

Chapter 7* **EVOLUTION AND CREATION*

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CONTENTS – CHAPTER 7

Chapter 7 EVOLUTION AND CREATION.....	7-1
7.1 INTRODUCTION.....	7-3
7.2 INTERPRETING THE SCIENTIFIC DATA.....	7-3
7.2.1 Science seeks truth	7-3
7.2.2 Scientific truth is derived by scientific method.....	7-3
7.2.3 Science as input to interpretation.....	7-3
7.2.4 Science and scientism.....	7-4
7.3 INTERPRETING THEOLOGICAL/BIBLICAL DATA	7-4
7.3.1 Distinguish scientific and theological questions	7-4
7.3.2 Interpretation is not inspiration.....	7-4
7.3.3 Science as an aid to interpretation.....	7-4
7.4 EVOLUTION— SCIENTIFIC ASPECTS	7-4
7.4.1 Introduction.....	7-4
7.4.2 History.....	7-5
7.4.3 Neo-Darwinism—modern Darwinism	7-7
7.4.4 Human evolution	7-8
7.4.5 Dating the past	7-9
7.4.6 Problems for evolution.....	7-9
7.5 EVOLUTION – THEOLOGICAL ASPECTS	7-10
7.5.1 Theological issues	7-10
7.5.2 Creation	7-11
7.5.3 Evolution by natural selection	7-11
7.5.4 Evolutionism.....	7-12
7.5.5 Creationism	7-12
7.6 BIBLICAL INTERPRETATION ISSUES	7-12
7.6.1 General principles.....	7-12
7.6.2 Gen 1:1– 2:4a: Creation by the word of God.....	7-13
7.7 REFERENCES.....	7-14

7.1 INTRODUCTION

No area of science touches more directly on the theological/biblical concepts of Creation, Humanity and the Fall than that of Evolution and Creation. Problems arise however with **interpretations** of both the scientific and the biblical data. Many consider that Evolution and Creation are **alternatives** and therefore that one must make a choice between these two explanations of the natural world. This difficulty has dogged the debate since Darwin presented his explanation of the multiplicity and development of species in the 19thC.— and even before. The issue has therefore become polarised and often the subject of **bitter controversy**. Huxley in the 19thC. and his modern counterpart Richard Dawkins in the late 20thC. have contributed to this polarisation as have those Christians who espouse a view of creation that envisages God acting in a staccato fashion to create individual species including man by acts of special creation.

A consideration of the history of Darwinism and of its context in 19thC England has indicated the complexity of the debate between evolution and creation. Darwin himself struggled with the issue of natural selection as either a substitute for God or as an explanation of God's activity. Darwinism was also perceived by his contemporaries as either a basis for atheistic naturalism or as an example of the way God acts in creation. Historical aspects are considered in *Chapter 3: Darwin and the Aftermath*.

History also served to illustrate the problem of linking a particular interpretation of Scripture, or a particular approach to theology, to an outdated understanding of science. The solution to this dilemma is to **understand evolution by natural selection as a proposed mechanism**, a means by which God brings about the rich variety of the biological world and to **reject as nonscientific any conclusion that evolution is an agent of creation**. The latter may be a valid proposition to put but it is a metaphysical proposition not a scientific one and it is best to distinguish such a view with respect to evolution as "evolutionism". If one clearly recognises this distinction then it will be appreciated that there is no intrinsic conflict between evolution and creation. **Evolution needs to be judged on scientific grounds and creation on theological and biblical grounds.**

We need to ask three questions therefore.

1. How do we interpret the scientific data?
2. How do we interpret the theological and biblical picture?
3. Are these pictures in conflict or are they to be seen as complementary?

7.2 INTERPRETING THE SCIENTIFIC DATA

7.2.1 Science seeks truth

If we are seeking truth we must examine the scientific data seriously and with integrity. We cannot dismiss it on trivial grounds or on the basis of presuppositions of what theology or the bible are saying.

7.2.2 Scientific truth is derived by scientific method

It must be interpreted on scientific grounds— by the scientific method.

7.2.3 Science as input to interpretation

We must also consider the implications of the scientific data in interpreting or reinterpreting theological and biblical matters.

7.2.4 Science and scientism

On the other hand, we must not allow the scientific conclusions to become philosophical conclusions, or evolution to become evolutionism or naturalism. This is to go beyond the scientific bounds to *scientism*— Cf. Dawkins.

7.3 INTERPRETING THEOLOGICAL/BIBLICAL DATA

7.3.1 Distinguish scientific and theological questions

In considering the issue of evolution and creation we need to distinguish the scientific from the theological questions. Evolution and creation are not alternatives, but represent respectively a secondary cause or mechanism and a primary cause. The former is outside the bounds of theology. "Biological man" and the "Image of God" are not alternatives, but represent two viewpoints of the same humanity. The former is outside the bounds of theology.

7.3.2 Interpretation is not inspiration

There have been a variety in interpretations, both throughout history and at present, as Christians and others have struggled to understand the text of the creation accounts. Theistic evolution, progressive creationism, special creation or literalism have all been understood by their proponents to best interpret what the text is describing. It is important therefore not to equate a particular *interpretation* with orthodoxy.

7.3.3 Science as an aid to interpretation

It may be necessary to reconsider a particular interpretation in the light of extra biblical information including emerging scientific data. This is well accepted with regard to language and cultural input and needs to be extended to input from science, if that is relevant.

7.4 EVOLUTION— SCIENTIFIC ASPECTS

7.4.1 Introduction

Issues

There are a number of very evident facts about the biological world that are well explained by evolution, by postulating a progressive transmutation of species from lower animals to higher animals including humans. Evolution therefore has good credentials as a scientific theory. This fact can be appreciated by most of the lay observers.

Variety of Species

There is an enormous variety of biological species, in the contemporary scene some 30 million separate species can be recognised. To this must be added the some 100 times this number which have become extinct over geological time. This is attested to by the fossil record. Thus we have a total number of different species over the history of biology of some 3 billion in all.

Relationship of species

There is a close anatomical, physiological and genetic relationship between species with a commonality in basic structure, in basic functions and in genetic constitution amongst living things. A continuous series can be constructed from the most simple plants and animals to the most complex. Thus there is evidence for a continuum rather than for a series of discrete species. The closer the species

are in the series the closer the similarity in their anatomical structures, their physiological functions and their genetic makeup.

Origin of Species

From these facts can be suggested that the origin of different species occurs, not by the individual creation of each of the three billion varieties, but by one species gradually transmuting into another to form a continuous series. **Thus the biological answer to variation and speciation is evolution.** It has become a basic principle of biology—one that unifies the whole of biology and undergirds modern biology.

Definitions

Evolution is the gradual unfolding of new varieties of life from previous forms over long periods of time. It was suggested as a possibility long before Darwin. The difficulty was that, before Darwin, a satisfactory and experimentally verifiable mechanism could not be agreed. Some mechanisms were suggested but they had little evidence to support them. See below.

Proposed Mechanism is by natural selection, acting from generation to generation, so that changes induced by mutation, are selected and passed on selectively from one generation to the next resulting in a change in allele frequency (or the genetic makeup) in successive populations.

Evolution thus:

- Denies a static unchanging world;
- Denies a separate origin for each species; and,
- Considers man to be part of the biological world;

but it does not deny the theological considerations:

- Creation or a Creator;
- Man made in the image of God;
- the nature and origin of sin.

7.4.2 History

Background

The development of information from geology and paleontology in the 18thC formed an important background for the emergence of evolution. This information related both to the fossil record and the age of the earth. The identification of fossils as evidence of previous life forms and their ordering in a fossil time sequence suggested some development over time. Initially no absolute time scale was known although geology progressively increased the time frame. Absolute timing of fossil artifacts, however had to await radioactive dating in the 1940's to provide firm evidence of the enormous time span involved.

With the advance of geology and the abandonment of catastrophism as an explanation of both the geological findings and the fossil record, a further foundation was laid for a consideration of evolution in the late 18th and early 19th centuries. This advance in geology culminated in the development of uniformitarian geology by Lyell in the early 19thC. Darwin had Lyell's very recently published *Principles of Geology* with him on the Beagle journey. Before the 18thC the age of the earth and the date of creation was established from biblical data notably by the findings of Archbishop Ussher. Thus both the age of the earth and the date of creation was considered to be 4004 BC, and this date appeared (giving it credence) in the margin of many bibles. By the end of the 19th century,

long time frames (although not to the extent now recognised) were universally accepted and creation over a long period was unquestioned.

Pre Darwinian evolution

As indicated above evolution was not suggested first by Darwin. His grandfather, the notable sceptic, Erasmus Darwin was talking about the possibility of mutability of species in the 18thC. Lamarck, the French biologist had a strong following for his concept of evolution. He suggested that environmentally determined changes were passed on to succeeding generations and thus favourable traits were perpetuated.

Darwin

Darwin was a careful observer and accumulated a mass of data in support of his theory of evolution by natural selection. His conclusions were influenced by the controversial views of Malthus and his theory of a struggle for human survival in Britain's 19thC. growing industrial society, with the pressures of limited resources of food and the problems of famine and disease. Population numbers were kept relatively constant as a result of these pressures. Darwin saw the analogy with nature as a whole and the explanation of his observations of nature.

Facts and interpretation

Fecundity, variation, selection and survival were the key elements in Darwin's proposal. The first two represented observed facts, the last two represented suggested interpretations of the facts to explain the origin of species.

All species had enormous fecundity. The potential for population growth was therefore considerable. Thus without natural checks numbers would increase very rapidly. Population numbers however remained relatively constant.

Therefore there was a struggle for survival

All populations showed considerable variation.

Therefore advantageous variations are selected by natural selection sometimes called "survival of the fittest". Darwin envisaged this process progressing to produce new species by transmutation of species

Evidence for Darwinism

Darwin's genius was his production of overwhelming evidence to support his theory. This came from three main sources.

Fossil records over a long time span.

Natural sequence of fossils.

Development of variation (speciation) in isolated populations. e.g. Galapagos islands.

Problems

Natural selection was not without its problems however. These have now been essentially dealt with in the contemporary theory of Neo-Darwinism.

Darwin however had no explanation for the basis of variation. This is now known to be the result of mutation.

Darwin also had no explanation for the fixity of variation in new generations. Again this has been clarified by the Mendelian mechanism of genetic inheritance.

Objections

It needs to be said that Darwin recognised the objections to his theory better than most and discussed them fully in the "Origin". Again most of these have

been dealt with by later observations but they still emerge as potential objections. There are three main groups:-

- The paucity of missing links, the gaps in the fossil record.
- The difficulty presented by complex organs such as the eye or the wing.
- The adequacy of the time span—is it enough?

Regarding gaps in the fossil record, see Conway Morris (2006). Regarding the time needed for evolutionary development, see Neild (2004).

Response

The response to Darwinism was mixed. Gradually however it was accepted by biologists although some remained doubtful until relatively late in the 19th century. See also chapter 2.

The Christian response was varied and still is. Gray, Wright and Warfield were evangelical and supportive. Huxley used it to promote a conflict position and his own agenda for scientific hegemony in 19thC England, where the universities were controlled by the ecclesiastical establishment.

7.4.3 Neo-Darwinism—modern Darwinism

Modern evolutionary theory distills the result of studies in modern genetics, population genetics etc. into the widely accepted theory of Neo-Darwinism. This has been contributed to by the following disciplines

Mendelian genetics

This provided a basis for **variation** by mutation. It also provided a basis for **inheritance** of variations by means of undiluted Mendelian characteristics.

Population genetics – Fisher

Provided a basis whereby small differences in population variation have been shown to be able to drive the process of natural selection at a remarkably rapid pace. It resolved the mutation vs. gradualism debate.

Genetic chemistry

Molecular biology techniques revealed the similarity and gradation at the chemical (DNA) level between species. Methods of inheritance by means of DNA etc. are identical from bacteria to humans. DNA sequencing between species reveals species relationships, common ancestors. Thus minor differences in DNA serve as a “molecular clock” to determine the gap between species. Humans and chimps for example have 98% of their DNA in common.

Experimental techniques - demonstration of microevolution

Over quite short time spans it can be demonstrated experimentally that the **selection** of variants can occur in a variety of populations. Drosophila, black/white moths and Sickle Cell Anemia in humans are examples.

To reiterate, the evidence for modern Darwinism comes from:-

- Fossil sequences
- Population genetics
- Microevolution
- Genetic technology

While there are still debates about the detailed mechanism, the general theory of evolution is considered by the scientific community to be well established.

7.4.4 Human evolution

The evidence for human evolution comes from three sources:-

- Paleo-anthropology— fossil man—molecular biology.
- Genetic data.
- Cultural considerations—tools, art, language.

Fossil evidence, skeletal and cultural

There are three groups of fossils distinguished, representing pre-human, early human and modern human fossils. Many recent discoveries have been made particularly in East Africa.

Prehuman australopithecines—ape men

These appear in South and East Africa around five million years ago. This group is characterised by bipedalism, a small cranial cavity and a protruding jaw similar to apes but with shorter canine teeth. They are not considered a direct ancestor of man, but to come from a common stock

Early man - homo habilis, homo erectus

These appear in Africa two to three million years ago and spread to Asia (Java man, Peking man) between one million and 500,000 years ago.

This group is characterised by an enlargement of the cranial cavity (2/3 of the size in modern man) and the development of the first "made" tools.

Oldowan tools appear at 2 million years ago, while more advanced Acheulean tools at 1.5 million years ago and fire at 700,000 years ago.

Modern man— homo sapiens

These appear first in Africa at 200,000 years ago and spread to West Asia (100,000), Australia (50,000), Europe (40,000), North America (15,000). They are characterised by a further increase in brain size and the development of sophisticated tools, and of art and religion (30,000). There are many unanswered questions and matters of dispute. The evidence however suggests an origin of modern man in Africa and a spread to other areas, descendants of early man (H. erectus) having become extinct. This is the so called Noah's Ark theory or the "African Eve" theory. This is supported by the genetic evidence.

Genetic data

This information is particularly important and can be considered under three headings.

Comparison of DNA with related species

Relationships and the closeness of this relationship can be deduced by such studies.

Backward projection from variants in populations from different areas

Mitochondrial DNA data suggest a common all female line ancestor to modern humans in Africa some 150,000 years ago. This is the "African Eve" or "Mitochondrial Eve" theory¹.

¹ See 'The Daughters of Eve' and 'The Curse of Adam' by Prof Brian Sykes, Oxford University. The first relates to mitochondrial DNA passed from mother to daughter; the latter to the Y chromosome passed from father to son. These are markers for tracing back the origin of most European women to seven 'mothers'.

Examinations of population variants today

Sickle Cell Anemia, which is caused by a difference of one amino acid in the β -haemoglobin chain, can be shown to be selected positively in malarial areas where this variant presents survival value but deselected in other areas where sickling is a disadvantage.

Cultural data

Cultural anthropology reveals characteristics such as language, religion, conceptual thinking in early human communities at 30,000 years.

One might well ask, what does it mean then to be human?

7.4.5 Dating the past

Many of these studies depend on the ability to date the past by a variety of techniques. Pre 20th century dating was imprecise, but it needs to be said that these techniques are now reliable and can be confirmed by a number of overlapping methods.

Mid 20th century—radioactive dating proceduresUranium-lead dating

U238, U235 decay to lead isotopes Useful for long periods to 4.5 billion years

Potassium 42 —argon dating

Useful for shorter periods Determines time from lava cooling

Radio carbon dating

Useful for periods 50,000 years or less.

Thermoluminescence

Periods to 100,000 years, similar to Radio Carbon dating.

7.4.6 Problems for evolution

These may be considered under two headings.

Scientific

Evolution is well established and the major issues are well recognised and taken into account by the scientific community. They are still essentially as recognised by Darwin but better addressed.

Gaps—missing links

There is still the unevenness of the fossil record— the presence of gaps and the absence of large numbers of intermediate forms. However there is a continual and progressive filling in of the fossil record as time proceeds. There is also reason to consider that rapid progress through intermediate forms would occur before the emergence of a relatively large successful population, so that fewer intermediate forms might be expected. Gould suggests a further process to account for speciation, called punctuated equilibria.

Complex organs such as the eye.

Small and intermediate changes are themselves adaptive and selective. There is not the need to envisage a full organ as being necessary for selection to be generative of changes. (See Dawkins, *Out of Eden* 1995, and Neild, 2004).

Time available is not sufficient

The monkey random typist argument. However there is not a completely random process, but rather directed selection, *progressively* moving towards the goal, (see Dawkins, *The Blind Watchmaker*, 1986).

Dating problems

These can be corrected and checked against alternative methods. The use of more than one method is normal practice in any event.

Pseudo-scientific

Scientific objections are often raised without understanding the scientific method or the way the scientific community operates. These follow a particular pattern suggesting that:

**evolution is only a "theory", or,
evolution is non-falsifiable, or that
some of the data does not fit or is disputed.**

Some of these objections consist of the **resurrection of old objections or those fully considered or discredited**, or of scientific concepts that are **bizarre or inadequately substantiated science**. These include disputes about dating, or of fossil explanations by catastrophism.

Many of these objections verge on the fraudulent, failing to take into account the whole picture or, at the very least, show a failure to understand the way in which science works.

7.5 EVOLUTION – THEOLOGICAL ASPECTS**7.5.1 Theological issues****Introductory considerations**

Two questions might be posed.

- 1. Does evolution exclude creation by God?**
- 2. Is evolution incompatible with a belief in God as Creator?**

Two reasons are given in support of answering yes to these questions.

Evolution is seen as presenting an alternative explanation to creation by God.

Therefore it is concluded that evolution and creation are alternatives incompatible with each other and one or other must consequentially be rejected. The secular humanist would accept that they are incompatible and accept evolution as the chosen alternative. The "creation scientist" would agree that they are incompatible but consider that evolution is unacceptable

Natural selection contradicts the nature of God through "predation and pain"

In a sense this is a much bigger issue— the understanding of why the world is the way it is.

However, let us examine the issue further and look for some definitions. What is creation? What is evolution?

7.5.2 Creation

There are three aspects which must be included in any understanding of the biblical doctrine of creation. They relate to the nature of the Creator, of the creation of humanity and of the nature of humanity as "fallen".

Creator

Asserts that all things, including time, owe their existence to God. The universe exists by the will of God. God's creative activity is continual and so includes not only beginnings but also his continued providence and sustenance.

However, any theological consideration of creation does not address certain aspects of origins. It does not indicate **how** God created.

- Does not imply **instantaneous** creation.
- Does not **preclude** a scientific explanation.
- Does not deny freedom and the potentiality for evil in creation. "Best of all *possible* worlds".
- Does not indicate creation in time but of time.

Humanity

The essential picture is of humanity made in the image of God and capable of relationship with God. However, while it affirms that humanity is more than just another animal it does not deny that man is part of the animal world— biological man. Nor does it imply instantaneous creation of man. It does however raise some issues about the relationship of emergent properties in "biological man" in relation to "theological man".

The Fall

Man is by nature sinful and in need of redemption.

However, it does raise some issues about the relationship of the origin, nature and transmission of a sinful nature in relation to the emergent "biological man".

7.5.3 Evolution by natural selection

This term must be restricted to the scientific explanation for the origin and nature of species including man. It includes the process (evolution) and the mechanism (natural selection). Evolution is not a force, but a mechanism, a description, to explain the "way things are", in biology.

Therefore, its truth or otherwise is determined by scientific investigation on the basis of the evidence, i.e. by "good science". It does not *exclude* God as a primary cause and does not *disprove* God as the creator. As a scientific mechanism it does however (as does any scientific theory) potentially explain the way God acts in nature.

It therefore presents a "**scientific** challenge".

The alternatives are therefore not

Evolution **or** creation, but rather

Evolution or some other plausible scientific explanation determined by the scientific method.

No other plausible scientific explanation so adequately explains the data.

7.5.4 Evolutionism

Evolutionism equates evolution with a force, an agent of creation— naturalism and blind chance are considered as agents of creation rather than God. It excludes God, by definition from the equation. Evolutionism does provide an alternative to God as creator. However it is a metaphysical concept, not a scientific one.

Evolutionism is thus an extension from evolution, but has no legitimate scientific basis. It does not *logically* follow from an acceptance of evolution as a scientific explanation, but goes beyond the domain of science.

It is espoused as a philosophy by scientific rationalists and ***rightly opposed by Christian believers.***

7.5.5 Creationism

Derived from a literal interpretation of the creation accounts in Genesis (young earth, flood geology interpretation). However it must be considered a belief system rather than science. Rather it is "*folk science*", seeking to support a *particular* scriptural interpretation. Creation in creationism is equated with "instantaneous creation" in six literal days. Because it excludes all other interpretations of origins it becomes incompatible with "evolution". The issue therefore is that of hermeneutics— of biblical interpretation.

How do we then interpret the Genesis creation accounts?

7.6 BIBLICAL INTERPRETATION ISSUES

7.6.1 General principles

In coming to biblical passages dealing with origins there are some important guidelines which are consistent with a high view of biblical authority and inspiration.

Take Scriptural authority seriously.

As inspired by God, the revelation of God, but not forgetting that it is expressed through human vehicles.

Consider genre.

Is it literary or literal, narrative or poetic, historical or allegorical?

All of these genres are present in the biblical record and a literal interpretation is not necessarily the appropriate one, particularly if there are conflicts with truth from other sources such as science.

Consider the context, world view of the hearers.

What was the scientific world view in the ANE in the first and second millenium BC? Cosmology was understood in terms of a three-decker universe, with no concept of modern cosmology.

The important question is what did the text convey to the hearers?

Consider the purpose of Scripture.

The primary purpose of Scripture is as a guide to faith and conduct, not of science.

Problems have arisen from such a misconception. Many have espoused a *biblicist interpretation*, where the Bible determines science, while others have espoused a *concordist interpretation*, where science determines the biblical interpretation. Neither is an adequate approach to Scripture.

History is illustrative of these issues and also reminds us that there have been many interpretations of Genesis both throughout history as at present.

Use extra-biblical evidence to clarify interpretation.

It is important to consider seriously the implications of contemporary science. Scientific truth and biblical truth will not be in conflict. This approach has good historical precedent.

7.6.2 Gen 1:1– 2:4a: Creation by the word of God

Several questions need addressing.

Literal or literary?

Numbers, structure, repetition, sequence suggest a literary interpretation rather than a literal one.

ANE background: the ANE world view

Enuma elish and other creation myths suggest a presentation of Gen. 1 as a hymn of praise extolling the nature of Israel's God, emphasizing a monotheistic understanding.

Interpretation

The basic facts emerge from the text of God as creator—separate, independent. There is a polemic against polytheism, monism, dualism.

Creation is separate, dependent and good.

Humanity is special, made in the image of God, having dominion over creation and in relationship to God.

The sabbath is special conveying a new relationship.

It is a polemic against contemporary ANE world views.

Concerned with who God is and who we are, not the how of creation.

Gen 2–3: Adam and the fall

The interpretation of this narrative is a major issue for the evolution/creation debate, but it is not often faced up to. We might well ask how do we interpret it?

Literary or literal?

Symbols abound— serpent, tree of life, rib, dust. Anthropomorphism. Structure is important— Gen 2, Gen 3, Eden and the fall—narrative.

History or myth, saga

Myth and its meaning.

Perspective and message.

Should we interact with the scientific (anthropological) data?

Who was Adam? (See Alexander, 2008.)

Was Adam a historic person or a generic term?

Was the creation of the *Imagio Dei* gradual or instantaneous?

Was the "Fall" gradual or instantaneous?

These are important questions for discussion.

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