SESSION 7

NEW TECHNOLOGIES

ARE WE PLAYING GOD?

They said to each other, 'Come, let's make bricks and bake them thoroughly.' They used brick instead of stone, and bitumen for mortar. Then they said, 'Come, let us build ourselves a city, with a tower that reaches to the heavens, so that we may make a name for ourselves; otherwise we will be scattered over the face of the whole earth.' But the Lord came down to see the city and the tower the people were building. The Lord said, 'If as one people speaking the same language they have begun to do this, then nothing they plan to do will be impossible for them. Come, let us go down and confuse their language so they will not understand each other.' So the Lord scattered them from there over all the earth, and they stopped building the city.
(Genesis 11:3–8)

When Christian singer-songwriter Sara Groves attended a church seminar on how Christians should respond to new biotechnologies she felt deeply challenged about the fact that so many were failing to engage in crucial debates that were going to shape our future world. Inspired by the speaker, bioethicist Nigel Cameron, she wrote the song 'Scientists in Japan' to help wake up fellow believers to the realities:

Scientists in Japan are making a robot to take your job.
Doctors in France are growing a heart that'll save your mum.
Eyes wide open and your jaw on the floor.
You see science fiction ain't fiction no more…
Who's gonna stay and think about it? Who's gonna stay?

Who's gonna stay?
Everybody's left the room, there's no one here to talk it through

Japan is the world leader in robotic technology, but many people do not appreciate that this is driven in part by anxiety about the country's demographic crisis. Decades of falling birth-rates and increasing lifespans have led to a situation where there are not enough people of working age to provide and care for the burgeoning elderly population with their complex medical needs. In 1950 Japan's population of elderly citizens (65 years and over) accounted for just 4.9% of the total population. By 2014 this had risen to over 25%. [1] By 2050, this is expected to rise to 39.6%. This growth of older people has been matched by a shrinking of the younger population. In 1950 those under 15 made up 35.4% of the total population but this had fallen to 13% by 2014. [2] If the trend continues, it will fall to 8.6% by 2050. Japan's problems are particularly acute but virtually all Western countries now suffer from this same problem to some extent.

Some Japanese scientists have suggested that robot technology may provide an answer to the country's social problems. They could be used in hospitals, provide help for the elderly, be play-friends for children and replace humans in various activities. Japan wants robotics to be for their twenty-first century economy what automobiles were for the twentieth century. Humanoid Japanese robots can blink, smile, walk, talk, express anger and even sing.

One of the newest Japanese robots, HRP-4C, nicknamed Miim, is a female robot programmed to catwalk. It walks, talks and with the help of 30 motors, moves its legs and arms. Its facial expressions are driven by eight motors to make it smile or blink and exhibit anger or surprise. The Japanese image of a robot is that of a friendly helper rather than something to be feared or avoided. So it is certainly not inconceivable, as technology improves, that wealthy elderly Japanese without family support (or with absent or unhelpful children) might turn to robots to care for them in old age. There is already a robot which can tell a

1. World population data sheet: Population ages 65 and older. Population Reference Bureau, 2014 *bit.ly/1u2hoBl*
2. World population data sheet: Population age <15. Population Reference Bureau, 2014 *bit.ly/Zo7IYT*

forgetful elderly person to take their pills, or not to take them twice. A computer or robot's ability to mimic a human convincingly is typically measured using the Turing test, in which a human holds a text-based conversation with an unknown correspondent. If the human cannot tell whether they are conversing with another human or a computer, then the computer has passed the test. The indications are that Japan is not far off achieving this with some of its more sophisticated robots. But robotics is just one of many areas where technology is dramatically impacting healthcare and lifestyles.

New technologies galore

The technologies authorised under the Human Fertilisation and Embryology Act 1991 were initially aimed at providing treatments like in vitro fertilisation (IVF) and gamete intra-fallopian transfer (GIFT) for infertility. But in doing so, the Act also allowed embryo experimentation, donation of eggs and sperm and surrogacy, so that a child can now effectively have five different parents. Now we have embryo selection, pre-implantation genetic diagnosis, embryonic cloning, genetic engineering, animal–human hybrids and the production of three-parent embryos. 'Saviour siblings' involve producing genetically healthy brothers or sisters to be a source of tissue or material for a baby or child with a disease caused by a bad gene.

Kate and Rupert had a baby with achondroplasia (a severe form of dwarfism) and were advised after investigation that this was caused by a rare gene Kate carried that she could potentially pass on to other children. They were advised to undergo pre-implantation genetic diagnosis (PGD) whereby embryos carrying the gene could be identified after IVF in a laboratory and discarded rather than being implanted. The couple however, believing that life should be shown the utmost respect from the time of conception, felt that this amounted to destroying lives just because they carried a disability. However rather than taking the chance of having another affected baby they instead arranged to adopt.

Most of these so-called 'advances' have been justified on the grounds that they will prevent human suffering. Some argue that human embryos might prove to be a source of stem cells for transplant to treat people with diseases like Parkinson's disease, diabetes and damage to the spinal cord. Some scientists would like to push the boundaries much further, promoting *animal–human hybrids* as an extra cheap source of stem cells for research given the difficulties and dangers of procuring large numbers of human eggs. Adult stem cells, derived from bone marrow, umbilical cord or (now) a whole host of other tissues have been used in treatment of blood diseases like leukaemia for many years and are now being trialled for a broad range of diseases involving other body tissues.

Advances in *adult stem cell technology* have also been behind hopes that whole organs may in future be able to be grown in the laboratory on synthetic templates and lessen the need for organ donation. *Nanotechnology* opens the possibility of producing tiny molecular machines that will enable us to 'engineer' minute biochemical systems at an atomic level. *Cybernetics* involves merging human tissue with mechanical or electrical devices in order to restore lost function or enhance human abilities and is no longer the stuff of science fiction. With retinal implants, cyborgs – part human, part machine – may be just around the corner. Some scientists, among them Oxford academics Nick Bostrom and Julian Savulescu, suggest that we might be able to use nanotechnology and cybernetics together to create 'trans-humans'. In other words they would like to take control of and develop human evolution to produce a better species. Now that we have unravelled the human genome, and are growing in our understanding of what genetic malfunctions might underlie various diseases, others argue that it might be possible to engineer genes in living humans – from embryos to adults – to correct these. New drug treatments are being developed not just to treat diseases but also to 'improve' human performance to new levels for example Viagra to enhance sexual performance and modafinil to heighten concentration and memory.

What drives us?

Bioethicist Robert Song argues that the development of new technologies is driven 'not primarily by commerce, government or health-related goals but the deep cultural desires and needs that technology fulfils'. [3] He attributes the origin of this drive to the 'Baconian project' (named after scientist Sir Francis Bacon (1561–1626)), which 'considered suffering as pointless and sought to eliminate it by the instrumental control of nature'. He makes three key observations about new technologies:

Mixed consequences

Any given technology can be both good and bad. A computer can be used to word-process a ground-breaking article for a scientific journal, or to produce and access pornography or disseminate viruses or information about bomb-making. Drugs can cure or kill. We cannot be Luddites, rejecting all technology. After all, we all benefit from anaesthetics and drive cars. So the real question is how we discern between good and bad uses in order to decide what to accept and what to reject.

Discerning good and bad

It can be difficult to discern sometimes between what are good and bad uses of technology. It is not necessarily black and white. Is there a difference, for example, between using a prosthetic limb to restore the lost ability to walk and using a more developed version to enable someone to run at a speed faster than the unaided human body is capable of? Does it matter if a retinal implant is used to restore lost sight or to confer superhuman eyesight?

A Pandora's Box

There is the feeling that technological advances are essentially unstoppable. In other words, having opened the Pandora's Box of possibilities, we might end up with consequences that are impossible to control. The *Terminator* series of films depict an apocalyptic future where humans create a worldwide computer system called Skynet,

3. Song R. Biotechnology and theology. *Triple Helix* 2006; Winter pp. 12–13. *bit.ly/17st898*

which ultimately seizes control of the world and creates robots designed to destroy the human race. Other films such as *Gattaca* (1997), *Coma* (1978), *Extreme Measures* (1996), *Robocop* (1987, 2014), *The Bourne Legacy* (2012) and *Limitless* (2011) have explored and dramatised the possibilities of genetic engineering, organ transplantation, stem cells, cyborgs, and mind-enhancing drugs.

Nanotechnology, cybernetics, stem cells, new genetic technologies, performance enhancing drugs: these technologies are already with us and are often the subject of government consultation, media scrutiny and new legislation. Ironically, these questions are often not asked until the technology in question is already being used. We have moved on. The old chestnuts of abortion and euthanasia, as bioethicist Nigel Cameron has observed, were about 'taking life'. New genetic technologies, nanotechnology and cybernetics are about 'remaking' or 'faking' life and we need great wisdom in using them. Technology can be wonderful and exciting and offer great benefits. But it can also be frightening and damaging. Christians must therefore be careful and clear-minded in the way that we use technology and in our attitudes to new developments.

Barry was a successful Christian businessman planning for retirement who had invested his resources wisely and provided well for his wife and children. He had recently received advice about a new biotechnology company which was apparently starting some ground-breaking research using embryonic stem cells. The promises of miracle cures were enticing and putting his money into research that would benefit others seemed to resonate with his faith. But Barry was concerned that the developmental stages of the research involved harvesting human eggs using potentially dangerous hormonal drugs and creating animal human hybrid embryos. He decided that it would be wrong to profit from such research and invested his money instead in a company developing long-lasting hip replacement implants.

Science and Christian faith

Science itself is based on a number of 'faith presumptions' that make perfect sense if one believes in God, but which cannot actually be proved scientifically. In order to do science, for example, we must believe that there is a real world of matter out there that is accessible and correlated to our senses. We must believe that our minds are giving us reliable information about this world and that language and mathematics, reason and logic can all be applied to the world of our senses. In fact, the most basic assumption of the sciences is the uniformity of nature – the expectation that the present and future will be like the past. This is a belief which cannot be proven by observation alone.

CS Lewis (1898–1963) explains the connection between Christianity and science in saying that 'men became scientific because they expected law in nature and they expected law in nature because they believed in a law giver'. [4] This explains why many of the most famous scientists in history believed in the existence of God or were Christian believers:

- *Sir Francis Bacon* (1561–1626) was a philosopher who is known for establishing the scientific method of inquiry based on experimentation and inductive reasoning. In *De Interpretatione Naturae Prooemium* (1603), he established his goals as being 'the discovery of truth, service to his country, and service to the church'. He rejected atheism as being the result of insufficient depth of philosophy.

- *Nicolaus Copernicus* (1473–1543) was a Polish astronomer who described mathematically how planets orbited the sun. From 1497 he also served as a canon in the Roman Catholic Church.

- *Johannes Kepler* (1571–1630) was a brilliant mathematician and astronomer who established the laws of planetary motion, but also a sincere and pious Lutheran, who described the scientific process as 'thinking God's thoughts after him'.

4. Lewis CS. *Miracles*. Collins, 1947 p. 110

- *Galileo Galilei* (1564–1642) is often remembered for his conflict with the Roman Catholic Church, particularly over his claim that the earth orbits the sun rather than the other way round, but he expressly said that the Bible cannot err. He saw his astronomic system as an alternate, more accurate interpretation of the biblical texts.

- *René Descartes* (1596–1650), the French mathematician, scientist and philosopher, has been called the father of modern philosophy. He had a deep religious faith along with a resolute, passionate desire to discover the truth: 'I think therefore I am'.

There is space only to mention later household names, who all greatly furthered our scientific understanding, while also holding sincere Christian faith: Robert Boyle (1627–1691), Isaac Newton (1643–1727), Michael Faraday (1791–1867), Gregor Mendel (1822–1884), Max Planck (1858–1957) and Albert Einstein (1879–1955) who famously exclaimed that 'God does not play dice with the cosmos' and that 'Science without religion is lame, religion without science is blind'.

Christianity and medicine

Given that medicine is a branch of science, we would expect Christians to be influential there also. They are. Ever since Jesus sent out his disciples to preach the kingdom of God and to heal (Luke 9:1–2, 10:9), Christian doctors motivated by Jesus' teaching and example have been profoundly influential in shaping healthcare's history. Starting with Luke the Physician who wrote Luke's Gospel and Acts, many other Christian doctors have followed in Christ's footsteps to meet the spiritual and physical needs of a suffering world. Medicine also owes a huge debt to the work that was motivated by people of faith.

Ambroise Paré (1510–1590) is regarded as the father of surgery and is famous for the saying, 'I dressed the wound, but God healed him'. Edward Jenner (1749–1823), who discovered vaccinations, Louis Pasteur (1822–1895), who introduced antiseptics and Joseph Lister

(1828–1912), who applied Pasteur's techniques to surgery are household names.

James Simpson (1811–1870) was the first to use chloroform in childbirth, but when asked about his greatest discovery, said that it was realising that he was a sinner and that Jesus was his saviour. James Paget (1814–1899), remembered for 'Paget's disease'; Thomas Barnardo (1845–1905), founder of Barnardo's Homes; Thomas Sydenham (1624–1689), 'the English Hippocrates'; the master clinician William Osler (1849–1919) and missionary doctor David Livingstone (1813–1873) are others. There is no space here to include details of the many other famous names, including: Ida Scudder (1870–1960), Herman Boerhaave (1668–1738), Thomas Hodgkin (1798–1866), Charles Bell (1774–1842) and many others. All these made an enormous impact on the development of healthcare and all were believers in Jesus Christ. There are yet more doctors and health professionals known only to their grateful patients, who have made substantial contributions in quiet corners beyond the reach of historians.

This brief survey shows that Christians have always been deeply involved in scientific discovery and medical innovation, motivated by their faith and the teaching of Scripture. So let's look further at what the Bible says about how the issue of new technologies, and see what principles we can draw from this.

Divine stewardship

In Genesis 1, God announces his intention of making man and woman in his own image, so that 'they may rule over the fish in the sea and the birds in the sky, over the livestock and all the wild animals, and all the creatures that move along the ground' (Genesis 1:26). God makes human beings stewards over creation so that they can care for the earth with his delegated authority. After creating humans, he 'blessed them and said to them, "Be fruitful and increase in number; fill the earth and subdue it"' (Genesis 1:28). This was not an invitation to strip the earth and to plunder mineral resources,

plants and animals for selfish ends. This delegated authority involved caring for the earth with the same tender love that God himself would use. It was not a licence to exploit but a command to protect and develop. They were to use their skills for the benefit of human beings and also the planet.

While the Fall (Genesis 3) introduced frustration and made work toilsome, it did not remove the stewardship mandate. In the very next chapter we see the development of scientific knowledge and technology. Jabal was 'the father of those who live in tents and raise livestock' (Genesis 4:20). Jubal was 'the father of all who play stringed instruments and pipes' (Genesis 4:21). Tubal-Cain 'forged all kinds of tools out of bronze and iron' (Genesis 4:21). Nimrod was a 'mighty warrior' and built cities (Genesis 10:8–10). So we have the beginnings of agriculture, farming, animal husbandry, metallurgy and the use of the technology to develop distinctive cultures through, for example, musical instruments.

The detailed descriptions God gave for the construction of the tabernacle, and later Solomon's temple, laid plans for complex construction, needlework and metal work to provide the structures, their furnishings and contents. We are told that Bezalel, who was instructed with the task of decorating the Israelite tabernacle, was 'filled with the Spirit of God, with wisdom, with understanding, with knowledge and with all kinds of skills – to make artistic designs for work in gold, silver and bronze, to cut and set stones, to work in wood, and to engage in all kinds of crafts' (Exodus 31:3–5). Bezalel was a Spirit-filled technologist. Similarly Huram, who was commissioned by Solomon to provide all the metal work for the temple, was 'highly skilled and experienced in all kinds of bronze work' (1 Kings 7:14). Solomon's acclaimed wisdom, also a gift of God, included a sound knowledge of science gained from careful observation:

> *'He spoke about plant life, from the cedar of Lebanon to the hyssop that grows out of walls. He also spoke about animals and birds, reptiles and fish. From all nations people came to listen to Solomon's wisdom, sent by all the kings of the world,*

who had heard of his wisdom.'
(1 Kings 4:33–34)

Technology – good and bad

This does not of course mean that all God-given technology will automatically be put to good use. Metal may be employed to make pruning hooks and ploughshares to feed a hungry world. But it can equally be fashioned into spears and swords to kill (Isaiah 2:4; Joel 3:10; Micah 4:3). Noah, on God's instruction, built an ark which was to be an instrument of salvation (Genesis 6). But just a few chapters later, men use technology to build the tower of Babel in defiance of God to 'make a name for ourselves' and to avoid being 'scattered over the face of the whole earth' (Genesis 11:3–4). In response God confuses their language and scatters them over the whole earth on the grounds that if they are allowed to continue without restraint 'nothing they plan to do will be impossible for them' (Genesis 11:6). In his illuminating book *Babel's Shadow: Genetic Technology in a Fracturing Society* (2001), science writer Pete Moore uses a metaphor of a new tower of Babel, with 'technology man' saying: 'Come let us build ourselves an industry... so that we may make a name for ourselves, build future generations to our own specifications and not be afflicted by any disease or illness'.

Tyler was a lively boy who suddenly became unwell at the age of three and was found to have a very rare form of cancer. The disease responded to chemotherapy but as a consequence Tyler's bone marrow was very seriously damaged and he required a bone marrow transplant to effect a cure. Thankfully a donor was found and Tyler's bone marrow was able to be replenished from a sample of umbilical cord blood that had been donated by another couple during the normal birth of their child. Now ten years later he remains free of disease and his parents are very grateful for the technology that was able to save him.

Moore stresses our need to be aware of pressures from those with an agenda: parents for flawless babies, professionals to deliver these to specification and health economists to reduce the number of individuals suffering from expensive, chronic disability. He argues that genetic technology has potential for good but only if we are prepared to use it in a spirit of humility and concern for our neighbour. John Wyatt writes: 'Babel symbolises the myth of technology which recognises no limits to human technical possibilities – technology that is used to seize God's rightful place as creator, and to overturn creation order.' [5] The men who built the tower of Babel were driven by a desire for technological creativity without bounds. They wanted to throw off what they perceived to be divine shackles and 'play God'. God's intervention to stop them was not only an act of judgment, but also one of mercy and grace aimed at stopping them destroying themselves. They had fallen prey to what in Greek tragedy was called 'hubris' – arrogant ambition and pride that ultimately caused the transgressor's ruin.

Babylon was famous for its temple towers called ziggurats, with foundations in the underworld and their tops, as they thought, in the heavens. This was of course self-deception. This showpiece of human endeavour, this wonder of the world, was called Babel from the Hebrew word for 'confuse' or 'jumble'. We can perhaps today understand the city and the tower as a bid for human security, self-achieved by technological advance. That is not the plan for mankind the Bible tells us about at all, and as in Greek tragedy, hubris always ends in tears.

Principles into practice

So how are we, as Christians in the twenty-first century, to approach the new biotechnologies? There is not space to deal with each technology in any detail, so let's instead try to build a framework of biblical principles which we can apply in each case.

5. Wyatt J. *Matters of life and death*. Nottingham: IVP. 1998, p. 68

Engage with the world

We must pray to be like the 'Men of Issachar' (1 Chronicles 12:32) who both understood the times and knew what to do. John Stott has popularised the principle of 'double-listening'. As Christians we must approach the world with the Bible in one hand and the newspaper in the other – listening both to God's word and God's world. Sometimes Christian scientists are more comfortable with God's world than God's word, and Christian theologians vice versa – but we need to bring them together. There is a lot of hard thinking that needs to be done. As Sara Groves asks in the song with which we began this chapter, 'Who's gonna stay and think about it?'

Don't depend on secular ethics

We must realise that ethical approaches based on a secular worldview are inadequate for dealing with these dilemmas. We cannot simply rely on uncritically accepting the world's principles. Much undergraduate ethics teaching is now dominated by the so-called 'four principles' approach of Tom Beauchamp and James Childress, two ethicists from the Kennedy Institute of Bioethics at Georgetown University in Washington DC. These men established a framework for resolving ethical dilemmas by applying a checklist to any proposed course of action. The four principles of beneficence (doing good), non-maleficence (not doing bad), autonomy (respecting free will) and justice (being fair) – the so-called 'Georgetown mantra' – provide very little meaningful assistance and can in practice be used to justify just about any course of action. It's not enough to say that we should just do good, respect choice and act fairly.

How are we to define 'good', 'bad' or justice without any agreed moral framework? Professor Len Doyal of Barts and the London Hospital, for example, has argued in the *British Medical Journal* that euthanasia is justified on the basis that death is a 'benefit' for some people. What do we do when choice and justice conflict? And what is it that defines a person to whom we owe these responsibilities? Are humans with severe dementia 'persons' with rights? Are fetuses? Are embryos? These key questions need to be answered from a biblical perspective first.

Hold onto truth and unity

We must hold on to both truth and unity. When Jesus prayed for his disciples, and all of us who would ultimately believe because of their testimony, he asked for two things: that God would sanctify them in his truth, and that they would be one (John 17:17, 22). Throughout church history Christians at different times have invariably sacrificed either truth or unity for the other. It is tempting to value truth above unity and retreat into escapist ghettos of like-minded people – to build our fortresses and shut the heretics out. It is equally tempting to say that truth doesn't really matter and to tolerate a diversity of mutually exclusive views so that eventually we have sections of the church being indistinguishable from the world in their beliefs and behaviour – what Jesus called 'tolerating Jezebel' (Revelation 2:20).

Emphasising truth over unity leads to schism, splits and division; but emphasising unity over truth leads to compromise. It is far more difficult to get together with other Christians with whom perhaps we disagree strongly and talk it through together. Holding truth and unity in tension requires courage, commitment and love.

Embrace a biblical view of humanity

We need to embrace a truly biblical anthropology, a biblical view of humanity. As we saw in chapter one, Humans have great value because they are made in the image of God, and as Thomas Sydenham taught his medical students, because the Son of God chose to become a man and thereby gave humanity a unique dignity.

This reminds us again that we are God's special creations, but also fallen creatures in need of redemption. We are not just the product of matter, chance and time in a godless and purposeless universe, but the product of intelligent divine design. We are godlike beings made for the purpose of knowing, loving and serving our creator forever.

Know the limits

We need to understand that there are limits to what we can legitimately do technologically to human beings. John Wyatt,

Emeritus Professor of Neonatology at University College Hospital London, has captured these truths in his book *Matters of Life and Death*, in describing human beings as 'flawed masterpieces'. On the one hand we are masterpieces made in the image of almighty God – analogous to the creation of a great painter or sculptor. On the other hand, perhaps like a great masterpiece, we have become cracked and flawed over time – needing restoration and ultimately re-creation. In attempting to restore the original in this life we must be guided by the creator's intentions, to the extent that we understand them. This teaches us a profound truth about how far we should go in restoring the image as opposed to enhancing it – with profound implications for how we use technologies like the new genetics, cybernetics and nanotechnology. Likewise we have to be realistic in recognising that there will always be limits to our powers of restoration.

Danielle developed diabetes in early childhood that proved very difficult to control. Injections failed to maintain her sugar levels in a safe range and the family were offered the use of an insulin pump that revolutionised her treatment and will help ensure that she does not develop early complications for her disease. Whilst they remain thankful for her treatment they also hope that someday in the future other treatments for diabetes – perhaps involved transplants of insulin producing cells – will become available that might cure her completely.

Keep an eternal perspective

We must keep an eternal perspective. The ultimate goal of some scientists is immortality and the elimination of disease – and the most extreme among them believe that perfect health and unlimited lifespans are within our grasp using some of these new tools. Of course, they have no choice but to see their ultimate hope in technology, because if you believe that man is nothing but a clever monkey and that death is the end, then there is no other hope than technology.

But as Christians, while we value the blessings of medicine, we look forward ultimately to the resurrection rather than the genetic revolution or cybernetics for our restored bodies. As we get older, and perhaps begin to suffer more as the consequences of the Fall are played out in our deteriorating bodies, we look forward to our new bodies even more. We need to be good stewards of technology and embrace and develop it as the gift of God but we should not imagine that it will provide all the answers. Much as we delight in its blessings and seek to use it in the loving service of others we must not seek to 'build heaven on earth'.

Love your neighbour

We must learn to embrace a wider love. Jesus told the parable of the Good Samaritan in response to the question 'Who is my neighbour?' (Luke 10:25–37). In telling the parable he taught the expert in the law what it was he needed to do to be a neighbour even to those with whom he felt no human bond. His neighbour was someone of another culture, another community, with whom he had no relationship, and in fact whom he despised, but nonetheless with a need he could meet.

The first century Jews were tempted to view the world under the principle of 'universal otherhood' – that is that we owe no responsibility to those outside our immediate community. By contrast Jesus taught that real love of neighbour means 'universal brotherhood' – all members of the human race are our brothers and sisters – to whom we have responsibility if we have the power to help them. And this must surely include not only enemies, but also those whose humanity we are most tempted to doubt.

The baby with special needs trapped inside a non-functioning and dying body is as valuable as the greatest athlete. The embryo in the Petri dish is as important as the scientist looking down the microscope. The person in a persistent vegetative state is as important as the member of the intensive care team. The child scraping an existence on a rubbish heap is as important as a world famous scientist. In today's global village this also brings in the

dimension of the global poor. What right have we to expensive technologies when others equally made in the image of God do not have access to life's basic necessities? God is a God of justice and demands that his people act justly (Micah 6:8).

Don't let ends justify means

We must keep ends and means in balance. In God's economy the end never justifies the means – we must do God's work God's way (Romans 3:8). It can be very tempting to dispense with biblical principles such as the sanctity of life or the purity of the marriage bond in finding solutions to some of the vexing challenges in medicine and society. While recognising that there is 'a time to die' (Ecclesiastes 3:2) and that there are limits to treatment we do not have the right to take innocent human life – and especially not the most vulnerable human life there is – in pursuit of what is perceived to be some greater good.

This principle has profound implications for what we do with fetuses and embryos in particular in seeking treatments for degenerative diseases like Parkinson's, diabetes and some forms of dementia. If we ignore it we will reap the whirlwind.

Focus on the cross

In all this we must keep the cross of Christ central – being prepared to follow in the footsteps that Jesus himself walked (1 John 2:6). Carrying the cross means two things. First it calls us to stand up for the truth whatever the world may throw at us – to risk reputation, credibility and career if the situation calls for it. The apostle Paul promised Timothy that 'all who desire to live a godly life in Christ will be persecuted' (2 Timothy 3:12, ESV). This may not mean imprisonment or physical abuse but could well involve loss of reputation or opportunity. This is not easy – and the bottom line is that when we speak out on many issues we will invite both the ridicule and the wrath of all sides. But this is what we should expect – it was Jesus himself who said 'the world hates me because I testify to it that its deeds are evil' (John 7:7). We must speak out both inside and outside our Christian community (Proverbs 31:8–9).

But carrying the cross also involves being part of the solution. It is true that Jesus called the world to repentance, but then he also carried the burdens of that sinful world to the cross. Jesus did not live in blissful disengagement from the world, like the Buddha, nor was he unmoved by human suffering like the God of Islam. No, by contrast his life was one of painful engagement and involvement. He became part of the solution – in fact Jesus *is* the solution! This must surely mean that we must be committed as his followers to fulfilling our role as God's stewards, using our God-given gifts and abilities in God's way to help provide just and compassionate solutions for human suffering whatever it may cost. That is what we need to work towards.

This is a high calling indeed. But God never calls us to any task that he does not also provide us with the means of grace to fulfil. Nor does he allow us to face any temptation without also providing us with the means to resist (1 Corinthians 10:13).

> *Now may the God of peace, who through the blood of the eternal covenant brought back from the dead our Lord Jesus, that great Shepherd of the sheep, equip you with everything good for doing his will, and may he work in us what is pleasing to him, through Jesus Christ, to whom be glory for ever and ever. Amen.*
> (Hebrews 13:20–21)

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THE HUMAN JOURNEY

THINKING BIBLICALLY ABOUT HEALTH

NEW TECHNOLOGIES

ARE WE PLAYING GOD?

SESSION AIM

To understand the risks and benefits of new technological developments, and use biblical principles to consider how we should assess them.

ICEBREAKER

Imagine yourself as a 120-year-old. What would your life be like? How might the world have changed?

WATCH THE DVD

▷ NEW TECHNOLOGIES: ARE WE PLAYING GOD?

Opening verses: Genesis 11:3–8

DVD KEY POINTS

New technology is dramatically impacting healthcare and lifestyles. We have embryo selection, pre-implantation genetic diagnosis, embryonic cloning, genetic engineering, animal-human hybrids, three-parent embryos.

These are often justified on the grounds that they will prevent human suffering.

'Remaking', 'faking' and 'taking' life

What does the Bible say?

- Genesis 1 – God makes human beings stewards over the whole of creation
- Genesis 4 – The development of scientific knowledge and technology

Christianity and science

- Many great scientists were Christians (eg Sir Francis Bacon, Kepler, Mendel)
- Many great doctors were Christians (eg Paré, Jenner, Simpson)

Good and bad uses of technology

- Noah builds the Ark (Genesis 6–8)
- Tower of Babel (Genesis 11)

Nine biblical principles:

- Be like the men of Issachar (1 Chronicles 12:32)
- Don't rely on the world's principles
- Hold onto truth and unity (John 17:17, 22)
- Embrace a biblical view of humanity (Genesis 1:27)
- Recognise the limits
- Keep an eternal perspective
- Embrace a wider love ('Who is my neighbour?' Luke 10:29)
- Don't let ends justify means (Romans 3:8, 6:1–2)
- Focus on the cross (Philippians 2:5–11)

Summary

Like Jesus we must be committed to fulfilling our role as God's stewards, to use our God-given gifts and abilities in God's way to help provide just and compassionate solutions for human suffering whatever it may cost.

EXPLORE

Key passages: Genesis 1:26–28; Genesis 11:1–9
Use these, and any other relevant passages you can think of, to help you discuss the following questions.

1 How are new medical technological developments viewed in society and reported in the press? What view of science does this promote?

2 What kind of attitude did the people have in building the Tower of Babel? What's wrong with that? Have you seen this attitude in society today?

3 What do you think we can learn about the use of technology from the story of the Tower of Babel?

4 How should we decide when a development in medical technology is worthwhile and when it is not?

5 *'Metal may be employed to make pruning hooks and ploughshares to feed a hungry world. But it can equally be fashioned into spears and swords to kill.'*

Should we ever put any technological developments 'out of bounds' or is it more a case of using all technology wisely?

6 Should Christians make use of technology that has been developed through unethical research (eg research carried out on embryos)?

GO FURTHER

- Talk to friends about the uses and abuses of new technologies.
- Ask someone to speak at your church on the ethical and moral challenges of a particular new technology.
- Decide on the principles you will personally employ about using new technologies in your own life.

PRAY

Pray all together or in smaller groups about what you've learned in this session. You may like to use these points as a guide:

- Give thanks that technological advances make it possible to treat previously fatal conditions.
- Ask for God to restrain human arrogance in developing technologies just because they are possible.
- Pray for Christians to be a voice of wisdom and restraint in the use of technology.

GLOSSARY

- **Biotechnology**: The use of living systems and organisms to develop or make products deemed to be useful.
- **In vitro fertilisation (IVF)**: a process by which an egg is fertilised by sperm outside the body (in a laboratory). Usually a number of embryos are created, and a maximum of two are implanted while the rest are frozen or destroyed.
- **Pre-implantation genetic diagnosis (PGD)**: Genetic profiling of embryos produced using IVF before they are implanted in the womb. This is used to identify embryos with hereditary conditions such as Down's syndrome, Huntington's disease or cystic fibrosis.
- **Stem cells**: Simple, unspecialised cells with the potential to become any other cell in the human body.
- **Surrogacy**: An arrangement where a woman carries and gives birth to a baby for a couple who are unable to conceive or carry a child themselves.

To continue thinking about the topics raised in this session read chapter seven of *The Human Journey* book: New Technologies – Are we playing God?

More resources on New Technologies are available at *www.humanjourney.org.uk*