

WEEK 3: IS ANYBODY THERE?

HUMAN IDENTITY AND CHOICE

Day 1: Introduction

Having explored the immensity of the universe and the question of our origins, we now turn to the most complex and mysterious part of God's creation: ourselves. The study of neuroscience has uncovered many mysteries about how our brains work, provoking new questions about our identity. What makes us human? Are our apparently free choices simply the products of our genes and environment? Are spiritual experiences merely "in our heads"? Now more than ever, Christians must be equipped to address these questions, along with the ethical questions that medicine and research raise. How should we use the new technologies that are emerging?



Take 10 or 15 minutes to complete the following activities.

1. What makes you you?

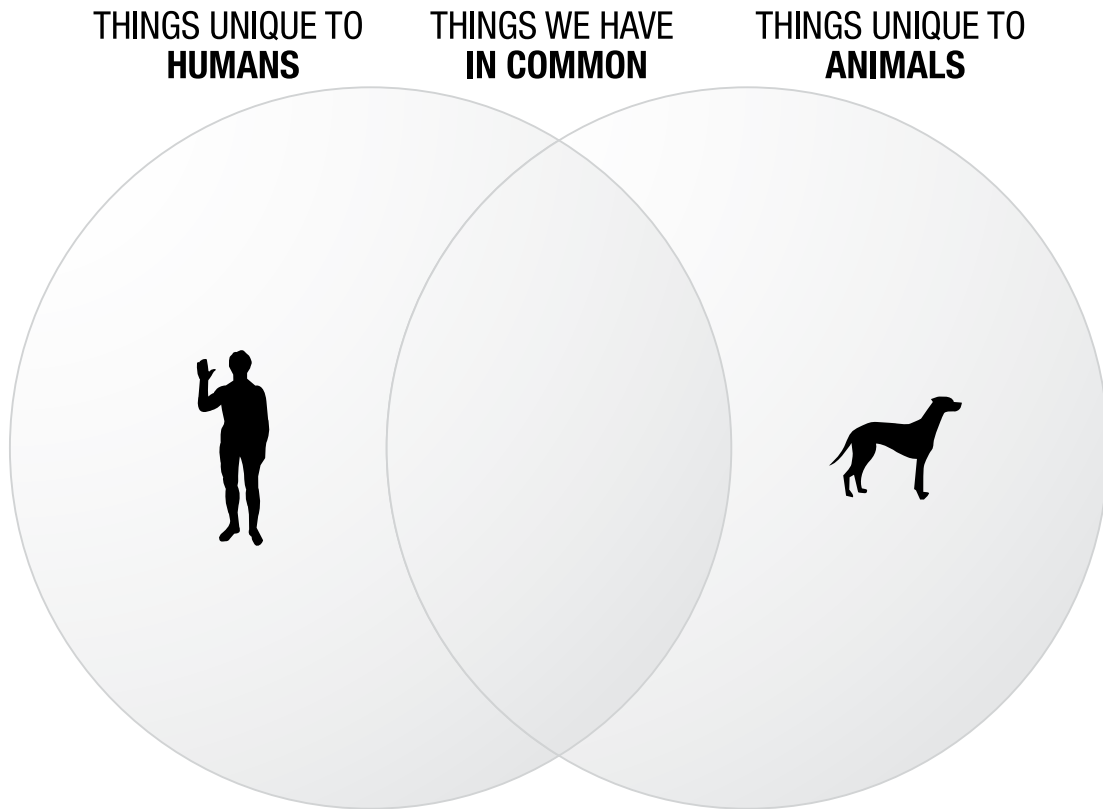
Think about what makes you who you are (your physical characteristics, talents, interests, likes and dislikes).

List a few personal traits that you might share with a family member. Do you think these traits were passed on to you in your genes or through the way you were raised?

List a few personal traits that you think came from another source (something learned, an experience you have had, something from your physical or cultural environment).

2. What makes you human?

Fill in the Venn diagram below to illustrate some similarities and differences between humans and other animals.



Based on your brainstorming, write a brief definition of what makes someone “human”:

3. Decisions, decisions

How do people make ethical decisions (decide what is right and wrong)? List some sources of people’s ethics below.

Specifically Christian sources	Other sources (Christians might also use some of these)



Watch Test of FAITH, Part 3 (one-half hour)



Review Part 3

The following sheet summarizes Part 3 of the DVD. To help you review what you have seen, fill in the blanks below:†

CHAPTER 1

Some scientists claim that we run on rails determined by our physical characteristics, and that spiritual experiences are just a by-product of our

But neuroscientists who are also Christians believe that we are made in the image of God.

When we are having a religious experience, something happens in our brains.

But that doesn't prove that religious experience is **just** what is in our brain. The experience also means something else.

And it is possible to artificially stimulate certain parts of the brain, and make someone feel angry or sad.

But that doesn't mean that it isn't possible to feel happy or sad for genuine reasons!

CHAPTER 2

We are not just determined by our biology.

Our experiences and the live in also play a role in shaping who we are.

And these scientists believe that the brain is more than the sum of its parts.

You could say that **our minds and personalities** **from the complex structure of the brain.**

But they can't be defined by just looking at the cells in the brain.

It's like music that emerges from the strings of an instrument – it can be described in a mechanical way, but it has a much deeper meaning than vibrations of strings.

CHAPTER 4

To really understand things in a meaningful way, theology and neuroscience need to talk to each other.

We need to read both the book of the Bible and the book of and not be afraid of asking new questions.

We need to use the tools of **both** faith and science to explore the world.

And, **for Christians, science increases their sense of wonder at what God has created.**

CHAPTER 3

With genetic technology, we now have the ability to enhance or even clone ourselves.

But **even a genetic clone would be more than the sum of its DNA.**

We are

We have the ability for moral reasoning

We make meaningful

These abilities seem to go far beyond our biological make-up.

WEEK 3

†. Test of FAITH Leader's Guide, page 111. Reproduced with permission, Paternoster 2009, Wipf & Stock 2010.

Day 2: Chapters 1 and 2

Part 3, chapter 1: IT'S ALL IN YOUR HEAD



Introduction

As you read this sentence, the brain cells (neurons) inside your skull are crackling with nerve impulses. Our complex neuronal networks are constantly sending electrochemical signals, which scientists measure using imaging technology. Neuroscience is the study of how different parts of our brains and nervous system work together when we think. Some neuroscientists are reductionists. They believe that their studies can reduce our religious beliefs down to the mere firing of our neurons. They argue that there are no spiritual realities external to us; it's all in our heads.

“Dr. Michael Persinger, a prominent neuroscientist and author, can stimulate your right temporal lobe [in your brain] and quite possibly cause you to experience a sense that something God-like is in the room. Persinger draws no small conclusions from this. ‘What is the last illusion that we must overcome as a species?’ he asks. And he answers: ‘That illusion is that God is an absolute that exists independent of the human brain—that somehow we are in his or her care.’ Other scholars and commentators have . . . [concluded] that modern neuroscience undermines belief in a monotheistic God or in the Bible. Still others maintain that brain imaging studies fit perfectly with support for ‘militant atheism.’” – Professor Steven Goldberg†

In chapter 1 of the DVD, we will learn about

1. Two kinds of reductionism
2. How reductionists interpret spiritual experiences, and how Christian neuroscientists respond



Watch Part 3, chapter 1 (6 minutes)

Stop at Alasdair Coles: “There may well be more to it that isn’t accommodated by the scientific method.” (5 minutes 20 seconds)



Discussion and questions

1. Reductionism

When studying the complexities of the human person, scientists use something called reductionism. Reductionism can mean two things. First, *methodological* reductionism takes a complex system or behavior and breaks it down into its parts. So scientists’ *methods* might be reductionist simply because they can gain a better understanding of the whole by examining each part and how it fits into the whole. We use this kind of reductionism in many different disciplines.

Think of some complicated structures that we need to break down (or analyze) in order to gain understanding:

- In music, we understand more about the whole symphony by studying the musical parts for each section of instruments.
- In literature, we understand more about the whole _____ by studying _____.

†. Quotation from S.P. Goldberg (2010, January 15). “Neuroscience and the free exercise of religion,” in M. Freeman, ed., *Law and Neuroscience: Current Legal Issues*. Oxford University Press, 2010. Georgetown Public Law and Legal Theory Research Paper No. 10-01. Available at SSRN: <http://ssrn.com/abstract=1537355>.

- In _____, we understand more about the whole _____ by studying _____.

The second kind of reductionism goes deeper, however, and extends from methods to metaphysics. *Metaphysical* reductionists say that the whole is *nothing but* the sum of its parts (a kind of reasoning sometimes referred to as “nothing buttery” by reductionism’s critics![†]). Metaphysical reductionism implies three interconnected beliefs concerning human identity, free agency, and spiritual experiences:



Photo by Steve Karg

- Human identity – People are purely physical beings. They are “nothing but” their chemistry, biology, and genetics. They are not qualitatively different from animals.
- Free agency – If one reduces the identity and uniqueness of people to their biology, then their choices are “nothing but” the products of their brains, which are programmed for survival. A person’s genetics and environment predetermine his or her decisions; there is no “I” making a free and meaningful choice.
- Spiritual experiences – Similarly, one can then reduce people’s spiritual experiences to “nothing but” neurons firing in the brain. There is no supernatural world; the evolutionary process has simply hard-wired humans to believe in God as a way of coping with their environment.

2. Spiritual experiences

How do we think about and experience God? Christians believe that God speaks to and interacts with his creation: we think of prayer, worship, hearing from God for guidance, feeling God’s presence, and the work of the Holy Spirit in changing our character as examples of Christian experience and practice. Some people, however, have seen visions, heard voices, or experienced a change in their personality as a result of brain injuries. Are these spiritual experiences “real”? And if not, what does that say about our own experiences of God?

Scientists can also stimulate the brain using electromagnetic waves or chemicals, causing people to see visions, sense a spiritual presence in the room, or have a feeling of transcendence. Some neuroscientists claim that these cases of brain injury or brain manipulation prove that so-called “spiritual experiences” are only by-products of our physical brains. They say that the physical phenomena of our neurons cause the mental phenomena (epiphenomena) of our religious thoughts. These religious thoughts have no reality in themselves, they say, but are the result of the physical activity of our brains.

In one sense, these reductionist scientists are right: our physical condition does affect our mental state.

Cool words!

Epiphenomena – from Greek: *phenomena* are events we can observe, and the prefix *epi* means “above” or “attached to.” (*Phenomena* is the plural, and *phenomenon* is the singular.)

- A. List some physical factors and/or substances that could affect your mental activity (your thoughts, emotions, and beliefs):

†. D.M. MacKay, *The Clockwork Image: A Christian Perspective on Science* (Inter-Varsity Press, 1974).

Does this relationship between the physical and the mental mean that our thoughts, emotions, and beliefs depend *entirely* on our physical state? To push the question further, does the fact that neuronal activity in my brain *correlates* with my religious experience mean that my neurons *caused* my religious experience?

Cool words!

Correlate – to be placed in a mutual, reciprocal relationship; to be linked, have an orderly connection (can also be a noun, pronounced differently).

B. * To help you answer these questions, think about our emotions as an analogy for spiritual experience. Neuroscientists can fabricate an emotion (such as anger or pain) in someone's head by stimulating parts of their brain. Some could argue, based on this fact, that our naturally-occurring emotions are similarly "fake." However, we know that our "real" emotions are responses to actual external events. How would you apply this reasoning to spiritual experiences?

C. * If the spiritual world is real, how might you expect it to "intersect with" the physical world? How does God influence, guide, or speak to us?

"To do science, people will reduce a complicated human behavior to something that can be tested and measured. So, [they reduce] the complicated behavior of religious experience to something that can be measured in an image on a particular scan. That's methodological reductionism to make it easier to do science. So spiritual experience is associated with a neural correlate, but that does not mean that religious experience is nothing but a neural correlate; there may well be more to it that isn't accommodated by the scientific method." – Rev. Dr. Alasdair Coles

Alasdair Coles says that the scientific method (reductionism) cannot accommodate certain areas of life. For example, literature students break a poem down into lines and words to gain understanding of the whole, but they cannot reduce great poetry to the individual meanings of the words in the poem. Similarly, people might try to be "scientific" about deciding whom they will marry. They might fill out checklists and compatibility tests and seek opinions from other people—but, in the end, they cannot guarantee a happy marriage by having all the right "ingredients." Science can analyze art and love, as well as spiritual experiences, but the scientific method cannot completely understand these things.

Part 3, chapter 2: WHOLE PERSONS



Introduction

Metaphysical reductionism can cause us to doubt whether we truly have a "mind" that exists apart from our physical brain—which in turn causes some to claim that we cannot make free choices at all. This philosophy, that everything is "pre-set," is called determinism. The theory of emergence counters determinism and helps shed light on these questions.

In chapter 2 of the DVD we will learn about

1. Determinism versus free agency in human behavior
2. The concept of emergence in human identity
3. The importance of seeing humans as whole persons



Watch Part 3, chapter 2 (7 minutes)

Stop at John Polkinghorne: “. . . not as collections of quarks and gluons or whatever it might be.” (12 minutes 51 seconds)



Discussion and questions

1. Determinism versus free agency

This chapter of the DVD starts with Bill Newsome’s “camera analogy,” which illustrates the inadequacy of the reductionist view.

- A. Why does Newsome say that reductionist explanations of the camera are impoverished, and how does he link this to reductionist explanations of the human person?

But what about the decisions that we make? Reductionists would say that the decision-making “mind” (separate from our physical brain) does not exist. They say that our seemingly free choices are completely determined by our brains, which in turn are “pre-set” by genetics, conditioned for survival, and dependent on our physical bodies and experiences. Free agency is a myth; everything is “determined” (set) in causal relationships: one thing causes another, which causes something else to happen, leading to an eventual (and inevitable) conclusion.

Cool words!

Determinism – from Latin: *Terminare* means end or boundary. *De + terminare* means to bound, or limit. So to determine an outcome means to limit it to one possible conclusion.

“Genetic determinism is the idea that analyzing every gene, and knowing the consequence of every mutation, will enable us to build a complete picture of a person’s physique, appearance and even their personality. Genes don’t just make you tick, they determine who you are.”
– Dr. Peter Moore, 2000†

- B. What are the dangers of this type of thinking? (How would this type of thinking affect parents considering having a baby? How would a very talented person feel if their talent was thought to be completely genetic? What about a person with bad behavior?)

Of course, as Bill Newsome points out when he describes Tiger Woods and Michael Jordan (in chapter 3), our genes *do* limit or enhance certain traits. However, the way our parents raise us, the experiences we have, and the choices we make play a major part in our development. This debate over whether genetics or environment plays a greater role in forming our identity is known as the “nature/nurture debate.” Evidence points to a complete and complex interaction between these two factors—but even so, the question remains: are we entirely “determined” by these things outside of our control? Do we have any free choice?

†. Quotation from *Test of FAITH Resources for Schools*, page 51. Reproduced with permission, The Stapleford Centre 2009.

The Bible tells a different story from reductionist science. Though Scripture emphasizes God’s sovereign power, it also teaches that humans are morally responsible creatures. In commands like “choose for yourselves this day whom you will serve” (Joshua 24:15), God underlines human free will and responsibility, giving us practical guidance for living that counters the “nothing buttery” and determinism of some scientists.

Look up the following verses: Deuteronomy 30:19–20; Proverbs 1:28–29; John 7:17; James 4:4.

C. What do these verses say about human free will (our choices and their consequences)?

2. Emergence

How do we reconcile reductionist science’s deterministic perspective with biblical teaching about free will? We need to go back to the distinction between the *brain* and the *mind*.

A. What do the scientists on the DVD mean by the word “brain”? By the word “mind”?

- Brain = _____
- Mind = _____

In order to make free choices, we need to possess a conscious mind which can choose. The theory of emergence helps explain the concept of “mind.”

Emergence occurs when the whole system takes on properties that the individual parts did not possess. For example, hydrogen and oxygen, on their own, are just gases. But together they take on a completely different property that could never have been predicted: wet-ness! Many scientists now take this idea of emergent properties as an essential part of their field. This is known by philosophers as *epistemological emergence*, because studying emergence gives us a *way of knowing* (epistemology). In order for us to understand the whole system, we have to understand the individual parts (reductionism), as well as the overall pattern and properties (emergence). Some examples of epistemological emergence are the surprising properties that crystals, icebergs, and snowflakes display.

Cool words!

Emerge – from Latin: e- (a variant of ex-) means “out, forth” and *mergere* means “to immerse or dip.” So, to emerge means to come out of being immersed in something (the opposite of “submerge”).

B. To truly understand a snowflake, scientists must understand its parts and the way those parts relate together to form the whole.

- What are the basic “parts” of a snowflake that scientists need to understand?

- What are the emergent properties that the snowflake as a whole exhibits?

* A more philosophical (and controversial) kind of emergence is known as *ontological emergence*. In this view, the emergent properties are not just a way of knowing, they are a new *kind of being* altogether. They have a separate identity from the more basic properties that give rise to them. Those who support ontological emergence would argue that not only do the basic parts of the system affect the emergent properties (upward causation), but the emergent parts can in turn affect the basic properties (downward causation). For example, letters and words combine to form this sentence that you are reading now—which takes on properties of meaning and purpose that the individual letters did not contain. Not only that, but the meaning of a sentence can summon up an idea or image in your mind, which is completely separate from the letters which formed it.

The scientists interviewed on *Test of FAITH* think that our minds emerge out of the physical realities that involve trillions of synaptic connections between the neurons in the brain, in addition to the interactions of the brain with the rest of the body and its wider

environment—in particular its interactions with other minds. They would say that this is an example of *ontological emergence*: our minds are really there and are qualitatively different from our brains, though they depend on them. Something emerges in us that is more than the sum of its parts. This emergent property (our mind) can affect and change the physical properties of other things. Try it and see! Just choose to stretch out your arm to pick up a pencil. That was your mind interpreting the words on this page, resulting in the top-down causation of the movement of physical objects.

3. Whole persons

This idea of emergence helps us to think of human beings as whole persons, and not just collections of atoms (as some reductionists think) or spirits that happen to be attached to inconsequential bodies (as some Christians believe).

The Bible emphasizes this holistic view of the human being. It teaches us that we are spiritual beings, and it shows us that our bodies are important as well.

A. Read Mark 12:28–30. Why are our physical bodies important?

B. Read Luke 24:36–44 and 1 John 3:2. What do these passages tell you about our physical bodies?

We are not simply machines; neither are we disembodied souls with no real connection to our physical bodies. We are souls, minds, and bodies—all intimately connected and combined to make a whole person. These Bible passages tell us that our bodies are important and influence our spiritual lives—and will be part of our identity as humans for all eternity.

Day 3: Chapters 3 and 4

Part 3, chapter 3: AN ETHICAL TOOLBOX



Introduction

Chapter 3 of the DVD discusses cloning. New discoveries in science have raised many ethical issues, including cloning. It is vital for Christians to be informed about current technologies and their implications, as well as to learn to think biblically about those technologies. Though God’s Word does not give specific guidance about modern technologies, we can derive principles from the Bible and apply them to cloning and other ethical issues.[†]

In chapter 3 of the DVD we will learn about

1. What makes humans different from other animals
2. Biblical principles (an “ethical toolbox”) for making decisions
3. Putting biblical principles into practice regarding the issue of cloning
4. Other ethical issues



Watch Part 3, chapter 3 (10 minutes)

Stop at John Polkinghorne: “. . . it’s not the whole story about us. We are more than computers made of meat, or something like that.” (22 minutes 11 seconds)



Discussion and questions

1. Being human

“We have to be careful not to allow reductionist interpretations of [human beings] to just take over. Neuroscience isn’t going to tell us all about the human person. It’s going to tell us interesting, important things—we’re embodied people; how our bodies work is important—but it’s not the whole story about us. We are more than computers made of meat.” – Rev. Dr. John Polkinghorne

Before we examine cloning and other ethical issues that stem from new technologies, we need to understand what it is that actually makes us human.

A. What are three of the characteristics that the scientists mention that show we are not just “computers made of meat”?

- _____
- _____
- _____

The characteristics you wrote down hold true for humanity as a whole, but what about people who do not possess them? Are they still counted as human beings? Look back at your definition of human beings from Day 1 of this week (page [62](#)). Did you remember to include babies? Elderly people? People with disabilities? People in a vegetative state due to head injuries?

[†]. These sections have been adapted in large part from *Test of FAITH Leader’s Guide*, pp. 86–96. Reproduced with permission, Paternoster 2009, Wipf & Stock 2010.

B. How would you define “being human” so that you include all of these people? In other words, what is it about us as humans that makes us different from other living creatures? (*Hint: Who created us?*)

Read Genesis 1:26–28 and 2:15–17.

C. * Based on these verses, what do you think the phrase “made in the image of God” means? If you get stuck, watch the bonus interview clip with David Wilkinson (3.1, found in the main menu of the DVD).

People with no religious faith would generally agree that we should protect and respect human life—but without a foundation in God’s Word, it is difficult to define who “counts” as a human and whom, therefore, we are responsible to protect.

2. An ethical toolbox

God’s Word not only helps us find our identity as human beings, but it also helps us think clearly about tough issues. To tackle ethical issues from a Christian perspective, you first need to construct a moral framework (or “ethical toolbox”) from biblical principles.

The Bible teaches principles that can function as “tools” to help you deal with ethical dilemmas. What moral principles can you draw from the following Bible passages?

- Galatians 3:26–29; Romans 12:4–8 –

- Mark 12:31; Philippians 2:3–4 –

- Deuteronomy 10:18 –

- Matthew 25:31–46 –

- Psalm 127:3–5 –

- Psalm 139:13–16 –

Cool words!

Ethics – from Greek (*ethikos*): the moral principles or rules of conduct of a group or individual.

3. Using your ethical toolbox: Cloning

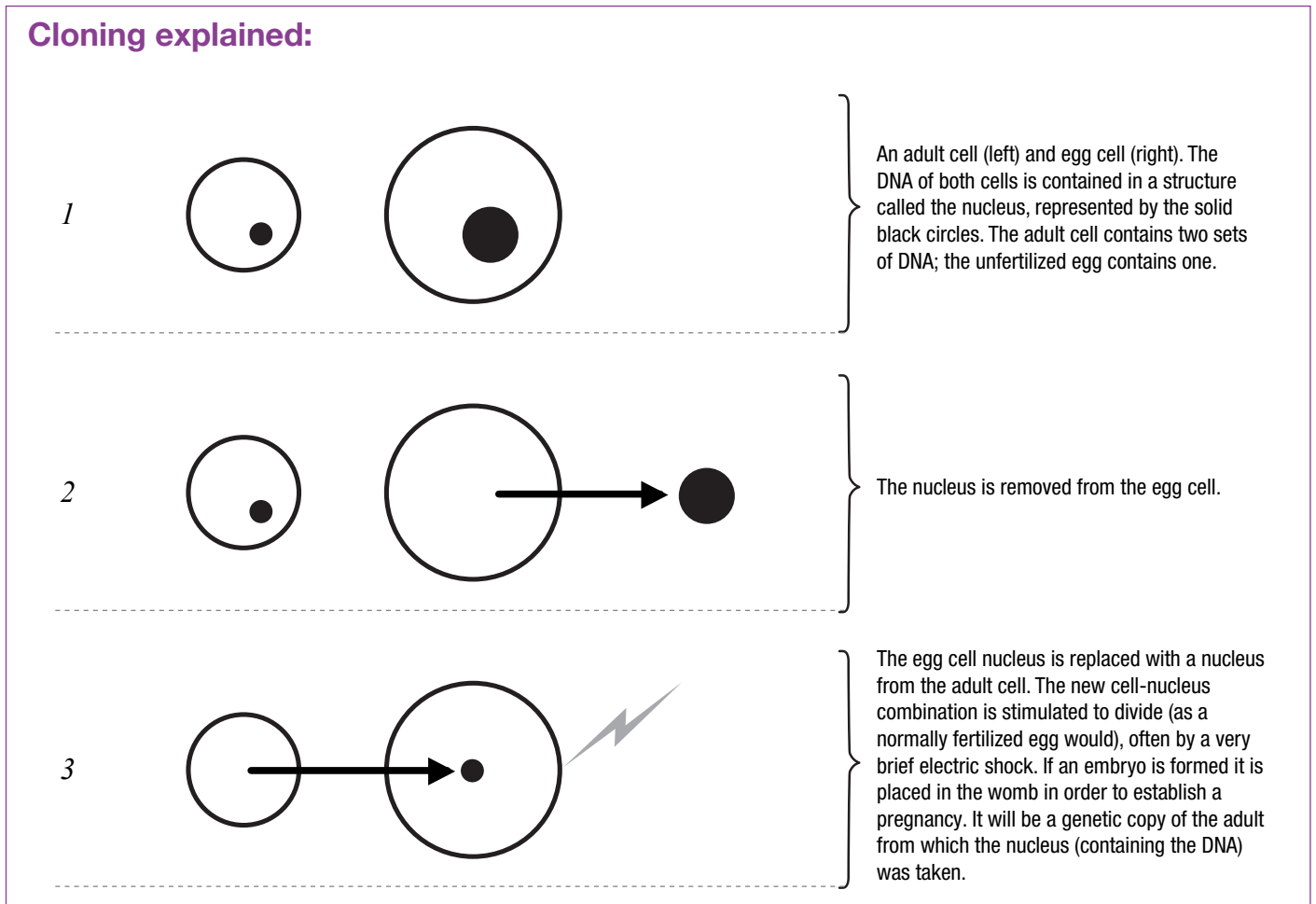
While the Bible does not specifically address cloning, genetic enhancement, abortion, or other such issues, we can take the appropriate tools (biblical principles) and apply them to a given situation. Let's open our toolbox and think about the issue of cloning.

Cloning (often called "reproductive cloning") means making a genetic copy of a person. The process would be like taking a cell from someone's body and using it as a seed to grow a new person.



Photo by JM <http://www.logodesignweb.com/stockphoto>

The following diagram explains the process of reproductive cloning:[†]



Among other questions, cloning raises the question of who the clone's parent would be. If an adult cloned him- or herself, the child's "biological parents" would actually be his or her grandparents.

Another question arises: what about the soul of a clone? Some babies born naturally are genetic clones of each other—also known as identical twins! If you have met any identical twins you know that, although they share many similarities, each one is a unique individual. (As we discussed yesterday, other factors besides our genes make up who we are.) Likewise, a clone would be a "real person," a unique image-bearer of God.

[†]. *Test of FAITH Leader's Guide*, page 91. Reproduced with permission, Paternoster 2009, Wipf & Stock 2010.

A. Why do you think someone might want to artificially clone a person?

Read the case study† and answer the questions that follow, bearing in mind your “ethical toolbox.”

Case Study

The fog on Interstate 95 was exceptionally dense as the Robinson family drove towards New York on November 20th, 2012. Their only child Susan, aged four, was playing happily with her dolls on the back seat. After years of unsuccessfully trying to have a baby, the Robinsons had eventually decided to use in vitro fertilization to have Susan, so she was especially cherished. Her long eyelashes and dimples were the spitting image of her mom, whereas even at that young age her long limbs held great promise of future athletic prowess, or so her proud father liked to think.

Suddenly a pile-up loomed out of the fog in front of them. Mr. Robinson slammed on the brakes. His quick responses prevented their car from diving into the mangled heap of wrecked cars ahead, but unfortunately the truck driver behind was not so alert. The truck slid into their rear with a sickening thud. Seconds later the shocked parents found themselves clutching Susan’s lifeless form as they huddled on the side of the road waiting for help to arrive.

Minutes later, after a short but fevered discussion, Mrs. Robinson called CLON777 on her cell phone and, as the fog began to clear, a helicopter landed in a nearby field, CLONE-AID emblazoned across its fuselage. A white-coated medical technician leapt from the helicopter and was soon taking tiny skin samples from Susan’s limp body. Minutes later the samples were being stimulated in a nearby CLONE-AID laboratory to establish cell cultures.

Several months went by while the Robinsons grieved for little Susan, but finally they could contain themselves no longer. They wanted a replacement Susan and they wanted her now. Fortunately Mrs. Robinson already had viable eggs frozen down as a result of her cycle of in vitro fertilization. The great day came. In the CLONE-AID laboratory, with its picture of Dolly the sheep proudly displayed on the wall, the process of “nucleus transfer” began. A nucleus was removed from one of Susan’s cultured skin cells.

This single nucleus contained the cell’s DNA with its genetic instructions to build a new Susan. Carefully the nucleus was placed in a small dish with one of Mrs. Robinson’s eggs from which the nucleus had been removed. A small electric current was zapped through the cell suspension and the nucleus fused with the egg cell to produce a tiny embryo. This procedure was repeated multiple times to generate several embryos that were carefully screened over the next few days to check for any abnormalities before one of them was implanted in Mrs. Robinson. Nine months later the Robinsons held in their arms a pink and gorgeous looking “replacement Susan,” complete with dimples, long eyelashes, and long limbs.

B. Can you anticipate some of the consequences of cloning this child? How might it affect the resulting clone and her family?

†. Extract with permission, from D. Alexander and R.S. White, *Beyond Belief: Science, Faith and Ethical Challenges* (Lion, 2004), as quoted in *Test of FAITH Leader’s Guide*, page 91. Reproduced with permission, Paternoster 2009, Wipf & Stock 2010.

C. * How might cloning affect our society's view of human beings? Of families?

The procedure of cloning poses huge medical risks:

- Cloned fetuses have a very high miscarriage rate.
- The cell from the cloned person is “old,” and the new child made from that cell will inherit that age (including cancer risks), rather than having his or her “clock” re-set by the process of egg formation. Biologists do not understand this process fully, so it is difficult to predict the results or reduce the risk.
- Normally, when a human body makes eggs or sperm, certain genes in the eggs or sperm are switched on and off. A clone whose “parent” is a fully developed cell may not inherit the correct switching required for normal development.

Cool words!

Bioethics – from Greek: *bio* means life and *ethikos* means moral principles, so “bioethics” means the moral principles that govern medical and biological research.

Most motivations for cloning do not involve saving lives (apart from creating organs for transplant, which is an extreme example of commodification of humans), so most bioethicists argue that cloning is not worth the risk.

Look back at the Bible verses and principles that we used to form our “ethical toolbox.”

D. Choose a couple of verses and the principles you derived from them and explain how they could apply to the issue of cloning.

○ _____

○ _____

4. Other ethical issues: Beginning of life and enhancement

One thing we did not mention in describing the ethical issues involved in cloning (and it's something you may have already thought about) is the creation and potential destruction of embryos that the process requires. This issue takes us to the question of when life begins, which is a foundational question for many current issues in bioethics (cloning, *in vitro* fertilization, genetic testing of embryos to screen for disease or defects, stem cell research, and abortion, to name a few). Thinking clearly about the question of when life begins will help you approach these other issues.

Read the following summary of the main views people hold on when human life begins:[†]

When does human life begin?

A) Human life begins at fertilization (0–6 hours)

Biblical/theological arguments

- The Bible names Jesus and other people by this stage.
- This is the origin of a “personal history.”
- This is when Jesus became incarnate as a man.
- Relationship with God is established.
- In the Bible the Hebrews believed life began as soon as they were aware of it being there. The message is that life begins as soon as there is something there. With our knowledge today, this means conception.

Biological arguments

- Fertilization provides a fairly precise moment of beginning.
- The genetic make-up of the individual is specified during this stage.

B) Human life begins at implantation (7–10 days)

Biblical/theological arguments

- Physical relationship with the mother begins – she can become aware of her pregnancy. Part of what defines us as human is being in relationship.
- Twinning may occur between the “blastocyst” (hollow ball of cells) stage and implantation, so until implantation there isn’t “one” individual present to relate to God.
- This is what passages about the unborn refer to because this is the time when pre-scientific societies became aware of pregnancy.

Biological arguments

- There is a high rate of embryo loss before implantation (70–80%).
- Until implantation, it is impossible to tell what parts will become the embryo and what will become the placenta.

C) Human life begins at the primitive streak stage (14 days)

Biological argument

- The development of the primitive streak marks where the nervous system will begin to develop. The capacity for sensation and pain are important in defining humanness and in determining how we treat others.

D) The beginning of human life is a continual process

This is the view that all of the above “milestones” are not that critical, since the development of human life is a continual process from fertilization through to birth and onwards. Human life deserves our care and protection all the way through, although prenatal care will increase in line with development.

Some Bible passages that are relevant to this discussion

These highlight the fact that human development is shaped and purposed by God from the beginning:

- Jesus’ incarnation – Luke 1:31–33
- God establishes a relationship with Isaiah and Jeremiah before birth – Isaiah 49:5; Jeremiah 1:5
- God’s knowledge of us in the womb – Psalm 139:13–16 and Job 10:8–12
- An important marker of new life was “quickening,” when a baby kicked for the first time – Luke 1:44
- Being in relationship is an important part of personhood – Genesis 2:18
- Care of pregnant women – Exodus 21:22–23

[†]. Test of FAITH Leader’s Guide, page 112. Reproduced with permission, Paternoster 2009, Wipf & Stock 2010.

A. What do you think of these different views?

B. How might the “toolbox” principle you derived from Deuteronomy 10:18 apply to the question of when life begins?

A final ethical dilemma about which Christians need to think carefully is human enhancement.

The following are examples of some enhancement technologies:

- Genetic modification, or GM (e.g., “gene doping” in athletes) (*a speculation for the future*)
 - To cause an effect in an individual.
 - To change the genes in someone’s eggs or sperm so that the future generation is affected.
- Prosthetics or implants (e.g., an artificial leg, brain implant, living tissue implant) (*many present realities*)
- Chemicals or drugs (e.g., to enhance memory) (*present realities or will be with us soon*)

Christians believe that we have a mandate to bring God’s care and healing to the world. We can think of healing as restoration to what is normal for most of the population.

C. Look at the list of potential treatments below and plot the numbers on the spectrum, deciding where they should be on the line from healing to enhancement.

1. Vaccination
2. Caffeine tablets
3. A memory implant (in a normal functioning person)
4. A third arm
5. GM to treat muscular dystrophy
6. Drugs to enhance concentration
7. GM to make someone taller
8. Glasses

Healing (acceptable)

Enhancement (unacceptable)

D. How might enhancement affect an individual and his or her relationship with the rest of society?

- Effects on individual: _____

- Effects on society: _____

You will have the opportunity to explore how the “beginning of life” and the “enhancement” questions apply to current technologies in the Extension section, if you choose.

Part 3, chapter 4: BELIEVING SCIENCE



Introduction

The final chapter helps us “zoom out” again to the big picture, reminding us of the relationship between science and faith. We need both perspectives in order to be whole persons and to pursue truth.



Watch Part 3, chapter 4 (4 minutes)

Watch to the end of the episode.



Discussion and questions

A. What two ways of discovering truth does Francis Collins mention?

- _____

- _____

B. * What warning does Collins give about using these two ways of discovering truth?

Days 4 and 5: Extension

Choose one of the following questions and write a 1–3 page (300–900 word) essay in response. Essay questions are divided into three levels based on difficulty.

The effective essay will contain an engaging introduction, a well-argued and organized body, and a solid conclusion. Where appropriate, use quotations and cite your sources.

Alternatively, you could prepare and give a presentation rather than write an essay.

Resources to help you in your research are listed beneath some of the more specific questions. General resources on ethical issues (for questions 2, 4, and 5) are listed at the end of this section.

Please use discernment as you research. Teachers should oversee the websites students are accessing. Test of FAITH may not necessarily endorse all the material on the websites recommended below.

1. What is the biggest influence on a person’s identity? Scientific research seems to swing between two poles: genetics or upbringing. This is known as the “nature/nurture debate.” Research this issue and write about what you find. What studies and evidence support the “nature” side of the debate? The “nurture” side? Finally, give your own opinion about how much nature and nurture contribute to a person’s identity. (*Foundation*)

- Bryant, J. (2005, September 1). “Don’t my genes determine my behaviour?” Evangelical Alliance, UK. <www.eauk.org/resources/idea/bigquestion/archive/2005/bq9.cfm>.
- Counterbalance website. “Are we free?” page <www.counterbalance.org/quest/free-frame.html>.
- Habgood, J. (n.d.). “All in the genes.” Science and Religion Forum. <www.srforum.org/articles/all-in-the-genes>.
- Science and Religion Today. Genetics topics. <www.scienceandreligiontoday.com/topic/genetics>.
- Test of FAITH interview clips. <www.testoffaith.com/resources/subcategories.aspx?id=13>.
 - John Bryant – Genetic determinism of behavior
 - Francis Collins – Did my genes make me do it?
 - Bill Newsome – 3 clips on the brain, “hardwiring,” human responsibility

2. When does life begin? Choose a position (refer back to Day 3 from this week, page 74) and defend it, using biblical and scientific resources. Explain the opposing arguments and provide counter-arguments to strengthen your position. (*Foundation*)

3. For decades, neuroscientists tried to find a “God Spot” in the brain—the part of the nervous system that controlled (or responded to?) our spiritual experiences. Current research shows that there is no single “spot” associated with spirituality; multiple parts of the brain are involved in the complex interaction of our beliefs and experiences. Research and respond to the following questions: What studies have been done to investigate the brain’s involvement in spiritual experiences? How might atheists interpret these studies? How might Christians respond? (*Intermediate*)

- Brown, W.S. (n.d.). “Neuroscience of religion.” The International Society for Science and Religion. <www.issr.org.uk/neuroscience-of-religion.asp>.
- Coles, A. (2008, July). “God, theologian and humble neurologist.” *Brain*, 131 (7), 1953–1959. Oxford University Press. <brain.oxfordjournals.org/content/131/7/1953.full>.
- Counterbalance website. Psychology and neuroscience page. <www.counterbalance.org/neuro/index-frame.html>.
- Test of FAITH interview clips. <www.testoffaith.com/resources/subcategories.aspx?id=13>.
 - Alasdair Coles: 8 clips on the brain and spiritual experience
 - Bill Newsome: 7 clips on the brain, neuroscience

4. Where is the line between acceptable enhancements and ethically unacceptable enhancements? Imagine you are at a conference of scientists and ethicists. Your task is to develop guidelines to regulate the “enhancement industry” and clarify the boundary between what is acceptable and what is unacceptable. Try to come up with general principles rather than specific rules as to what

is “in” or “out,” because new technologies will continue to emerge and you want these guidelines to still be applicable. (You will need to research what enhancement technologies are coming our way in the future. In addition to bioethical questions, think also about questions of justice and money—to whom are these new technologies going to be available?) (*Intermediate*)

5. Research a new technology that carries ethical implications. Describe the science behind the technology (i.e., how the technology works). Then apply biblical principles from your ethical toolbox to this technology, weighing up the pros and cons. Finally, give your conclusion on whether this technology might be acceptable or not from a Christian standpoint. (*Intermediate-Advanced*)

Possible technologies to research include (but are not limited to):

- a. stem cell research
- b. *in vitro* fertilization
- c. genetic testing of embryos to screen for disease or defects
- d. genetic modification (GM) of crops
- e. GM and transhumanism

6. Some Christians use emergence to counter the “nothing buttery” of reductionism. Research and write about the concept of emergence within neuroscience. What is the difference between epistemological and ontological emergence? How does emergence relate to reductionism? Finally, discuss emergence from a Christian perspective. Does emergence give us a helpful way of looking at the human person? Why or why not? What does the concept of emergence say about the soul? (*Advanced*)

- Mckenzie, R. (n.d.). “Emergence: The whole is greater than the sum of the parts.” Test of FAITH. <<http://www.testoffaith.com/resources/resource.aspx?id=627>>.
- Polkinghorne, J. (n.d.). “More than a body? Science and Religion Forum.” <www.srforum.org/articles/more-than-a-body>.
- Poole, M. (2007, April). “Reductionism: Help or hindrance in science and religion?” Faraday Institute for Science and Religion. Faraday Paper Number 6. <<http://www.st-edmunds.cam.ac.uk/faraday/Papers.php>>.
- *Test of FAITH*
 - Bonus interview clips on DVD – 3.5, 3.6, 3.7 Bill Newsome: Emergence.
 - Briefing sheet: “Mechanism and meaning.” <www.testoffaith.com/resources/resource.aspx?id=243>.
 - Interview clips on website. <www.testoffaith.com/resources/subcategories.aspx?id=13>.
 - Alasdair Coles – Emergence.
 - Bill Newsome – Ontological emergence.

General resources: Ethical issues (questions 2, 4, and 5)

Test of FAITH:

- Bonus Interviews on DVD
 - 3.3 Denis Alexander: Genetic testing.
 - 3.4 John Bryant, Francis Collins, and John Polkinghorne: Enhancement.
- Online Interview Clips. <www.testoffaith.com/resources/subcategories.aspx?id=13>.
 - Denis Alexander: 4 clips on enhancement, ethics.
 - John Bryant: 13 clips on bioethics, transhumanism, cloning, embryos, IVF.
 - Francis Collins: Genetic enhancement.

Articles:

- Alexander, D. (2009, June). “Enhancing humans or a new creation?” Jubilee Centre. Cambridge Papers, Vol. 18 No. 2. <www.jubilee-centre.org/document.php?id=320>.

- --. (1997). "Genetic engineering in God's world." Jubilee Centre. Cambridge Papers. <www.jubilee-centre.org/document.php?id=17>.
- Bryant, J. (2007, April). "Ethical issues in genetic modification." Faraday Institute for Science and Religion. Faraday Paper Number 7. <<http://www.st-edmunds.cam.ac.uk/faraday/Papers.php>>.
- Deane-Drummond, C. (n.d.). "Genetic engineering: Foe or friend?" Science and Religion Forum. <www.srforum.org/articles/genetic-engineering-foe-or-friend>.
- Goddard, L. (n.d.). "Bioethics: A Christian perspective." Test of FAITH. <www.testoffaith.com/resources/resource.aspx?id=252>.
- *Test of FAITH*. (n.d.). "What does the 'image of God' mean?" <www.testoffaith.com/resources/resource.aspx?id=242>.

Websites:

- www.asa3.org/ASA/topics/ethics/default.html. American Scientific Association, ethics page.
- www.bioethics.ac.uk. BioCentre (UK).
- cbhd.org. Center for Bioethics and Human Dignity.
- www.cmda.org/wcm/CMDA/Public_Policy/Ethics_and_Position_Statements/CMDA/PublicPolicy2/EthicsPositionStatements/CMDA_Ethics_Position.aspx?hkey=150c638e-719e-45bd-92ed-6c0d20387d1b. Christian Medical and Dental Association (USA), ethics and scientific statements.
- www.cmf.org.uk/publicpolicy. Christian Medical Fellowship (UK), ethics and public policy page.
- ethicsforschools.org. Ethics and issues page for UK high-school-aged students, published by the Christian Medical Fellowship.
- www.counterbalance.org. Online library of articles and media related to science and religion. See the subjects "Genetics" and "Ethics."