

# 6

## Science and religion

### 6.1

### What is meant by truth?

#### ■ The nature of truth

We all know what we mean when we say that something is true, but to define what we mean by 'truth' is difficult. When we say something is true, we mean that we think it is right and that there is **evidence** to support our opinion. This evidence may be objective evidence that it is based on fact and is not based on personal opinion, or it may be subjective evidence that is based on personal opinion. People use evidence as proof to establish a fact or the truth of a statement. The type of evidence that is used to prove something is true can be placed in categories, for example scientific, historical and religious.

#### Scientific truth

Many people will only accept the truth of something when it is proved true using scientific evidence. Scientists use observation, hypothesis (an idea based on known facts that are yet to be proved), experiment and repeated testing to prove something is true. Scientific truths are objective because they are not just one person's opinion. Scientific truth is constantly changing because observation and experiment may result in new evidence that proves earlier scientific **theories** untrue or inaccurate. For many people, scientific truths are the most trustworthy type of truth because of the painstaking evidence used to support them.



**A** Scientists use experiment and observation to prove a hypothesis

#### Objectives

Investigate what is meant by truth.

#### Key terms

**Evidence:** facts that can indicate whether something is true.

**Theory:** a hypothesis that explains facts that are widely accepted or well-tested.

#### links

Look back to pages 8–9 for a discussion on proof.

#### Discussion activity

- 1 With a partner, discuss whether or not there are things that can never be proved true or false. You must include specific examples in your discussion to support your points.

## Historical truth

Historians use evidence from the time they are researching to discover the truth about an event or historical era. This evidence may consist of objects used or documents written by people living at the time or, more recently, sound recordings and film. Some historical facts can be supported by evidence that all historians can agree on. But a historian also has to explain *why* things happened, and different historians may use the same evidence but reach different conclusions about an event or the era. Because of this, historical truths are regarded as subjective; a historical truth cannot be proved in the same way as a scientific truth.

### Activities

- 1 List the evidence that a scientist might use to prove that the dinosaurs died out before human life began.
- 2 List the evidence that a historian might use to prove that Germany was defeated in the Second World War.

### Discussion activity

- 2 As a whole class, discuss why the truths that dinosaurs are extinct and Germany was defeated are objective, whereas a historian's reasons why Germany was defeated are subjective.

## Religious truth

Religious truth is what believers claim to be true about the existence of God, the origin of the universe and the purpose of life. The evidence they use to support a particular religious truth involves experience, belief, trust and faith. When believers make claims about the truth of their religious beliefs, they offer evidence drawn from religious authority revealed through sacred writings, their conscience, religious experience, the history of the religion, and from observation of the natural world. However, the main source of evidence that believers use to support the truth of their religion is their faith.

### Activities

- 3 'The moon is made of cream cheese.' How might scientists establish that this statement is not true?
- 4 'Charles I was beheaded.' How might historians establish the truth of this statement?
- 5 'God exists.' How might a religious believer establish the truth of this statement?

### Summary

You should now be able to discuss what is meant by truth and be aware of different kinds of truth.



**B** Why did the dinosaurs die out?

### links

Look back to page 23 to remind yourself of what is meant by conscience.

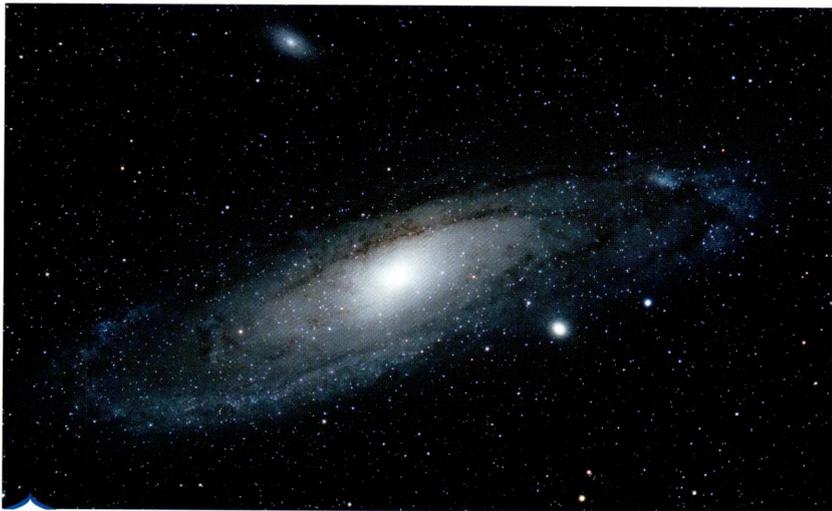
### Study tip

It is useful to understand the differences between scientific, historical and religious evidence, but you will only be examined on scientific and religious truth.

## 6.2 Origins of the universe

### The Big Bang theory

The Big Bang theory is an explanation for the origin of the universe and the development of the laws of physics and chemistry. It is thought to have taken place some 10 to 15 billion years ago. It is a theory that supports the idea of an ever-changing universe because the universe is still evolving. The universe is continuing to expand out from the point at which it began.



**A** *The Milky Way is the galaxy in which we live*

After approximately half a million years, the temperatures had cooled sufficiently to allow the gases, hydrogen and helium to form. It took another billion years before the stars and galaxies began to appear. Many of these stars died before our own sun and its planets were formed in the Milky Way galaxy. Some scientists believe that it was the death of the early stars that provided the materials needed for life to develop on earth.

### The creation account – Genesis 1 and 2:1–3

The Genesis account of creation explains that in the beginning there was darkness and God. Then, at God's command, the process of creation out of nothing began. It started with the creation of light, followed by the separation of heaven and earth, and then land and sea. Life began in the sea and gradually developed until humans were formed by God. According to the Genesis account, the process of creation took six days. On day seven, God rested and thought the creation was good.

### Believers' views of Genesis

The Genesis account of creation is found in the scriptures of both Christians and Jews. Whether they accept both the Genesis account and the Big Bang theory as true depends on how they interpret these scriptures.

#### Objectives

Compare and contrast the Big Bang theory and the Genesis creation story as explanations for the origins of the universe.

#### Key terms

**Creationism:** a view which only accepts that God created the universe, as laid down in the sacred text followed by the believer (e.g. Book of Genesis).

#### Study tip

Make sure that you are able to explain both the Big Bang theory and the Genesis account of creation in the examination.

#### links

The Big Bang theory was introduced and defined on page 14, or you can look it up in the Glossary at the back of this book.

## Fundamentalist view

A fundamentalist approach to scripture teaches that it is the direct Word of God, dictated to the writers as if by a heavenly voice. Therefore, everything in the scripture is the literal, exact truth. It is a factual historical record. Because the Genesis account states that the world was created in six days, then it was created in six days. If the Big Bang theory contradicts Genesis, then the Big Bang theory is wrong. This belief that the creation account in Genesis is the true account, in the sense of a true scientific account, is known as **creationism**.

## Non-literal view

Judaism has a long tradition of not interpreting the creation account of Genesis literally, and many Christians share this view. They believe that the writers did not record God's message word for word but brought their own personalities and writing styles to each event. For these believers, the writers were inspired by God but what they wrote in scripture is God's Word interpreted, so that the meaning is clear to the people. The Genesis account teaches a religious idea – that God created the universe – and was written in a way that the people of the time, with limited scientific knowledge, would understand.

## Creation account as myth

For some believers, including some who hold a non-literal view, the Genesis account of creation is a myth. A myth is believed to have truth within it, but it is not scientific or historical truth; it is religious or moral truth. It is a story which has been passed down, often through many generations, to help people understand God's role in creation; it is not intended to be taken as a scientific account of creation.

## Are Genesis and the Big Bang theory compatible?

Atheists would not find the Genesis and the Big Bang theory compatible as they do not believe in God. They would accept only the scientific account.

A fundamentalist religious believer would state that it is not possible to accept the Big Bang theory as it conflicts with the Genesis account and the Genesis account is the truth.

Many religious believers can accept both as compatible if the Genesis account is not taken literally. If the Genesis account is accepted as a myth, showing religious truth, then it can be compatible with the Big Bang theory. It is possible that God made the Big Bang happen. Scientists suggest that nothing happened before the universe began and this agrees with the Genesis account. The stages of creation in Genesis are not so different from the stages of the development of the universe. There are many scientists who are also religious and accept both the Big Bang theory and Genesis.

## Summary

You should now be able to explain the Big Bang theory, and compare and contrast it with the Genesis account of creation. You should understand different ways in which the Genesis account is interpreted.

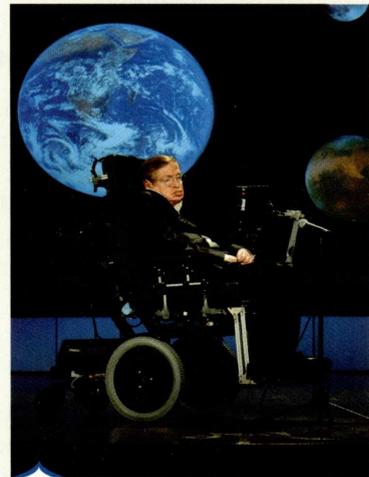
## Research activities

### Scientific creationism

- 1 Using the internet, find out what is meant by 'scientific creationism'.
- 2 Write an explanation of scientific creationism.

## Activity

The physicist, Stephen Hawking (1942–), has said that, as scientists do not know what caused the Big Bang, God is as good an explanation as any. Write what you think. Explain your view.



**B** Stephen Hawking developed the Big Bang theory

## 6.3

# Other religious creation accounts

### Other religious accounts of creation

Every religion has its own creation story and many have more than one. When an individual accepts one of the stories as true, they are making a subjective decision. Many of the stories fit in with the Big Bang theory.

#### links

Make sure that you understand the different ways that things are proved true by reading pages 8–9.

#### Buddhism and creation

Buddhists do not believe in God and their creation story is based on a teaching of the Buddha. Little attention is given to how creation happened in Buddhism, therefore, accepting the Big Bang theory is not a problem for Buddhists.

#### The Muslim creation account

The Muslim account of creation is found in the Qur'an and explained by Muhammad. Islam teaches that Allah created everything in the universe and that the creation of the universe is ultimate proof of the existence of one creator, Allah. Muslims, therefore, have no problem in accepting the Big Bang theory as it is additional evidence that Allah is the creator. They do not think that the Qur'an's account conflicts with the scientific account.

#### Creation story from Sikhism

Sikhs believe that God created the whole universe. God was all that existed before creation. While alone, God planned the universe and then, when God had finished the planning, everything needed for creation was enclosed in an egg. When God decided that the time was right, the shell burst and the elements to create the universe started to move out and away from the point of bursting. Sikhs believe that there is nothing in science that contradicts this teaching in the Guru Granth Sahib.

#### Discussion activity

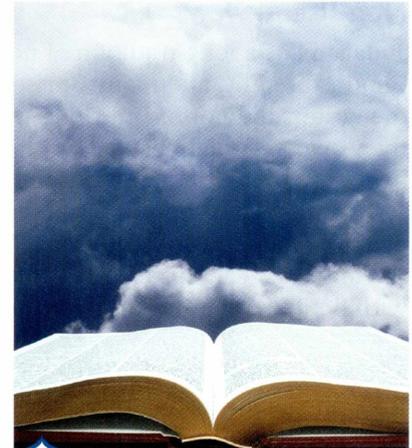
As a whole class, discuss the following statement: 'The account of the cosmic egg of Sikhism matches the Big Bang theory.' Do you agree? Give reasons for your answer, showing that you have thought about more than one point of view.

#### A creation story from Hinduism

One Hindu creation story is that before the world was created, there was no time and no space, just an endless ocean. In the nothingness, a giant cobra floated on the surface, and within its endless coils the god, Vishnu, lay asleep. Everything was peaceful and silent.

#### Objectives

Investigate the compatibility of other religious creation stories and the Big Bang theory.



**A** There are many other religious accounts of creation

#### Beliefs and teachings

He makes the night  
For rest and tranquillity,  
And the sun and moon  
For the reckoning of time.

*Qur'an 6:96*



**B** *The universe was created out of a Lotus flower*

Suddenly a humming sound, Aum, began to fill the emptiness and silence. The water began to shake and Vishnu woke up. Light began to enter the darkness. A lotus flower began to grow out of Vishnu and in the centre of the blossom sat Brahman. Vishnu told Brahman that it was time to create the world, and the process of creation began.

Brahman divided the lotus flower into three: one part became the heavens; one part the sky and one part the earth. On the earth, he created vegetation, followed by life in the sea, on the land and in the sea. Finally, he made humans.

According to Hinduism, the universe is created and destroyed in cycles, and therefore the Big Bang could be how the universe is recreated after its destruction.

### Activities

- 1 Compare Genesis 1 with the Hindu creation story.
- 2 Make a list of the similarities and the differences between the two creation accounts.

### Extension activities

- 1 Using the internet and/or a library, find out about another Hindu creation story.
- 2 Compare the story that you have researched with the Big Bang theory.

### Summary

You should now be able to discuss whether the different religious accounts of creation are compatible with the Big Bang theory.



**C** *Vishnu told Brahman it was time to create the world*

### Study tip

Make sure that you are familiar with the account of creation in Genesis.

## 6.4 The Cosmological Revolution

### Changing views of the world

In the Middle Ages, religious and scientific views of the world agreed with each other because scientific explanations of how things were included God. However, in the 16th century, new scientific developments led to a change in the way in which people understood God's place in the universe. This changing world-view is known as the Cosmological Revolution.

### The Medieval world-view

In the Middle Ages, it was believed that we lived in an earth-centred universe, that is, a universe in which the earth was thought to be at the centre of everything. Science was based on the Bible's account of creation in Genesis. God had placed the earth at the centre of his creation, and he controlled the universe. The Christian Church taught that what mattered was not life on earth but being admitted to heaven after death, so there was little interest in finding out more about the world in which people lived.

The Church taught that God created the universe and, on the sixth day, placed human life at the centre of his creation. Nothing happened unless God commanded it. Everything on the flat earth decayed and was always changing. Everything above the moon in God's realm did not change, never decayed and moved in perfect circles around the earth. Everything happened for a purpose. The Church explained this purpose in religious terms. All knowledge was subject to the Church's control. The authority of the Bible was regarded as final and it was interpreted to support an earth-centred universe.

### The Cosmological Revolution

Towards the end of the Middle Ages, the attitude to learning changed. Ideas were no longer accepted simply because that was the way it had always been. The Church's control on ideas was breaking down. There was a new interest in learning, including the study of astronomy and science. This led to new scientific findings that began to cause a division between religious and scientific teaching.

#### Case study

#### Galilei Galileo (1564–1642)

Galileo's observations of the universe through a telescope supported the findings of Copernicus. For Galileo, the heavenly bodies in the universe were not made of a substance that was superior to the earth. He observed sunspots, and these proved that the heavens were not unchanging. He proved that the movement of the planets was natural and not the result of God. However, Galileo was not seeking to disprove the existence of God.

#### Objectives

Investigate the Cosmological Revolution.

#### links

Look back to pages 10–11 to remind yourself of the Cosmological argument.

#### links

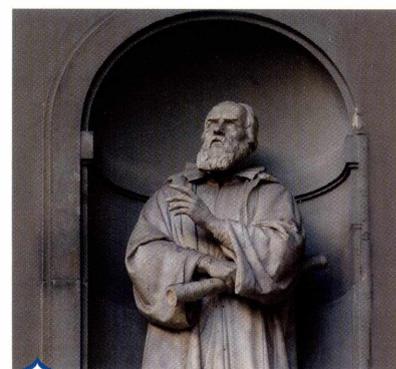
An outline of the Genesis 1 account of creation can be found on page 120. Make sure that you know what is taught about God's role in creation in Genesis 1.

#### Extension activity

Using the internet and/or a library, find out how Aristotle's world-view influenced medieval thinking about the world.

#### Research activity

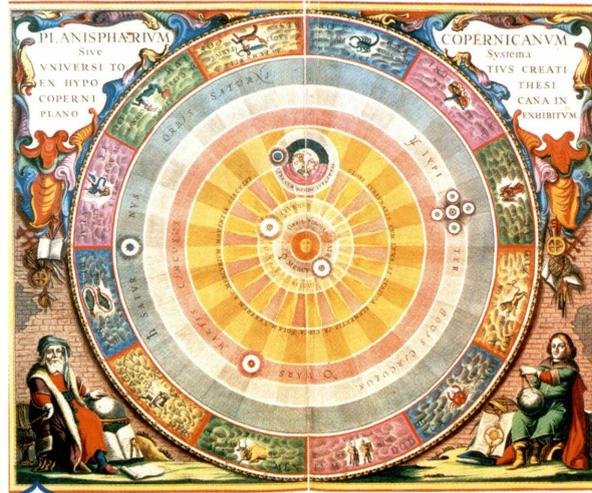
- 1 Using the internet and/or a library, find out why we no longer accept that the earth is flat. Make brief notes on the evidence that has been put forward.



**A** Galileo used a telescope to observe the universe

## Nicholas Copernicus (1473–1543)

Copernicus was an astronomer. He was employed by the Church to produce an accurate calendar. Through his mathematical observations of the planets, Copernicus concluded that the earth went around the sun along with the other planets. Only the moon revolved around the earth. Copernicus said that the sun was at the centre of (what was then believed to be) the universe and he believed the heavenly bodies travelled in perfect circular orbits around it. The change to this belief in the universe with the sun as its focal point was the beginning of the Cosmological Revolution.



**B** How Copernicus saw the universe of his time

### Research activity

#### 2 The Cosmological Revolution

In groups, research the contribution that one of the following scientists made to the Cosmological Revolution. Share your findings with the rest of the class using presentation software.

- Nicholas Copernicus
- Tycho Brahe
- Johannes Kepler
- Galilei Galileo
- Isaac Newton

### The challenge of the Cosmological Revolution

The findings of scientists were a challenge to the way people thought in the Middle Ages and to their religious beliefs. For example:

- If the sun was the centre of the universe, then God had not put humans at the centre of everything but on a tiny planet circling the sun. This challenged the idea that God had a special relationship with humanity.
- The Christian faith no longer had control over science. Scientists no longer referred to God to explain the way the physical world worked. Science and religion began to separate as scientists no longer had to make their findings match Christian teaching.
- Religion became the explanation for those things that were still not understood by science.
- God was no longer regarded as immanent and the controller of everything. Parts of God's creation were like a machine that ran itself. God might have created the world and moved on.

### Activities

- 1 Explain why many Christians in the 16th century could not accept the idea that the sun was the focal point of the universe.
- 2 Explain the Cosmological Revolution.
- 3 Explain why the Cosmological Revolution resulted in a division between religion and science.

### Summary

You should now be able to discuss the problems of the Cosmological Revolution for religious belief.

## 6.5 Origins of life

### The theory of evolution

Evolution is the process by which plant and animal life developed from the earliest and most primitive life forms to reach their present state. It means that one species, or group of living things, is descended from another species that is different from it. A chain can be established going back through time to trace the origin of each species. The apes are descended from another species of mammal and, in turn, the mammal descended from a reptile, before that from a fish, and eventually the chain can be traced back to the origin of all life forms, a simple bacterium.

The two best-known evolutionary theories were proposed by:

- Jean-Baptiste Lamarck
- Charles Darwin.

#### Jean-Baptiste Lamarck (1744–1829)

Lamarck is important to the development of the theory of evolution. He believed that organisms change to meet their needs according to their changing environment. At the bottom of the evolutionary 'ladder' are simple microscopic organisms, and from these more and more complex life forms developed until at the top of the 'ladder' human life was reached. Lamarck's major conclusions about evolution were:

- the organs that a life form uses the most in order to survive grow bigger and get stronger. Those organs that are no longer needed for survival will shrink until, eventually, they disappear.
- changes that are useful for the life form's survival are inherited by their offspring. For example, the long neck of the giraffe was the gradual result of many generations of stretching and stretching to reach the leaves high up on the tree. Each generation inherited the 'longer' neck of their ancestors.

#### Extension activity

Using the internet and/or a library, find out more about Jean-Baptiste Lamarck's evolutionary theories.

#### Charles Darwin (1809–1882)

Darwin's evolutionary theories are in a book called *On the Origin of Species by Means of Natural Selection* (1859). Darwin observed that organisms produce more offspring than can survive. The offspring vary – they are not identical. Depending on the environment, some of these variations will help some of the offspring survive better than the others. The ones that survive will produce offspring of their own. Over time, the number of offspring with these variations will increase and this will help the species to survive. Darwin called this process 'natural selection'.

#### Objectives

Consider and compare the theory of evolution and the Genesis creation story as explanations for the origins of life.

#### Study tip

Make sure that you are able to explain both the theory of evolution and the Genesis account of creation in the examination.

#### links

The theory of evolution was introduced and defined on page 14, or you can look it up in the Glossary at the back of this book. The Genesis account was also introduced on page 11.



**A** Are humans at the top of the evolutionary 'ladder'?

#### Research activity

##### Charles Darwin's theory of evolution

Using the internet and/or a library, find out more about Darwin's theory of natural selection. Write a brief account of this theory.

## The Genesis account of the origin of life

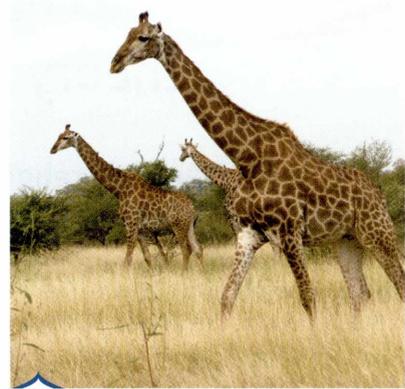
All life, according to Genesis, was created by the action of God. If the account is taken literally, life was in its final form by the sixth day of creation. Human life was the last to appear. Human characteristics were complete at the time of creation, and humans were made in the image of God.

### Beliefs and teachings

#### God creates humans

Then God said, 'Let us make man in our image, in our likeness, and let them rule over the fish of the sea and the birds of the air, over the livestock, over all the earth, and over all the creatures that move along the ground.' So God created man in his own image, in the image of God he created him; male and female he created them.

*Genesis 1:26–27*



**B** Is the giraffe's long neck the result of natural selection?

## Are Genesis and the theory of evolution compatible?

Atheists do not find Genesis and the theory of evolution compatible as they do not believe in God.

A creationist would state that it is not possible to accept the theory of evolution as it conflicts with the Genesis account and the Genesis account is the truth. All life forms were in their final form by day six and, therefore, one species cannot evolve into another.

Religious believers can accept both as compatible if the Genesis account is not taken literally. If the Genesis account is accepted as a myth, a story with a religious truth, then it can be compatible with the theory of evolution. It is possible that evolution was God's plan for the development of life. According to both the Genesis account and the theory of evolution, the first life appears in the sea, and the final life form to evolve is humanity. There are many scientists who are also religious and accept both the theory of evolution and Genesis.

### links

The challenge of Darwin's theory of evolution is examined on pages 14–15.

### Discussion activity

As a whole class, discuss whether or not human life is still evolving.

### Activities

- 1 Explain what is meant by 'natural selection'.
- 2 Explain why the theory of evolution is not a problem for atheists.
- 3 Explain why the theory of evolution is a problem for creationists.

### Summary

You should now be able to explain the theory of evolution and compare and contrast it with the Genesis account of creation. You should be able to understand different interpretations of the Genesis account.

## 6.6

# The challenge of Darwin's evolutionary theory

### Charles Darwin's religious beliefs

Charles Darwin was brought up as a Christian. At first, he continued to accept the teaching of the religion while he was developing the theory of evolution. Darwin believed that the theory of evolution would support the argument for the existence of God based on design. It would show how God had a plan for the creation of the world and everything within it.

Gradually, Darwin became convinced that, although God created life and designed the laws of nature, God had left the details to random chance.

This remained his view until the 1860s, when Darwin's research into evolution and natural selection caused him to reject the evidence for God in nature, and ultimately to doubt the Bible, God and the Christian faith. Darwin wrote his theories about human origins in *The Descent of Man* (1871). He accounted for all human characteristics by natural selection from other life forms, and concluded that humans descended from apes. Most people in his day thought his ideas were wrong because they went against the belief that humans are unique and made in God's image. Most biologists now consider that both humans and apes are descended from a shared ancestor (now extinct).

“ *The old argument of design in nature, as given by Paley, which formerly seemed to me so conclusive, fails, now that the law of natural selection has been discovered. We can no longer argue that, for instance, the beautiful hinge of a bivalve shell must have been made by an intelligent being, like the hinge of a door by man. ... Everything in nature is the result of fixed laws.* ”

Charles Darwin

### Darwinism and Genesis

Darwin's theory of evolution undermined the Genesis account of creation for a number of reasons:

- Darwin showed how living things developed in small steps, and how this development could be the result of chance. He demonstrated that animals and plants were not in their final form by the sixth day of creation.
- If natural selection occurs by random chance, then this seems to reject the work of a designer God.
- Evolution showed that things changed to fit in with the environment. The environment was not shaped for their needs. This conflicts with the Bible's account that God created the environment for the benefit of living creatures.

### Objectives

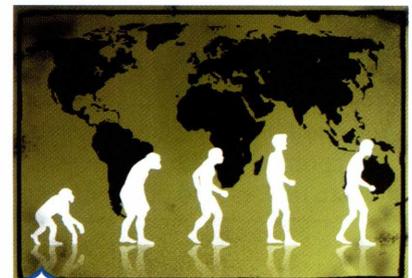
Examine Darwin's theory of evolution as a challenge to religious belief.



A Charles Darwin (1809–1882)

### links

Look back to page 13 to remind yourself of William Paley's version of the Design argument.



B The evolution of humans

## Darwin's challenge to religious belief

Darwin's theory is not a challenge to Buddhism as Buddhists do not believe in God. They can accept the theory of evolution.

### Research activities

#### Buddhist beliefs about evolution

- 1 Using the internet and/or a library, find out more about Buddhist beliefs about evolution.
- 2 Write an explanation of what Buddhists believe about the beginning of life on earth.

### Religious reasons for rejecting Darwin

Some religious believers reject Darwin's theory and believe that God created humans in their final form. Reasons why they oppose the theory of evolution include the following:

- The Genesis account states that humans were made in the 'image of God' – therefore, they cannot have evolved from other species.
- Humans have a spiritual soul that distinguishes them from animals – therefore, humans cannot have evolved from other species.
- There are gaps in the fossil records that have been found – therefore, there is no conclusive evidence that the evolutionary process took place.
- Scientists have never found absolutely clear fossil evidence to support the supposed link between the apes and humans.
- It is claimed that natural selection occurs by random chance, but the advance to a higher life form would require the careful selection of the variations within a species. There is no evidence that this happens within nature.



**C** *Is the chimpanzee the result of natural selection?*

### Discussion activity

With a partner, discuss whether or not the discovery of 'jumps' in evolution supports or opposes the idea of God as creator.

### Religious reasons for accepting Darwin

Other religious believers think that it is possible to accept evolutionary theories without rejecting their faith. They believe that evolution is the process through which God's creation took place. Evolution shows the power of God and God's design for the development of humanity. There is no problem in accepting both the theory of evolution and the existence of God, especially as there are huge and sudden 'jumps' in evolution. These 'jumps' result in unexplained changes happening at certain times. One explanation could be that they are part of God's plan.

### Activity

'If you accept Darwinism, you have to be an atheist.' Do you agree? Give reasons for your answer, showing that you have thought about more than one point of view.

### Summary

You should now be able to discuss whether or not Darwin's theory of evolution is a challenge to religious belief.

### Study tip

Darwin's theory of evolution appears to challenge some religious believers' idea of God as creator. Make sure you are able to explain what these challenges are. Show that you have thought about different points of view.

## 6.7

# Can science and religion agree?



**A** Can science and religion agree?

### Why science and religion cannot agree

Scientists who are atheists can never agree with religion as they totally reject any aspect of religious belief. Religious believers who insist that their scripture and tradition contain the literal truth are unlikely to agree with science, unless they develop their own scientific theories. For example, fundamentalist Christians have developed their own scientific theories of creation and evolution that support the Genesis account of creation, called scientific creationism. Religious believers who reject agreement between science and religion argue that it is dangerous to change religious truths to fit scientific laws as this leads to the rejection of other teachings in the Bible.

### Why science and religion can agree

Many scientists and religious believers have no problem in accepting both scientific theories and the belief that God created and continues to sustain the universe. Many believers feel that the conflict between science and religion is over unimportant points. If the Bible's creation stories are not taken literally, then science can be regarded as revealing the laws by which God created the universe. Islam has always taught that science proves the truth of the Qur'an, and Islam encourages scientific research.

Buddhism, Hinduism and Sikhism all agree that scientific findings do not conflict with the teachings of their religion. In fact, they believe that science has tended to support their oldest teachings and they agree that both science and religion put forward some of the same truths.

### Objectives

Investigate whether or not science and religion can agree.

### links

Make sure that you understand why the Big Bang and evolution theories are challenges to religious belief by reading pages 14–15.

### Research activities

#### John Polkinghorne (1930–)

John Polkinghorne is a scientist who believes that science and religion can agree.

- 1 Use the internet to research Polkinghorne's views.
- 2 Write an explanation of why Polkinghorne believes that science and religion can agree.

### Study tip

When answering a question about whether or not science and religion can agree, make sure that you show that you have thought about different points of view.

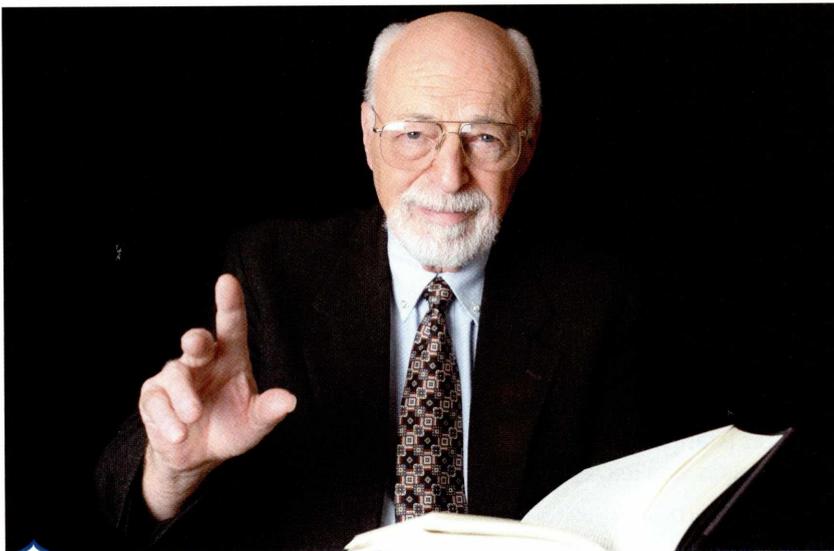
For the two to come together, scientists must be willing to accept that God or an Ultimate Reality is behind the scientific laws, which are continually changing in the light of new discoveries. Religious believers must be willing to adapt their interpretation of the scriptures and their religious teachings to keep up with scientific discoveries.

One recent development has been the theory of Intelligent Design. This explains the features of the universe and of living things in a scientific way, but avoids suggesting that the Big Bang and evolution are random processes. The theory makes it easier for religion and science to agree as it does not say that the designer is God.

## Conclusion

Many religious believers argue that it is possible to accept the Big Bang and evolutionary theories without rejecting their faith. They believe that evolution is the process through which God's creation took place. In fact, they say, their faith can be supported by scientific theories as they show how God acts in the world in which we live. There are occasions when science cannot explain problems and so some people turn to religion for explanations.

Religious beliefs cannot be proved in a scientific experiment, but science can give people a sense of wonder at the natural world that supports their faith. Whether someone accepts both science and religion depends on how they interpret the scriptures and teachings of their religion.



**B** *Does it all depend on what you believe?*

## Summary

You should now be able to discuss whether or not science and religion can agree.

## Extension activity

Using the internet and/or a library, find out more about the theory of Intelligent Design.

## links

Look back to pages 26–27 to remind yourself about faith.

## Activities

- 1 Explain why some religious believers argue that science and religion can never agree.
- 2 Explain why some religious believers think that there is no conflict between religion and science.

## 6.8

# Absolute truth versus evolving, changing truth

### Science versus religion

The last section considered whether or not science and religion can ever agree. This depends very much on people agreeing that they are asking the same questions about the real nature of the world and/or universe – but in a different way. It depends on what people understand by ‘truth’. There are two types of truth that cause conflict between religion and science:

- 1 Absolute truth.
- 2 Evolving, changing truth.

#### Absolute truth

Absolute truth is when it is thought that what is believed to be true cannot be changed. The facts are unalterable because they are correct. For example, it is the absolute truth that there are no square circles or round triangles. Absolute truth is fixed and cannot be changed.

Fundamentalist Christians believe that the Bible contains the absolute truth.

Richard Dawkins argues that God does not exist because there is no evidence to support a belief in God. For Dawkins, this is an absolute truth.

#### links

Look back to page 88 to remind yourself about Richard Dawkins' views.

#### Beliefs and teachings

##### *Richard Dawkins supports science*

Science offers us an explanation of how complexity (the difficult) arose out of simplicity (the easy). The hypothesis of God offers no worthwhile explanation for anything, for it simply postulates [states] what we are trying to explain. It postulates the difficult to explain, and leaves it at that.

Richard Dawkins – official website

#### Evolving, changing truth

Evolving, changing truth varies, depending on the knowledge and understanding at the time. As information and circumstances change, what is understood to be true may also change. An agnostic would be willing to accept that more evidence in the future could prove that God exists. For an agnostic, belief in God could be an evolving, changing truth.

#### Objectives

Investigate the issues of an evolving, changing truth versus an absolute truth.

#### Key terms

**Absolute truth:** fixed, unalterable facts. Something which is true for all times and in all cultures.

**Authority:** something or somebody accepted as having the power or right to expect obedience.

#### links

Look back to pages 118–119 to remind yourself about the different types of truth.



What is true about the world?

#### links

Look back to pages 120–121 to remind yourself about Fundamentalist Christian views.

Similarly, most scientists accept that they may not have discovered the absolute truth about the origin of the universe or life. This is why they often refer to discoveries as ‘theories’ – they are aware that new information may need people to change their understanding of theories such as the Big Bang or evolution.

Some religious believers are willing to accept that their scriptures and teachings are open to interpretation, and that their understanding of the reality of things may have to evolve and change as science discovers more about the world.

## The reliability of the source of authority

Whether or not something is accepted as the absolute truth depends very much on the reliability of what is accepted as the **authority**. If a religion teaches that God has spoken directly to people through the scriptures and revealed information about the reality of things, then for the believer that would be the absolute truth. If it is accepted that the scriptures may be interpreted, then what is considered to be the right interpretation may evolve through time. Science evolves as new discoveries are made. For example, in the Middle Ages, scientists believed that the earth was at the centre of the universe. Later, it was accepted that the earth revolved around the sun.

The main source of authority for people is themselves, what they personally believe to be true. This means that truth is subjective. What the followers of one religion believe is different from what the followers of a different religion believe. In the same way, one scientist may interpret the facts that have been discovered one way, whereas another scientist may come to a different conclusion.

Look at picture **B**. Do you see an old woman or a young girl? Your decision will depend on the way you interpret the image. The same is true of religion and science: it depends on what people believe to be true.

### Activities

- 1 Explain what is meant by ‘absolute truth’.
- 2 Explain what is meant by ‘evolving, changing truth’.
- 3 ‘Science and religion can never agree as they see the truth of things differently.’ Do you agree? Give reasons for your answer, showing that you have thought about more than one point of view.

### Summary

You should now be able to discuss the issues related to absolute truth and evolving, changing truth in relation to science and religion.

### Discussion activity

With a partner, discuss what sort of information might cause an atheist to start believing in God.



**B** Is this a picture of an old woman or a young girl?

### Study tip

Make sure that you are able to explain the differences between absolute truth and scientific and religious truth.

## 6.9

# Do science and religion answer the same questions?



**A** *Why am I here?*

### What are the questions?

The last section discussed the difference between absolute truth and evolving, changing truth. It also looked at the ways in which religion and science have similar views on what is true when considering questions about reality. Another issue is whether or not science and religion are trying to find the answers to the same questions.

The answer is probably 'yes', but not in the same way. Both are asking questions about the origins and development of the universe and life, but science puts the emphasis on 'how' and religion puts the emphasis on 'why'. The questions science is trying to answer include:

- How did the universe begin?
- How did life begin?
- How did the universe develop?
- How did life on earth evolve?

The questions religion is trying to answer include:

- Why did the universe begin?
- Why did life begin?
- Why did the universe develop?
- Why did life on earth evolve?

### What are the answers?

Science and religion ask the same questions but in different ways. For example, in questions about the origin of life, it is possible to see that science asks 'how' and religion asks 'why'.

### Objectives

Investigate whether or not science and religion answer the same questions.

### links

Look back to pages 130–131 to find more about whether or not religion and science can agree.

### Study tip

Make sure that you are able to support your arguments with examples in the examination.

### links

Look back to pages 118–119 to find more about the different ways in which religion and science seek to prove things true.

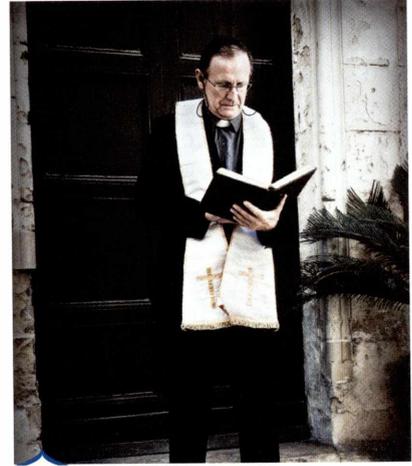
Science would ask how life began and seek scientific answers, such as the theory of evolution. Religion would ask why life began and seek religious answers, such as life began because God decided to create it.

However, it is possible for a scientist and a theist to accept each other's answers to the question. The scientist and the theist could both accept that evolution is the means by which God created life.

### Discussion activity

Stephen Hawking concluded in his book, *A Brief History of Time*: 'If we do discover a complete theory, ... we shall all, philosophers, scientists, and just ordinary people, be able to take part in the discussion of the question of why it is that we and the universe exist. If we find the answer to that, it would be the ultimate triumph of human reason – for then we would know the mind of God.'

What do you and the rest of your class think Hawking meant by this statement?



**B** Is it possible for a scientist and a theist to accept each other's answers to questions?



**C** 'We would know the mind of God'

### Activities

- 1 Explain the questions that religion and science try to answer.
- 2 'Religion and science ask the same questions.' What do you think? Explain your opinion.

### Summary

You should now be able to discuss whether or not science and religion ask the same questions.

## 6.10

# Science versus religion in the modern world

### The separation of science and religion

One of the reasons given for science being favoured over religion in the modern world is the fact that the world has become secular, that is, non-religious. Fewer people attend a place of worship on a regular basis, or bring their children up within a religious faith. In the Middle Ages, the reverse was true: religion dominated both society and science, and science had to adapt to religious teaching. The two gradually separated as a result of the Cosmological Revolution, when new scientific discoveries meant that people turned less and less to religion for answers to their questions.

#### Discussion activity

As a whole class, discuss why the work of scientists, such as Galileo and Newton, has resulted in the separation of science and religion in the modern world.

### God of the gaps

As science explained more and more, it was felt that the role of religion was to fill in the gaps that science could not explain. This became known in the 19th century as the philosophy of the ‘god of the gaps’.

After Newton’s discovery of gravity, scientists began to think that they would be able to discover a set of unbreakable natural laws governing the whole universe. For many scientists, this would mean that the universe was the equivalent of a machine with all parts working together, rather than the creation of God. God was no longer regarded as immanent and the controller of everything. The new scientific world-view encouraged the acceptance of a world that was a machine that ran itself. A scientist called Pierre Laplace (1749–1827) was so convinced that science would shortly have all the answers that he thought there would soon be no need to refer to God at all.

### A clockwork universe

Some people regarded the universe rather like a large clock that had been wound up and set going. A clockwork universe does not leave room for the spiritual soul. A belief developed (called Deism) that once God set things going, he moved on and didn’t again intervene in his creation. Science deals with the everyday workings of the cosmic clock, and religion deals with God and the soul.

#### Objectives

Investigate why society seems to favour science over religion in the modern world.

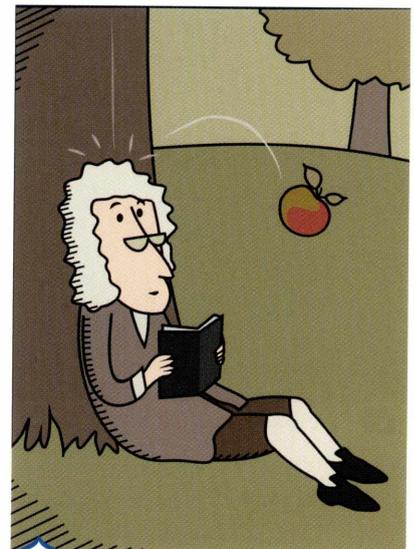
Investigate the impact of this for science and religion.

#### Study tip

Make sure that you are able to explain the influence of the Cosmological Revolution.

#### links

Science and religion began to separate after the Cosmological Revolution. Look back to pages 124–125 to remind yourself about the causes of the Cosmological Revolution.



**A** Newton’s discovery of gravity led to the theory of ‘god of the gaps’ and to a view of God as a distant being, a creator taking no further part in his creation

## Is there a place for religion in the modern world?

Laplace thought that when all the laws of nature were discovered, there would be no place for religion. However, the certainty Laplace and other scientists had that these laws would be found has been undermined by two recent scientific theories: Einstein's theory of relativity and the theory of quantum mechanics. These two theories have shaken the confidence of scientists in establishing facts about the reality of the world. This means that, once more, some scientists, such as John Polkinghorne, are turning to religion for answers to what cannot be otherwise explained, and therefore see religion as having a place in the modern world.

### Extension activity

Using the internet and/or a library, find out more about the theories of relativity and quantum mechanics.

## Religion has adapted to the scientific modern world

Many religious believers now accept that science is independent and cannot change its findings to conform to religious teaching. For many religions, this is not a problem. They accept that science has actually helped to support some of their religious truths. Buddhism, Hinduism and Sikhism consider that modern scientific thought does not contradict the truth of their religion. For these believers, science and religion complement each other. Islam has always taught that the seeking of knowledge is required by God: evidence discovered by science is further proof of the truth found in the Qur'an. Most Jews and Christians would also agree with this view.

## The modern world needs both science and religion

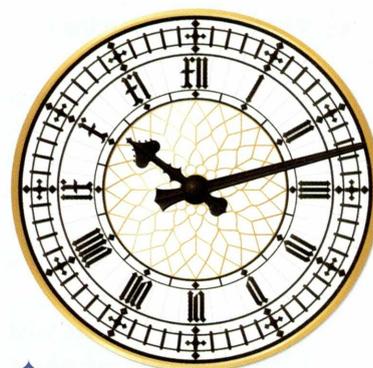
Many religious believers and scientists argue that the modern world needs both religion and science. Science can explain facts, but the spiritual needs of people have to be catered for as well. Recent research has shown that people who have religious beliefs are healthier and less likely to suffer from stress.

### Activity

'Science is more important than religion.' Do you agree? Give reasons for your answer, showing that you have thought about more than one point of view.

### Summary

You should now be able to discuss why modern society favours science over religion and the impact of this. You should understand how many religious believers respond to scientific theories.



**B** Do we live in a clockwork universe?

# 6

### Study tip

Remember, you may refer to one or more than one religion/denomination in this section of the examination.

## Science and religion – summary

For the examination you should now be able to explain:

- ✓ what is meant by scientific truth and how it is different from religious truth
- ✓ the Big Bang theory
- ✓ the Cosmological Revolution
- ✓ the theory of evolution.

You should be able to discuss:

- ✓ the Big Bang theory and Genesis 1 creation story
- ✓ interpretations of religious creation stories and their compatibility with scientific theories
- ✓ the challenge of the Cosmological Revolution to religious beliefs in the late Middle Ages
- ✓ the challenge of Darwinism to religious belief
- ✓ the extent to which religion and science can agree
- ✓ issues of evolving, changing truth and absolute truth when applied to science and religion
- ✓ science and religion in the modern world.

### Sample answer

- 1 Write an answer to the following examination question:

'There is no place for religion in the modern world.' Do you agree? Give reasons for your answer, showing that you have thought about more than one point of view. Refer to religious arguments in your answer. (6 marks)

- 2 Read the following sample answer:

I am not certain whether I agree that there is no place for religion in the modern world. Science does seem to be able to answer many questions about the origin of life through the theory of evolution but there are still things about the modern world that scientists do not understand. Science can tell us how things happen such as the Big Bang but not why, and I

think that this is where religion can help as it can explain the why through God. An atheist would agree that there is no place for religion in modern society as they do not believe God exists, but there are many other people who go to a place of worship regularly and live their lives by the teachings of their religion. For these people, religion is still very important in the modern world.

- 3 With a partner, discuss the sample answer. Do you think that there are other things that the student could have included in the answer?
- 4 What mark would you give this answer out of 6? (Look at the mark scheme in the Introduction on page 7 (AO2) before you attempt this.) What are the reasons for the mark you have given?