Science, Evolution, and Intelligent Design

Part I

Précis

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[Part I considers the *Philosophy of Science* and *Cosmology and Cosmogony*. Part II will consider the *Origin of Life and Species* and *Intelligent Design*.]

I. Philosophy of Science

A. Questions About Science[1]

1. Science: A Matter of Faith

The word *science* literally means "knowledge," and has its origin in the Latin *scire* ("to know").

The discipline of science is built upon certain first principles and assumptions established in philosophy. J. P. Moreland states:

> Philosophy undergirds science by providing its presuppositions. Science … assumes that the universe is intelligible and not capricious, that the mind and senses informs us about reality… and so forth. All of them are philosophical in nature.[2]

Let us accept that first principles are self-evidently true. In order for science to be sound, it must keep the faith it has in reason, and correct reasoning logically depends upon the existence of a thinking entity (God).

2. The Principle of Causality

The first principle of science is a philosophical assumption upon which the discipline of science rests: it is the *principle of causality*. This principle states that *every event has an adequate cause*.

There are several causes that can be isolated: Primary (efficient) causes and secondary (instrumental) causes. Considering sunlight passing through a prism, the spectrum of colors is an effect that has a secondary (instrumental) cause: the prism. The primary (first) cause, however, is the sunlight. Actually, we can go further and ask, what caused the sunlight?

3. Causality and God

When applying the principle of causality to God, atheist philosopher Bertrand Russell (1872-1970) asked "Who made God?"[3] After all, causality implies that everything has a beginning, including God. But causality does not say that everything needs a cause, but only that which is finite and limited. God is neither.

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[1] This section is based on *Unshakable Foundations*, ch. 4.
[2] J. P. Moreland, *Christianity and the Nature of Science* (Grand Rapids, MI: Baker, 1989), in *Unshakable Foundations.*
[3] Bertrand Russell, "*Why I Am Not a Christian" and Other Essays on Religion and Related Subjects,* ed. Paul Edwards (New York: Simon and Schuster, 1957) in *Unshakable Foundations.*

Similarly, Jean-Paul Sartre (1905-1980) argued that God must be a self-caused being, which is logically impossible. In fact, God is an uncaused Being.

4. Operation and Origin Science[4]

Two important terms are operation science and origin science. *Operation science* deals only with repeatable, observable processes in the *present*. It is distinguished from *origin science*, which helps us to make educated guesses about origins in the *past*. Operation science has been very successful in understanding the world and has led to many technological advances. In contrast, origin science deals with the unobserved and unrepeatable past. Both sciences use the principles of *causality* and *uniformity* or *analogy* (the present is the key to understanding the past).

5. Science and God

Many scientists believe that science can neither affirm nor deny the existence of God. Paleontologist Stephen Jay Gould has said,

> Science simply cannot (by its legitimate methods) adjudicate the issue of God's possible superintendence of nature. We neither affirm it nor deny it; we simply cannot comment on it as scientists…. Science can work only with naturalistic explanations; it can neither affirm nor deny other types of actors (like God)[5]

However, Gould and other scientists, including Albert Einstein, Carl Sagan, and Stephen Hawking, regular break their own rules and passionately use science to come to terms with God's existence (though not the God of the Bible).

Nevertheless, numerous scientists over the centuries believed in an error-free Bible. Some of these are: Johannes Kepler, Blaise Pascal, Robert Boyle, Isaac Newton, Michael Faraday, Charles Babbage, Louis Agassiz, Gregor Mendel, Louis Pasteur, William Thomson (Lord Kelvin), and James Clerk Maxwell.

Belief in a Creator does not nullify the scientific method. For example, Francis Bacon was inspired by the theistic doctrine of creation. He concentrated on secondary scientific causes (natural laws) used by God to operate the universe.

B. The Authority of Scripture[6]

1. The Authority, Sufficiency, and Perspicuity of Scripture

Within the evangelical scientific community, a minority hold to a biblically-centered view. This view, as recently espoused by Jonathan Sarfati, has the following tenets:

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[4] These terms were coined by Norman L. Geisler and J. K. Anderson, *Origin Science: A Proposal for the Creation-Evolution Controversy* (Grand Rapids, MI: Baker Books, 1987). This section is based on *Refuting Compromise*, p. 64-65.

[5] Stephen Jay Gould, "Impeaching a Self-Appointed Judge," *Scientific American*, July, 1992.

[6] This section based on Sarfati, Jonathan, *Refuting Compromise* (Green Forest, AR: Master Books, 2004), ch. 1.

- The Bible, because it is God's written Word, should be the basis for our thinking in every area on which it touches, including science.
- The Bible is *propositional revelation* – it uses words to reveal true propositions, or facts about things. Therefore, it can be interpreted according to the rules of grammar and historical context.
- Nature, in contrast, does not contain propositional revelation, but instead the data must be interpreted according to a framework. Thus, the interpretation of the days of Genesis must be evaluated first in a biblical context.
- Scripture is understandable (perspicuous) by ordinary people using sound hermeneutical principles without needing an elite group to interpret it. In Reformation times, this elite group was the Roman Catholic Magisterium. Today, it appears to be scientists.

Evolutionists start with the axiom of materialism, that is, matter is all that exists. Professor Richard Lewontin, a leader in evolutionary biology, states:

> We take the side of science *in spite* of the patent absurdity of some of its constructs, … *in spite* of the tolerance of the scientific community for unsubstantiated just-so stories, because we have a prior commitment, a commitment to naturalism.[7]

2. The Effects of the Fall

Consider the effect of the Fall on man and creation. Because of Adam's sin, creation is cursed[8], man's heart is deceitful[9], and the thinking of a godless man is futile[10]. Scripture, although penned by fallen humans, was superintended by the Holy Spirit[11]. *It is the only source of revelation on tainted by the Fall.* In particular, general revelation (nature) is not on a par with Scripture (special revelation).

Science is therefore fallible and ever-changing. *We must therefore resist the temptation to prove the Bible with science.* Instead, the *presuppositional* approach means that while the biblical framework is non-negotiable, scientific models proposed to elucidate this framework should be held loosely.

Some will argue that Theology and Science each have their own domain: Theology is the interpretation of the Bible, and Science is the interpretation of nature.[12] If science is really the study of God's general revelation, the first and most basic conclusion should be the character of the God who made the world. *But science largely misses God, so it can hardly be regarded as an authority by Christians.*

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[7] Richard Lewontin, "Billions and Billions of Demons," *The New York Times Review* (9 Jan. 1971), p. 31 (emphasis in the original), in *Refuting Compromise*, 43.
[8] Gen. 3:17-19; Rom. 8:20-22.
[9] Jer. 17:9.
[10] Rom. 1:21.
[11] 2 Tim. 3:15-17.
[12] See Stephen Jay Gould, "Nonoverlapping Magisteria," *Natural History,* 106 (March 1997): 16-22.

3. Magisterial and Ministerial Use of Science

What should the role of science be? The *magisterial* role of reason occurs when reason stands over Scripture like a magistrate and judges it. Such reason is bound to be flawed, because it starts with axioms invented by fallible humans and not invented by the infallible God. In fact, it is the chief characteristic of liberal "Christianity."

The *ministerial* use of reason occurs when reason submits to Scripture. This means that all things necessary for our faith and life are either expressly set down in Scripture or may be deduced by good and necessary consequences from Scripture. Further, we note that science is not of the same order as logic. Valid logical deductions from true premises always lead to true conclusions, while scientific theories come and go.

C. Scientific Realism[13]

Scientific realism holds that good scientific theories are rational. Realists hold that, since science always defeats religion in their battles, the perhaps religion was never intended to be a factual, rational way of understanding the world, but rather a private guide for one's practical life. J. P. Moreland notes that there is now a major battle going on over scientific realism, and it is being rejected by many philosophers, sociologists, and scientists. This view is presented below, along with alternatives.

The core tenets of **Rational (Scientific) Realism** are:

- Scientific theories (in mature, developed sciences) are true or approximately true.
- The central observational and theoretical terms of a mature scientific theory genuinely refer to things in the world.
- It is possible in principle to have good reasons for thinking which of a pair of rival theories is more likely to be more approximately true.
- A scientific theory will embody certain epistemic virtues (simplicity, clarity, internal and external consistency, predictive ability, empirical accuracy, scope or relevance, fruitfulness in guiding new research) if and only if it is approximately true.
- The aim of science is literally a true picture of the world. Scientific progress tends to converge on truer and truer pictures of the world.

Rational Nonrealism posits that scientific theories are rational but do not give true descriptions of the deep structure of the world's hidden substances, particles structures, or laws.

Nonrational Nonrealism not only denies realism, but also denies that there is some objective sense in which science is rational. For instance, there is no such thing as neutral facts or data. Two different people with different paradigms or theories actually see different things.

Moreland draws the following conclusions:

[13] This section is based on *Scaling the Secular City,* 186-197.

- Rational realism has serious difficulties which have led a large number of thinkers to reject it. (For instance, several past theories now believed to be false had several epistemic virtues. So truth is not related to the success of a theory.) *Christians who try to integrate science and theology should not naively assume rational realism by holding that current science must be approximately true by definition.*
- One should be cautious in accepting a current, established scientific theory as an approximately true description of the world. For instance, one could be a realist in geology but a nonrealist in quantum physics.
- The boundary between science and nonscience is a difficult one to draw.

D. The Limits of Science[14]

The aims, methodologies, and presuppositions *of* science cannot be validated *by* science. The validation of science is a philosophical issue, not a scientific one, and any claim to the contrary will be a self-refuting *philosophical* claim.

Several philosophical views which are necessary presuppositions of science must be held.

- First, the senses are reliable and give accurate information about a mind-independent physical world.
- The mind is rational, and the universe is rational in such a way that the mind can know it. Science must assume some uniformity of nature to justify induction (i.e., science must assume that one can legitimately infer from the past to the future and from the examined case to the unexamined ones of the same kind).
- The laws of logic are true; numbers exist; language has meaning; and truth exists and involves some sort of correspondence between theories and the world.
- Science assumes certain moral, epistemic, and methodological values. For instance, experiments should be reported honestly and truth-telling is a moral virtue.
- "Boundary conditions," such as the mass of a proton and the nature of the creation event, are not subsumable under higher laws. They are givens which cannot be accounted for by science.

E. Models for Integrating Science and Theology[15]

J. P. Moreland presents five models for integrating science and theology. The first four are considered inadequate because they fail to account for the overlap between the disciplines.

1. Difference in Essence. Science and theology are concerned with two distinct and separate realms, the natural and he supernatural. Thus science and theology cannot, even in principle, come into conflict.

[14] This section is based on *Scaling the Secular City,* 197-200.
[15] This section is based on *Scaling the Secular City,* 200-208.

2. Difference in Approach. Science and theology are two distinct, noninteracting approaches to the same reality. Theology focuses on the *why* and *who* of a phenomenon; science focuses on the *what* and the *how*.

3. Theology Foundational for Science. Theology provides the metaphysical foundation for science and helps to ground the latter by explaining the necessary preconditions of science.

4. Science Delimitative of Theology. Science provides the boundaries within which theology must work. Science can dictate to theology what its limits must be, but not vice versa.

5. Interactive Approaches to the Same Reality. Science and theology are interacting approaches to the same reality. Occasionally they make competing, interactive claims about the same reality in such a way that theology sometimes implies that gaps will exist in scientific accounts at those points where God intervened.

This eclectic view of integrating science and theology is the most adequate if one assumes a rational realist view of science. It recognizes that sometimes that the two disciplines are concerned with two distinct realms, sometimes they are noninteracting approaches to the same realm, and sometimes they are competing approaches to natural phenomena.

F. Creation and Evolution: An Example of Integrating Science and Theology[16]

J. P. Moreland considers creation and evolution as an example of integration of science and theology.

1. Creation Science

Is creation science a religion and not science? This issue comes up often in public discourse and particularly at legal trials. Six objections are often raised:

1. *Creation science uses a religious concept ("God") and is therefore a religion and not a science*. This objection fails because "God" is not necessarily a religious concept. "God" may be a mere philosophical concept or theoretical term, as it was to Aristotle.[17]

2. *"God" is an illegitimate term in science, not because it is religious, but because it is supernatural, and science explains by using natural laws*. This seems to imply that that a proper explanation *must* be a naturalistic one. Further, scientists have long understood the difference between establishing the existence of a phenomenon and explaining it by a natural law.

3. *Creation science is a theory derived from the Bible and is therefore not a scientific theory.* This is an example of the genetic fallacy.

[16] This section is based on *Scaling the Secular City,* 208-223.
[17] This seems like an odd argument for a Christian to make. Our God definitely is a religious concept.

4. *Creation science makes no predictions and is not empirically testable*. In fact, scientific creationism makes a large number of testable predictions. For instance, it predicts that the fossil record will lack clear transitional forms and will show systematic gaps.

5. *Creation scientists are narrow-minded and hold their theory so tenaciously that it cause them to be closed to a revision of their theory*. First, this is at best an ad hominem criticism. Second, many scientists in other areas have shown resistance to scientific change. Third, creation scientists do indeed refine their theories.

6. *Creation science does not rely on positive evidence to support its case, but rather relies on problems in evolutionary theory*. This is false because creation science does involve predictions which give positive evidence for creation science. Further, falsifying or weakening an evolutionary tenet does offer support for rival theories.

2. Biblical Issues in the Doctrine of Creation

Moreland argues that there are sufficient problems in interpreting Genesis 1 and 2 to warrant caution in dogmatically holding that only one understanding is allowable by the text.

Among *literal interpretations,* the most orthodox is the *six-day-creation* view, which holds that the six days of creation are literal 24-hour periods, and that the cosmos is less than ten thousand years old. Other views involving literal 24-hour days are the *six-day-re-creation* view, the *six-revelatory-day* view, and the *gap theory*.

Progressive creationism rejects macroevolution (including theistic evolution) and holds that God intervened directly at certain points in the process of creation. It also holds that the days of Genesis are long, unspecified periods of time. Thus, it tries to steer a middle course between literal creationists and theistic evolutionists. The six days of creation are held to be six consecutive periods of time, though there is some difference of opinion as to whether the days are overlapping or not.

II. Cosmology and Cosmogony[18]

Does the universe need a cause? Bertrand Russell said, "the universe is just there." Carl Sagan agrees: "The Cosmos is all that is or ever was or ever will be." On the other hand, Mortimer Adler said,

> IF the existence of the cosmos as a whole needs to be explained, and IF it cannot be explained by natural causes, THEN we must look to the existence and action of a supernatural cause for its explanation.[19]

C. S. Lewis put it this way:

[18] Based on *Unshakable Foundations,* ch. 5.
[19] Mortimer J. Adler, *How to Think About God* (New York: Macmillan, 1980), in *Unshakable Foundations*.

> Is it not equally reasonable to look outside Nature for the real Originator of the natural order?[20]

Two important terms are *cosmology* and *cosmogony*. Cosmology is the theory of the cosmos, which deals with the nature and structure of the universe as a whole. It is the operation science component of astronomy, and deals with the present workings of the physical universe. Conversely, cosmogony is the origin science component of astronomy that is concerned with the origin of the universe.

The *second law of thermodynamics* holds that everything in the universe tends toward disorder and decay. Any process, such as converting petroleum to gasoline and using that gasoline to fuel a car, is inefficient. This amount of disorder, know as *entropy*, is continually increasing, and it is hypothesized that the universe will eventually die in a "heat death." As Roy Peacock noted, "For us to live in a universe in which the Second Law of thermodynamics holds, then it must be a universe that has a starting point, a creation."[21]

A. The Days of Creation[22]

A debate is raging between young-earth creationists, who hold to literal creation days in Genesis chapter 1, and progressive creationists, who do not believe these are literal 24-hour periods.

The Hebrew word for "day" (*yôm*) occurs 2,300 times in the Old Testament – 1,450 in the singular, 845 in the plural, and 5 in the dual form (two days). Its semantic range is restricted to these five meanings:

- A period of light in a day/night cycle
- A period of 24 hours
- A general or vague concept of time
- A specific point of time
- A period of a year

The normal sense of *yôm* is a period of 24 hours. When *yôm* means a period of time, it is heavily modified by other time indicators.

1. Indications the Days of Genesis 1 are Ordinary

- In Genesis 1 the creation days are modified with both "evening and morning" and a number.
- The heavenly bodies were created to be "for signs and for seasons and for days and years" (Gen. 1:14[23]), with "day" used in the ordinary sense.

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[20] C. S. Lewis, *God in the Dock* (Grand Rapids, MI: Eerdmans, 1970), quoted in *Unshakable Foundations*.
[21] Roy Peacock, *A Brief History of Eternity* (Wheaton, IL: Crossway, 1990), quoted in *Unshakable Foundations*.
[22] This section is based on *Refuting Compromise*, chapters 2-3.
[23] Scripture references are taken from the New American Standard Bible, 1995 Update, unless otherwise noted.

- The creation week is the very basis of the working week, as evidenced by the Fourth Commandment.[24]

2. History of the Interpretation of Genesis 1-11

Chapters 1-11 of Genesis have been analyzed by theologians since the beginning of the church. Most believed that the days of creation were 24 hours long. The minority who dissented believed they were instantaneous, not long. Belief in a "young earth" (thousands of years) was unanimous among those who commented. Ideas such as day-age and gap theory arose in the 19th century only in response to modern "science."

B. The Big Bang[25]

The Big Bang may be succinctly described as the origin of the universe from a state of extremely high temperature and density about 14 billion years ago.

1. Key Assumptions of the Big Bang

Einstein's General Theory of Relativity describes the gravitational attraction of all matter. It is based on scientific observation and is not disputed.

The Cosmological Principle states that an observer's point of view of the universe depends neither on the direction in which he looks nor on his location. It is an entirely philosophical assumption, and there is no particular biblical or scientific reason to accept it.

Finally, the assumption of **Naturalism** is usually left unstated. It holds that the universe today is entirely the result of natural processes, without the direct involvement of God.

2. Alleged Evidence for the Big Bang

According to the fallacy of verified prediction, if Theory T predicts Observation O, and O is observed, it does not necessarily mean that T is true. Keeping that in mind, the two primary evidences for the Big Bang are:

Cosmic Expansion. The fact that distant galaxies are receding was shown by Edwin Hubble's red shift analysis. The Big Bang did not predict the expansion of the universe, but rather the expansion was discovered first, and the Big Bang was developed to explain it. The expanding universe is strong evidence that the universe had a beginning, and, thus, is finite. Old Testament passages such as Isaiah 40:22 indicate that God has stretched out the heavens.[26]

Cosmic Microwave Background Radiation (CMB). The Russian-American physicist George Gamow in 1946 predicted that a "hot" Big Bang would have an "afterglow" of radiation that would be highly red-shifted. In 1965 two radio-astronomers at Bell Labs in New Jersey detected a signal that came from everywhere in the sky at the same intensity,

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[24] "For in six days the LORD made the heavens and the earth, … and rested on the seventh day," Ex. 20:8-11; cf. 31:17.

[25] This section is based on *Refuting Compromise*, chapter 5.

[26] See also Job 9:8, Jer. 10:12.

having a temperature of 3 K (degrees above absolute zero). Their discovery is regarded as vindication of the Big Bang. Although the CMB is predicted by the Big Bang, its exact characteristics of the CMB were not predicted, but rather are used to refine the Big Bang theory.

3. Scientific Problems with the Big Bang[27]

Several problems are noted with the Big Bang theory, among them:

Missing Monopoles. Hypothetical subatomic particles called **monopoles** are believed to have formed in the high temperature conditions of the Big Bang. Yet, despite considerable searching, monopoles have not been found. This suggests that the universe was never as hot as the Big Bang predicts.

Insufficient Antimatter. The Big Bang should have produced precisely equal amounts of matter and antimatter. Yet the visible universe is comprised almost entirely of matter—with only trace amounts of antimatter.

Missing Primordial ("Population III") Stars. The first stars would be comprised of only the three lightest elements (hydrogen, helium, and lithium, since these would have been the only elements in existence initially). Some such stars should still be around today, but none have been found.

In addition to these direct predictions of the Big Bang, many other evidences point to a recent age for the solar system and universe. These include the saltiness of the ocean, the decay of the moon's orbit, the recurrence of comets, and the decay of the earth's magnetic field.

4. Alternatives to the Big Bang

Secular scientists have proposed several alternatives to the Big Bang theory that seek to avoid a beginning to space and time:

- The first is an *oscillating* or *pulsating* model of the universe. Eventually the expansion of the universe slows as gravitational forces dominate. Ultimately the universe contracts upon itself, resulting in a "Big Crunch." This cycle of Big Bang-Big Crunch repeats itself infinitely.
- The *Steady State* model, proposed in the 1940s by Sir Fred Hoyle, holds that the universe always existed and, on a macroscale, looks the same for all periods of time.
- Stephen Hawking's quantum cosmology[28] is fraught with metaphysical assumptions.[29]

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[27] This section based on J. Lisle, "The Big Bang: God's Chosen Method," *Answers,* 3:1 (2007), accessed 25 October 2008 at https://www.answersingenesis.org/.
[28] Stephen W. Hawking, *A Brief History of Time* (New York: Bantam, 1988).
[29] Roy E. Peacock, *A Brief History of Eternity* (Wheaton, Ill: Crossway, 1990), 95, quoted in *Unshakable Foundations*, 109.

The naturalistic biases of these models are obvious, in that they seek to avoid the need for a Creator.

C. Physical Evidence for a Finite Universe

Reasoning that the First Cause of the universe is eternal (outside of time), powerful enough to account for the origin and existence of the universe, and knowledgeable, Geisler and Bocchino conclude:

> [T]he Superforce that brought the universe into existence is a supernatural entity that is infinitely powerful, eternal, and knowledgeable.[30]

Regardless of origin model, the universe clearly exhibits design and purpose. Paul Davies states,

> The laws which enable the universe to come into being spontaneously seem themselves to be the product of exceedingly ingenious design. If physics is the product of design, the universe must have a purpose, and the evidence of modern physics suggests strongly to me that the purpose includes us.[31]

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[30] *Unshakable Foundations,* 102-103 (emphasis in the original).
[31] Paul Davies, *Superforce* (New York: Simon & Schuster, 1984), 243, quoted in *Unshakable Foundations*, 103.