriots, which controlled gold resources.'

David Smith, [Congolese Warlord, Thomas Lubanga Convicted of Using Child Soldiers](#), *The Guardian*, March 2012

Page 144: 'He forced children as young as eleven to fight for him. Some were subjected to torture and rape.'

[International Criminal Court Upholds sentence for Congolese War Criminal Thomas Lubanga](#), *Euronews*, January 2014

Page 144: 'It is harder for kids to learn if they have experienced this kind of uncertainty.'

Sir Harry Burns, [Tenth Kilbrandon Lecture](#), 2012

Page 144: 'One in four young adults were maltreated during childhood. Between one and four children die every ten days in the UK due to child abuse.'

[Action Against Abuse](#) website

Page 145: 'The evidence is clear: many children who grow up in poverty in Scotland are starting school at a serious disadvantage to their classmates.'

[Thrive At Five: Comparative Child Development At School-Entry Stage](#), Save the Children, 2012

Page 145: 'By the age of five, the gap between rich and poor has already determined the parameters in which children might achieve.'

[Growing Up in Scotland](#) website

Page 146: 'The United Nations MDG report shows internationally the percentage of girls receiving primary and secondary education, compared to boys, is improving, though girls still lag behind, especially in later school years.'

UN Report on [Millennium Development Goals](#), 2013

Page 146: 'If fewer girls go to college and university, they have less opportunity to change their economic and social circumstances and are more vulnerable to discrimination.'

[Gender Inequality in Education, Employment and Entrepreneurship](#), Final Report to the MCM, OECD, 2012

Page 146: "... the number of years spent in education between men and women.'

[Gender Inequality in Education, Employment and Entrepreneurship](#), Final Report to the MCM, OECD, 2012

Page 147: "It is a waste of resources if you don't use people like Dai Manju", she says.'

Sheryll Wu Dun, TED Talk, [Our Century's Greatest Injustice](#)

Page 147: 'For WuDunn the 'central moral challenge of this century is gender inequality.'

Sheryll Wu Dun, TED Talk, [Our Century's Greatest Injustice](#)

Page 147: 'More troubling than inequities that exist between genders in education is more basic abuse suffered by women and children – especially the practice of genital mutilation.'

WHO fact sheet on [Female Genital Mutilation](#)

Page 148: 'And women are afraid to move on because they have no means.'

WHO article on [Dr. Christine Kaseba-Sata](#)

Page 148: 'This is the age of "missing women" - an estimated 30 to 70 million of them.'

Madeleine Bunting, [India's Missing Women](#), *The Guardian*, July 2011

Page 149: 'In China alone this amounts to 50 million "missing women".'

Amartya Sen, [More Than 100 Million Women are Missing](#), *The New York Review of Books*, 1990

Page 149: 'In short, greater numbers of women than men die in some parts of the world because of social and cultural factors that lead women to experience poor health and to lack appropriate access to medical treatment.'

Gita Sen and Pirooska Ostlin, [Unequal, Unfair, Ineffective and Inefficient Gender Inequity in Health: Why It Exists And How We Can Change It](#), Report to the WHO Commission, September 2007

Page 149: 'Poverty presents barriers to children, in places stopping them from accessing rights to education.'

UN Report on [Millennium Development Goals](#), 2013

Challenge 7: The Gap Between Rich and Poor

Page 151: 'He says the most important problem that we are facing now today, I think, is rising inequality in the United States and elsewhere in the world.'

John Christoffersen, [Robert Schiller: Income Inequality Is the 'Most Important Problem'](#), *Huffington Post*, May 2013

Page 152: 'Why is this?'

Dorling (p3,2014)

Page 152: 'In sharp contrast, the richest decile hold 87% of the world's wealth, and the top percentile alone account for 48.2% of global assets.'

[Global Wealth Report 2014](#), Credit Suisse, 2014, Page 11

Page 152: 'The report also shows that there are around 4,000 more millionaires in 2014 than in 2013...'

[Global Wealth Report 2014](#), Credit Suisse, 2014, Page 25

Page 152: '... in the next five years there will be almost 20,000 more.'

[Global Wealth Report 2014](#), Credit Suisse, 2014, Page 43

Page 152: It says of trends in inequality:

[Global Wealth Report 2014](#), Credit Suisse, 2014, Page 37

Page 153: 'Not only does inequality slow economic growth, but it results in health and social problems and generates political instability.'

[Global Inequality: Beyond the Bottom Billion](#), UNICEF, April 2011, Page 7

Page 153: 'The same report notes women suffer poverty more than men:'

[Global Inequality: Beyond the Bottom Billion](#), UNICEF, April 2011, Page 23

Page 153: 'The question for us is whether we wish to accept this situation or challenge it.'

[The Economist, Towards the End of Poverty](#), *The Economist*, June 2013

Page 154: 'Authors of *The Spirit Level, Why Equality is Better for Everyone*, Richard Wilkinson and Kate Pickett note some consequences of inequality:'

Richard Wilkinson and Kate Pickett, *The Spirit Level, Why Equality is Better for Everyone*, Penguin, 2010; the quotes have been taken from an extract found in the article, Richard Wilkinson and Kate Pickett, [Yes We Are All in This Together](#), *The New Statesman*, November 2010

Page 154: 'Sir Harry Burns, former Chief Medical Officer for Scotland draws a link between the biological events that lead to poor health and low life expectancy, such as heart disease, and social psychology.'

Peter Hetherington, Harry Burns: [‘We Need Compassion, Not Judgements, About Poor People’](#), *The Guardian*, March 2014

Page 155: ‘We have to deal with early years, we have to deal with teenagers, we have to deal with the health and young people who are being alienated even further, we have to help older people who become isolated.’

Sir Harry Burns TED Talk, [What Causes Wellness](#); similar points are made about health improvements in eastern Europe in Sir Harry Burns, [Tenth Kilbrandon Lecture](#), 2012

Page 155: ‘The poor performance of the United Kingdom in relation to the growing gap between rich and poor has caused widespread concern.’

Jason Beattie, [Breadline Britain: One in Three Now Living in Poverty As Chasm Between Rich and Poor Widens](#), *The Mirror*, June 2014

Page 155: ‘Because of its social, ...’

Kate Pickett and Richard Wilkinson, [‘A 25 Year Gap Between The Life Expectancy of rich and Poor Londoners Is A Further Indictment of Our unequal Society’](#), *The Independent*, January 2014

Page 155: ‘... but also its negative economic consequence.’

Matt Chorley, [‘Growing Gap Between Rich and Poor In Britain Over Two Decades Means the Economy is 9% Smaller Than It Could Be’](#), *The Daily Mail*, December 2014

Page 155: ‘In the year 2000, as part of the celebration of the millennium, the United Nations agreed eight areas of priority for action by 2015, called the Millennium Development Goals.’

UN Report on [Millennium Development Goals](#), 2013

Page 156: ‘The goals are backed by finance from wealthy nations who commit 0.7 per cent of their Gross National Income to Overseas Development Aid.’

Three articles show how the goals are to be funded and the on-going costs: UN Millennium Project, [‘The 0.7% Target, An In Depth Look’](#); *Global Development Blog*, [‘Who’s Going to Pay for Millennium Development Goals’](#), *The Guardian*, January 2012; [The Costs of Attaining the Millennium Development Goals](#), Report for The World Bank

Page 156: ‘For example, research by statistician Hans Rosling shows significant achievements in improving education and treatment of women and also in tackling poverty.’

Hans Rosling, TED talk, [The Good News of the Decade](#)

Page 156: ‘And in a TED talk, Iain Goldin highlights tackling inequality as a key challenge for humanity.’

Iain Goldin TED talk, [Navigating our Global Future](#)

Page 157: ‘Statistics published by the National Literacy Trust show people with poor literacy are more likely to lead lives affected by mental illness and divorce and are less likely to have a career. In short, a person’s literacy affects their ability to lead a fulfilling life.’

[National Literacy Trust Report](#) on effects of poor literacy on life chances

Page 157: ‘The United Nations established the International Day of Literacy in 1965 to highlight a global problem.’

UNESCO [International Day of Literacy](#) website

Page 157: “Among student characteristics, engagement in reading has the largest median correlation with achievement in reading literacy.’

OECD Report, [Reading for Change, Performance Engagement Across Countries](#), 2002

Page 158: ‘Improvements in literacy at any stage of a person’s life can have a profound effect.’

George Dugdale and Christina Clark, [Literacy Changes Lives: An Advocacy Resource](#), National Literacy Trust, 2008

Page 158: ‘And four books a month does seem to be a tipping point.’

Christina Clark and Lizzie Poulton, [Is Four the Magic Number](#), National Literacy Trust, 2011

Page 158: ‘But, it is not just about quantity. Ex-children’s laureate Anthony Browne says ‘Pleasure, engagement and enjoyment of books is what counts – not simply meeting targets.’

Banedicte Cage, [‘Authors Raise Doubts about Gove’s 50 Book Challenge’](#), *The Guardian*, March 2011

Page 158: ‘No matter your background, if you want to give yourself the best chance of success in education, develop your interest in reading. If you want to help others, think about how you can support the project of developing literacy around the world.’

[Close the Gap](#) website

Page 158: ‘Hans Rosling points out the danger of ‘underestimating the tremendous social change in Asia.’

Hans Rosling, TED talk, [The Good News of the Decade](#)

Page 159: ‘And progress in the less developed world as a whole has accelerated. Sub-Saharan Africa—the region with the highest level of under-five mortality—has doubled its average rate of reduction, from 1.2 per cent a year over 1990-2000 to 2.4 per cent during 2000-2010.’

UN Report on [Millennium Development Goals](#), 2013

Conclusion

Page 161: 'Iain Goldin says the future is unpredictable and that people who speculate about it almost always get it wrong.'

Iain Goldin TED talk, [Navigating our Global Future](#)

Page 162: 'It is more difficult when it comes to the future.'

Ian Goldin and Pascal Lamy, ['Overcoming Short-Termism, A Pathway for Global Progress'](#), *The Washington Quarterly*, Summer 2014

Page 162: 'The UN has published trend analysis which projects the human population might be as much as twelve billion by 2100.'

United Nations Department of Economic and Social Affairs, [Probabilistic Population Projections](#) (2012 Revision)

Page 162: 'Environmental groups worry about depleting natural resources, like plant and animal species.'

[World Wildlife Foundation](#) website

Page 162: 'The UN worries about future shortages of water and food.'

United Nations [Water Organisation](#) website

Page 162: 'The sense of injustice felt throughout the world because of this, could lead to conflict.'

Patricia Cohen, ['Global Wealth is Flowing to the Richest, Study Finds'](#), *The New York Times*, January 2015

Page 163: 'Hans Rosling charts great developments internationally in life expectancy and health.'

Hans Rosling, TED talk, [The Good News of the Decade](#)

Page 163: 'Peter Diamandis highlights potential new technologies which could solve the problems of having clean drinking water and have a revolutionary effect where they are most needed.'

Peter Diamandis TED talk, [Abundance is our Future](#)

Page 163: 'And Jurgen Habermas finds hope in the development of the modern era.'

Stuart Jeffries, ['A Rare Interview With Jurgen Habermas'](#), *Financial Times Magazine*, April 2010

Page 163: '... but ultimately unsustainable.'

Niall McCarthy, ['As China's economy rises, what are the advantages and disadvantages of it's growth?'](#) Quora website, April 2012

Page 164: 'There is also the evidence that wealthy nations advocate free markets, but in fact manage their own interests to maintain economic superiority.'

[Constraints to Economic Growth in Developing Countries](#), Economics Help website

Page 164: 'In seventy countries people were on average poorer than they were in 1980. The income of the wretched of the earth hadn't even kept pace with inflation.'

When (p261, 2004)

Page 164: 'Jean-Francois Rischard argues we need to change the way in which we govern global development and manage change.'

Rischard (p157, 2002)

Page 165: 'Financial collapses cut across nations, due to how markets work. And, terrorism weakens the security and identity of countries – as Iraq shows.'

Sama Nakhoul, ['Iraq's Implosion Could Redraw Middle East Boundaries'](#), Reuters News Agency, June 2014

Page 165: 'Robert Winston's Scientific Manifesto links learning in science to other aspects of citizenship through an interdisciplinary approach.'

Robert Winston, *Bas Ideas in Science*, Bantam Press, 2010, Page 518 – 522

Page 166: 'This allows people (including young people learning about science) to reflect on ethical and social consequences of scientific advance.'

John Coggins, ['Let's Work Together to Build New Curriculum'](#), *The Scotsman*, October 2014

Page 166: 'Much of the medical profession did not take his views seriously until Louis Pasteur and Joseph Lister had developed the germ theory of disease, which explained why hygiene was important.'

Wilkinson and Pickett (p11, 2010)

Page 166: 'The drive for efficiency can rupture the relationships between people and organisations they depend on.'

David Boyle and Michael Harris, ['The Challenge of Co-production'](#), NESTA, December 2009

Page 167: 'Tim Kasser says we should, 'Think of materialism as being about three main things: money and what it can buy, appearance and image and fame, popularity, status and power. What holds these values together is the idea of how we appear through the eyes of others.'

Tim Kasser, ['The Real Cost of Materialism'](#)

Page 167: 'Consumerism is programmed to ensure people want more. But in future there will be less. And, it will be owned by a smaller proportion of the global population. Some people think things are coming to a head.'

Andy Coughlan, ['Consumerism is Eating the Planet'](#), New Scientist website, August 2009

Page 168: 'We still call this progress.'

Jules Pretty (pX, 2014)

Page 169: ‘At the same time we need courage to... create the societal policies that will make us more sustainable, healthier and more equitable.’

Phil Hanlon, [How Should We Live?](#), After Now website

Page 169: ‘But schools are measured by other standards which do not necessarily equate to challenges young people will encounter in their lives.’

Paul Coughlan, [How PISA Became the World’s Most Important Exam System](#), BBC, November 2013

Page 169: ‘It demands open-mindedness, making connections between ideas that previously seemed unrelated and becoming familiar with knowledge in other fields.’

Andreas Schleicher, [The Case for 21st Century Learning](#), OECD, 2014

Page 170: ‘Jane McGonigal’s comments on gaming show the potential of active and collaborative learning to solve the challenges of the future.’

Jane McGonigal, TED talk, [Gaming Can Make a Better World](#)

Page 170: ‘John Hunter’s Peace Game is similar, providing a context, where young people undertake important negotiating roles and focus on big challenges.’

John Hunter TED talk, [Teaching with the World Peace Game](#)

Page 170: ‘The Dalai Lama said something like this in 2008.’

The Dalai Lama, [Human Rights, Democracy and Freedom](#), Dalai Lama’s website, 2008

Page 170: ‘We are educating people out of their creative capacities.’

Ken Robinson, TED talk, [Do Schools Kill Creativity?](#)

Page 171: ‘... effective delivery in schools will largely depend on the understanding, ability and motivation of student teachers to help young people make such ‘global connections.’

Holden and Hicks (2007)

Page 172: “... their main global concerns related to issues of: war and peace, pollution of the environment, food and poverty, and relationships between countries.’

Holden and Hicks (2007)

Page 172: ‘One that brings peoples together, understanding that injustice could cause greater division, which could in turn lead to destruction.’

Iain Goldin TED talk, [Navigating our Global Future](#)

Page 173: ‘But, who are potentially our friends.’

Peter Singer TED talk, [The Why and How of Effective Altruism](#)

Page 173: “... there are a very great many circumstances in which populations will fall below selfishness, if selfishness is interpreted as enlightened self-interest.’

Bertrand Russell, [Why Desires Are Politically Important](#), Nobel Lecture, December 1950

Page 174: 'We build better lives and better worlds slowly, painstakingly, and there are no short cuts, just lots of improvements, most small, a few greater, none decisive.'

Banks (p197, 2014)

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