

Unit Three SECTION J: Religion and Science
(Students study part three or part four)

PART FOUR: CURRENT ISSUES FOR RELIGION AND SCIENCE: LIFE AND DEATH

Syllabus Aim	<ul style="list-style-type: none"> - To develop an awareness of the changing nature and methods of the scientific and theological enterprises - To examine some key moments in the history of the relationship between religion and science - To examine some of the issues and debates concerning the contemporary relationship between religion and science - To explore the ethical implications of scientific progress
Syllabus Objectives	<p><i>Knowledge</i></p> <ul style="list-style-type: none"> - identify possible future points of conflict and communication for science and theology. <p><i>Understanding</i></p> <ul style="list-style-type: none"> - have an understanding of the connections between the scientific and theological enterprises, particularly in contemporary science and theology - have an awareness of the limits and possibilities of the dialogue between religion and science - have an understanding of the ethical implications of scientific progress - For Higher Level Only - have an understanding of the theological perspectives on current developments in genetics <p><i>Skills</i></p> <ul style="list-style-type: none"> - differentiate between the scientific and theological enterprises - engage critically in current debates between religion and science - identify ethical implications of scientific progress <p><i>Attitudes</i></p> <ul style="list-style-type: none"> - awareness of scientific and religious fundamentalism - openness to the insights of science and religion in current debates - critical evaluation of scientific and technological progress

Topic 4.1 The Life Questions

Procedure

scientific descriptions of the beginnings of life and the moment of death
religious descriptions of the beginnings of life and the moment of death

The beginnings of life – Review scientific and religious descriptions of the beginnings of life.

Read *Student Work: STEM CELLS* OR *Student Work: THE BEGINNINGS OF LIFE*

The moment of death - Review scientific and religious descriptions of the moment of death

Discuss: What have the scientific and religious descriptions in common?
 How do the scientific and religious descriptions differ?

Take feedback and conclude by highlighting the scientific imperative ‘If we can do it, then we must do it’ and how ethics (philosophical and theological) raises the ‘ought we do it’ question.

Discuss:

- Is science at the service of the human person in community or an end in itself?
- The means and ends debate: Do good ends justify any means?
- How do we measure ‘progress’?

- Do we measure 'progress' by - human flourishing, technological advances, contribution to individual happiness, and promotion of the 'common good'?
- What do we mean by 'natural' and 'unnatural'? Have these concepts ethical implications?
- What does it mean to be a 'person'?
- Are human rights intrinsic to human persons or dependent on achievement, health, wealth, race, civil authorities?
- The Christian understanding of '*imago Dei*' (image of God) and its implications for equality of persons, human worth and human creativity.

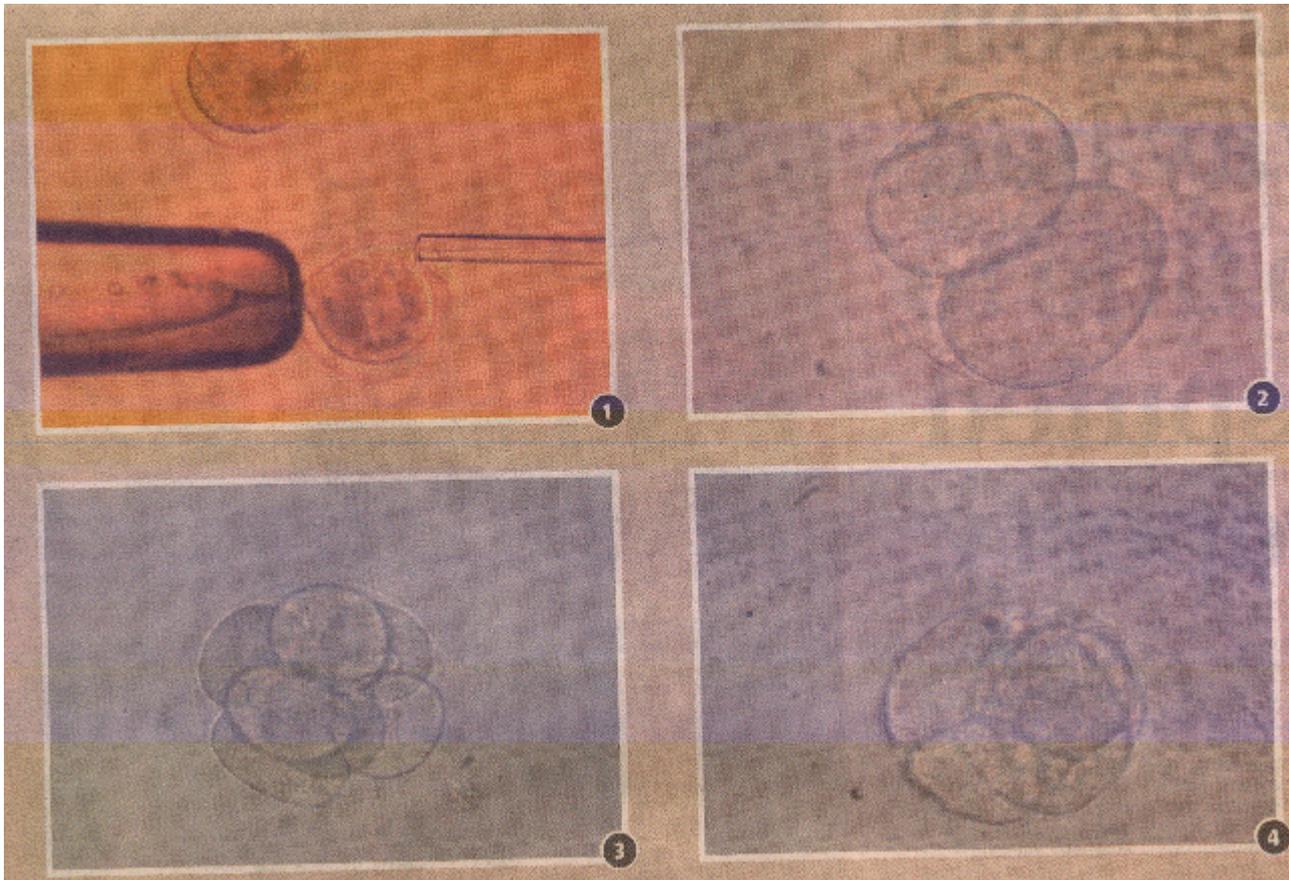
Assessment Questions

1. Compare a scientific and religious understanding of the moment of death.
How might they be the same? How might they differ?
2. Choose one of the following issues:
 - Cloning
 - Genetically modified life
 - The prolonging of life
 - The ending of lifeExplain why religion and science may have differing views on this issue.

Outcomes:

- Present scientific and religious accounts of the beginning and ending of life and indicate areas where science and religion share the same concerns

Student Work: STEM CELLS



(Adapted from *Unravelling the mystery of creation with life's recipe* by Nigel Hawkes - Irish Independent 13/02/2004)

Life sequence. The pictures show the process used by South Korean and US scientists who have successfully cloned a human embryo and extracted stem cells for the first time. Picture top left shows the injection of a donor cell; next the cloned embryo at the two-cell stage; the cells development is shown in the third picture at the four-cell stage and finally the eight-cell stage. The technique which is not cloning to make human babies could be used to create cells that could grow into any tissue, and could potentially be used to replace damaged tissue.

As an embryo grows it has to be able to produce a wide range of cell types, from brain and skin cells to liver and kidney cells. It achieves this by producing a kind of "starter" cell that has the potential to grow into any of the 210 cell types found in the body, the so-called stem cells. Researchers are interested in stem cells because of their potential to become any type of cell. This raises the possibility that they could be used to reverse degenerative diseases such as Parkinson's or to reconnect severed nerve tissues. Stem cells can be recovered from a variety of sources, including embryos, adult organs and tissues and also from the placenta and umbilical-cord blood. Embryos produce large numbers of stem cells making them an attractive source for these cells. The embryonic cells also appear to be the most "plastic" or pluripotent of all stem-cell types, making them of particular interest to researchers. Adults also produce stem cells in a range of tissues, including bone marrow and the liver. These cells are far less plastic however, and only tend to become the type of adult cells in the places where they are found. For example, stem cells from the liver tend to become liver cells. Placental and umbilical cord stem cells are easily recovered but behave more like adult than embryonic cells, making them less attractive for research.

- *Stem cells:* These are the source cells from which the body's specialised tissues grow. They change from a non-specific, undifferentiated state into a differentiated "adult" state, taking on one of the body's more than 200 different cell types.
- *Embryonic stem cells:* These are the most "plastic" or changeable stem cells, apparently able to differentiate into any of the body's various tissues. Their use is controversial because they are recovered from a dividing embryo, but their plasticity means they may be the most valuable form of stem cell for medical treatments.
- *Adult stem cells:* Adults also produce stem cells but they are much less changeable than embryonic cells. They have been found in liver, marrow and brain tissue, and tend to convert into cells appropriate to these locations.
- *Umbilical and placental stem cells:* Stem cells have also been recovered from the placenta and umbilical cord, although they act more like adult stem cells than embryonic stem cells. Their value is still being assessed.
- *Stem cell lines:* These are cultured stem cells originally taken from embryos but which now divide perpetually. Many countries accept research using cultured stem cells including Germany, which is strongly opposed to, and has legislated against, embryo research, but readily imports stem cell lines from other countries, including Israel.
- *Embryonic cloning:* Ethically fraught, being able to clone embryos would produce an endless supply of embryos, but also an endless supply of stem cells.

(Adapted from *Embryonic stem-cell research: what is it?* By Dick Ahlstrom in The Irish Times 26/11/03 & 04/12/03)

Student Work: THE BEGINNINGS OF LIFE

An article *Faith in God can co-exist with theory of evolution* by William Reville - senior lecturer in biochemistry at UCC

Of all the topics that I write on, the one that arouses most reaction is evolution. Some people find the concept deeply disturbing. At the heart of this disturbance is the fear that if evolution is true, everything in the world is devoid of higher meaning. That scenario is simply too bleak and barren for many people to accept and, consequently, they are bitterly opposed to the theory. But there is no need to take this pessimistic black and white approach.

Darwin's and Wallace's (1858) theory of evolution did indeed change things utterly. Before that it was pretty much universally accepted that the totality of things could be arranged in a hierarchy from top to bottom in the order of God, Mind, Design, Order, Chaos, Nothingness. It was accepted that all movement of effect in that hierarchy was from higher elements downwards. Then along came Darwin and Wallace to propose that things actually move in the opposite direction; out of chaos order can arise, out of order design can arise, out of design mind can arise.

Darwin and Wallace further proposed a credible mechanism, natural selection, to explain how these changes occurred. Darwin set out to explain the relationship between the different species of life and how these species changed over time. His conclusion was that existing forms of life have slowly arisen through natural selection from somewhat different forms by a process of gradual modification. Natural selection is the process whereby nature unconsciously favours the increase of those individuals displaying characteristics that to their environment better than their fellows. In this way, slowly emerging changes in an organism are naturally selected, and after a long period of time this unconscious process produces organisms "designed" to live efficiently and effectively in the environment.

In his book *The Descent of Man*, Darwin makes it clear that humankind also arose through evolution. In other words, our most prized possession, the conscious mind, is the product of unconscious natural selection. This was the most radical proposal imaginable at the time and to this day, many people cannot accept it. Even Alfred Russell Wallace, who was the co-discoverer of the principle of evolution, could not take matters this far. I appreciate why many people find it instinctively unpalatable to think that the mind arose out of the unconscious selection of random changes. Humans are part of nature, but are also obviously very different from the rest of nature. We are self-conscious, we can reason, we have language and culture. It is much more palatable to think that we have a spark of the divine, that we are connected upwards rather than effected from below.

Many people fear and despise an evolution because of its perceived knock-on implications. They feel that, if evolution is true, there is no place for God and there is no preordained purpose in the world. If evolution is true there are no absolute rights and wrongs, and codes of morality become, at best, guidelines to ensure efficient behaviour. If evolution is accepted, there is no compelling reason for people to be good. Natural theology produced several proofs for the existence of God. The best of these

proofs was the argument from design. This pointed to the sophisticated design that is obvious in the biological world. Where design exists there must be a designer and that designer is God. Before the theory of evolution, that argument made sense.

However, Darwin and Wallace knocked the legs from under it by showing that natural selection can produce design. But, while this invalidates the argument from design, it does not disprove the existence of God. Is it possible to have it both ways i.e. to believe both in evolution and in a God by whose will the world exists and operates? In my opinion, the answer is yes. I am a Christian and I also believe in evolution. My belief in God does not rest to any significant extent on identifying gaps in nature that science cannot explain, and invoking God to account for these gaps. I am content that science should go on uncovering mechanisms that explain the natural world. Nevertheless, I think that the basic material (quarks, electrons etc.) of which the universe is made is so wonderful as to make it not unreasonable to think that it exists by the will of God.

According to the picture provided by science, the universe has bootstrapped its way by natural means all the way from hydrogen in the beginning to Einstein in the 20th century. Granted it remains to be demonstrated that several huge steps along the way, such as the origin of life and the development of consciousness, occurred by purely natural means.

However, let us assume that they did and it is not unlikely that this will eventually be demonstrated. There is no evidence that God interferes with the natural unfolding of the world through the operation of the laws of nature. This would mean that the entire world developed naturally and inevitably to its present state because of the nature of the basic fabric of the universe. In that event we must stand in awe at the amazing potential built into the basic stuff of the universe and ask how this can be so.

Science provides natural explanations for natural phenomena. It is not competent to investigate the supernatural. Neither should we look to science to provide us with moral or ethical codes, although science can provide information useful in part in forming such codes. God is by definition, supernatural. Science and religion occupy different spheres, but there is no necessary conflict between the two. It is very unwise to use gaps in existing understanding of the world as 'proof' of the existence of God. Such a proof can stand only until a natural explanation arises. It seems to me that the existence of God is not a thing that can ever be proved. If there is no God this is obviously true. If there is a God, and if this ever became self-evident, it would remove the need for faith and for the sensible exercise of free will on our part. The lack of objective rational certainty in this matter coupled with the existence of just enough evidence for God, when apprehended by the whole being seems to be an essential element that validates faith between humans, as free agents, and God, whose nature we dimly reflect and in whose direction we aspire to move.

(Adapted from *The Irish Times* 13/10/1997)