

Physics and Faith 1.

**Views of the Relationship
Between Science and
Theology**

Introduction

Four ways of relating science and theology

(from Ian Barbour):

1. Conflict
2. Independence
3. Dialogue
4. Integration

Conflict

Science and theology are two **conflicting views of reality:**

- 1 Scientific Materialism
2. Biblical Literalism

Conflict

Scientific Materialism

Tenets of Scientific Materialism:

1. the scientific method is the only reliable path to knowledge (= **scientism**)
2. matter is the fundamental reality in the universe

Tenet 1: is a *epistemological* (= the nature of knowledge) assumption

Tenet 2: is a *metaphysical* (= the nature of reality) assumption

Together, these two assumptions imply only those things studied by science are real

Conflict

Scientific Materialism

Scientific Materialism often involves
reductionism:

1. **Epistemological Reductionism** -- All scientific theories ultimately reducible to the laws of physics
2. **Metaphysical Reductionism** -- component parts of a system are the fundamental reality

Conflict

Scientific Materialism

Science (Scientific Method):

1. uses only reproducible, public data
2. theories are subject to experimental testing / observations
3. defined criteria for evaluation of competing theories

Religion:

1. no reproducible, public data
2. no experimental testing
3. no accepted criteria for evaluation of competing theories

Religion therefore subjective, parochial, uncritical.

Conflict

Scientific Materialism

Scientific Materialism leads to

Philosophical Materialism

- matter alone is real
- the mind, purpose, human love are byproducts of matter in motion

Conflict

Scientific Materialism

Jacques Monod's *Chance and Necessity*:

- **"Man knows at last that he is alone in the universe's unfeeling immensity, out of which he emerged only by chance"**
- **"Anything can be reduced to simple, obvious mechanical interactions. The cell is a machine. The animal is a machine. Man is a machine."**
- Consciousness an illusion that will be explained biochemically

Conflict

Scientific Materialism

Logical Positivism

philosophic movements in 1920's to 1940's
that said that:

- scientific discourse the norm for meaningful language
- the only meaningful statements we can make are those verifiable by sense data

Statements in ethics, metaphysics, religion
are:

- meaningless pseudo-statements
- expressions of emotion / preference without cognitive significance

Conflict

Biblical Literalism

Most mainstream Christian denominations consider scripture a *human witness* to God's revelation (and hence fallible)

1970's and 1980's: rise in fundamentalism.

Considered the scripture *inerrant, literal word of God*. Bible thus interpreted provided:

- certainty in a time of rapid change
- basis for defense of traditional values in time of moral disintegration (sexual permissiveness, drugs, crime. . .)

Conflict

Biblical Literalism

Modern science clearly conflicts with a literal reading of the Bible.

Led to "opposition" movement of **Creation Science** or **Scientific Creationism**

- claims there is scientific evidence for the creation of the world in the last few thousand years

Outline

Four ways of relating science and theology:

1. Conflict

2. Independence

3. Dialogue

4. Integration

Independence

Science and theology are *two totally independent, autonomous activities*

Completely different realms or spheres of human life:

- **Neo-Orthodoxy**
- **Religious Existentialism**

Completely different "languages:"

- **Linguistic Analysis Movement**

Independence

Neo-Orthodoxy

Post World War I reaction to Protestant Liberalism. Karl Barth its most prominent theologian:

- God is transcendent, unknowable except as self-revealed through Jesus Christ
 - Theology is based on divine revelation; science is based on human observation and reason
- Religious faith is based entirely on God's initiative, not on any kind of human discovery. Science is based on human discovery.
- God acts in history, not in nature

Independence Existentialism

In 1923, Martin Buber published *I and Thou* (the usual English translations of the German *Ich und Du*)

Two modes of experiencing / relating to the world:

- 1. Experience of an object = **“I-it”** Relation
- 2. An Encounter with Another = **“I-Thou”** or **“I-You”** Relation ("You" is the "You" of intimacy, which used to exist in English in the word **“Thou”**)

Independence Existentialism

“I-it” Relation:

- We objectify, conceptualize, fit into the “box of our understanding” that which we see, hear, etc (“it”).
- Impersonal
- The “normal” experienced world of space and time

Independence

Existentialism

“I-You” Relation:

- The “You” can never be objectified, or “boxed” into our understanding. A “You” has no borders, cannot be measured. A “You” “fills the sky” of our mind's eye
- An encounter, a transitory event (the “event of relation”) which is mutual and reciprocal
- Can be called love
- Comes to us by grace

Independence Existentialism

A “person” then is someone with whom we can have an “**I-You**” relationship. The person of an “**I-You**” encounter cannot be “objectified,” or “boxed-in,” turned in “content.” A person of an “**I-You**” encounter is a *Presence*, is *Presence* as power.

God is a being encountered in an "**I-You**" relationship

Science deals only with "**I-It**" relationships

Independence

Linguistic Analysis

Linguistic Analysis: philosophy that followed **Logical Positivism**

Different human endeavors use different types of "language" that serve different functions. You cannot "translate" from a language serving one function to a language serving another function
- Wittgenstein: the "language game"

Independence

Linguistic Analysis

Language of **Science** functions for prediction and control

Language of **Religion** functions to:

- recommend a way of life
- form attitudes
- encourage moral principles

Each language is valid only for the function it is designed for.

A form of **Instrumentalism**: scientific theories and religious beliefs are merely *human constructs* for specific *human purposes*

Outline

Four ways of relating science and theology

1. Conflict
2. Independence
- 3. Dialogue**
4. Integration

Dialogue

Dialogue is a mixed bag of views of the relationship between science and theology, which suggests that there are some *indirect* or *peripheral* points of contact between the two

Examples of Dialogue:

- Limit Questions. Science often leads us to a "limit," to questions science alone cannot answer
- Nature-Centered Spirituality. We can respond to nature in personal and experiential ways that can have spiritual significance for the individual

Outline

Four ways of relating science and theology

1. Conflict
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- 4. Integration**

Integration

- An *integration* is possible -- at times necessary – between the views of reality of theology and science. Three versions:
1. **Natural Theology.** We can prove the *existence of God* through *study of nature*.
 2. **Theology of Nature.** Theology is largely outside the realm of science, but where they *overlap*, they must be *consistent*.
 3. **Systematic Synthesis.** The views of reality offered by science and theology can be *combined* to give a comprehensive view of reality

Integration

Natural Theology

In **Natural Theology**, science is the starting point for the search for God. Natural Theology says that by studying nature:

- we can find proof of God existence
- we can learn something about the nature of God

Integration

Natural Theology

Arguments for the Existence of God in
Natural Theology:

1. The **cosmological argument**. There must be a "first" cause (God)
2. The **teleological argument**. There must be an ultimate designer (God)

Integration

Natural Theology

Cosmological Argument or "**First Cause**"
Argument (Thomas Aquinas, 1225-1273):

1. Everything in the universe depends on something else for its existence
2. What is true of the parts of the universe must also be true of the universe itself
3. Therefore, the universe must also depend on something else for its existence
4. That "something else" is, by definition, that which we call God

Integration

Natural Theology

Teleological Argument = Argument from Design

- *telos* = Greek for the "end" or "purpose"
- things do not simply exist, they appear to have been *designed* for a *purpose*

Integration

Natural Theology

Thomas Aquinas:

The fifth way is based on the governance of things. We see how some things, like natural bodies, work of an end even though they have no knowledge. The fact that they nearly always operate in the same way, and so as to achieve the maximum good, makes this obvious, and shows that they attain their end by design, not by chance. Now things which have no knowledge tend towards an end only through the agency of something which knows and also understands, as in the case of arrow which requires an archer. There is therefore an intelligent being by whom all natural things are directed to their end. This we call "God"

Integration

Natural Theology

Cosmological or "**First Cause**" Argument, and the **Teleological Argument** or **Argument from Design** have in common the idea that the universe is contingent or dependent on something else – God

Modern physics has 4 unexplained "contingencies" that have been suggested as "rumors" of a designer, creator and/or sustainer:

- (1) the laws of physics
- (2) the boundary implied by a beginning (a time = 0) to the universe
- (3) the existence of space-time itself
- (4) the Anthropic Principle

(We will be discussing (1) and (2) in session 2 of this series; and (3) and (4) in session 3)

Integration

Natural Theology

(1.) The Laws of Physics

- The universe has been found to obey laws of great mathematical beauty and elegance
- Where do these laws come from?
- Why do these laws appeal to our sense of beauty?
- Why are these laws comprehensible to us?

Integration

Natural Theology

(2.) The Boundary Implied by a Beginning of the Universe

- Near the beginning of time, a "Big Bang" -
 - a great fireball of immense density and temperature -- filled all of space and started its evolution
- The theories of Relativity tell us space and time are woven together in a single created fabric called **space-time**
- Models of the Universe using General Relativity lead to a point where time = 0 where the fabric of space-time was undefined, immediately after which both space and time abruptly began to exist

Integration

Natural Theology

(2.) The Boundary Implied by a Beginning of the Universe

-What "caused" the universe to emerge at $t = 0$?

Integration

Natural Theology

(3.) The Contingency of Every Point of Space-Time

- Quantum Gravity suggests that the dimension we call time becomes "fuzzy" and turns into a fourth spatial dimension as we approach "time = 0." There is no "beginning" to the universe.

All points of the "block" of "space-time" require an explanation.

The theological concepts of *creatio ex nihilo* (creation from nothing) and *creatio conservata* (God's continued sustaining of the physical universe) are the same

Integration

Natural Theology

(4.) The Anthropic Principle

- We live in a universe that appears to be incredibly fine-tuned to produce life
- The slightest deviations in the physical constants or the laws of physics would have resulted in a sterile universe devoid of stars and life

Evidence for a Designer?

Integration

Natural Theology

A possible fifth contingency:

(5.) Rumors of a "Ground of Being" from Quantum Physics*:

- Quantum physics tells us the atomic "particles" of which we are made are not the ultimate physical reality.
- There is an ultimately impenetrable ground of physical reality which must be imagined as teeming with latent potentialities, latent possibilities not yet actualized, not yet real (these potentialities are described by the "wavefunction" or "state function")

(*we will be discussing this further in session 4 of this series)

Integration

Natural Theology

(5.) Rumors of a "Ground of Being" from Quantum Physics (cont):

- the act of measurement or observation causes one of these possibilities to become actualized, to become real; a particle will "appear" for a short period of time as a result of the measurement (called the "collapse of the wavefunction")
- After the measurement is completed the "particle" will fade back into the impenetrable realm of latent potentiality and possibility

Integration

Natural Theology

(5.) Rumors of a "Ground of Being" from Quantum Physics (cont):

- whenever two or more "particles" interact, the ground of physical reality never seems to "forget" what they shared
- In a deeper sense, the interacting "particles" become a single entity with shared latent potentialities and possibilities, and this sharing, the "strength" of this single entity, is never diminished by separation in space and time (quantum entanglement = quantum nonlocality; the EPR paradox)

Integration

Natural Theology

(5.) Rumors of a "Ground of Being" from Quantum Physics (cont): Metaphysical questions:

- What is the “realm” in which the “wavefunctions” = latent potentialities “exist”? What is the nature of their “being”?
- How does this “ground of physical reality” “remember” all the interactions between “particles” and what they shared? Why is this remembrance unaffected, impervious to separations in time and space?

Integration

Theology of Nature

Theology of Nature holds that:

- science and religion must be consistent where they overlap
- some traditional theological doctrine may need to be modified based on what we learn about nature through science

Integration

Theology of Nature

Examples of two areas of theology where physics might change doctrine*:

1. How does God work in the universe?
Why is there "evil" in the world?
2. Eschatology (Theology of the Last Things)

(*We will be discussing these issues further in sessions 5 and 6 of this series)

Integration

Theology of Nature

How does God work in the universe?

- **Quantum physics** tells us we absolutely cannot predict the properties of a particle no matter how well we know its past history.
- **Chaos theory** shows many if not most systems of nature are extremely sensitive to the starting conditions. A nearly infinitesimal difference in the starting conditions can lead to completely different behaviors

Newtonian determinism is dead.

Integration

Theology of Nature

How does God work in the universe?

Implies: The universe is a place of true becoming. The chance, happenstance given to nature allows the universe to evolve and give rise to novelty and new forms -- to become “creative”

Integration

Theology of Nature

Eschatology

- The universe will die, either in "fire" or in "ice": in a collapse back to a great fireball, or in an eternal expansion where all structure is dissipated and all energy so spread out that the temperature will be near absolute zero everywhere
- only a redemptive act of God that contravenes the laws of physics can save the universe

Integration

Systematic Synthesis

The views of reality offered by science and theology can be *combined* to give the a comprehensive view of reality

1. Alfred North Whitehead: **Process Theology**
2. Pierre Teilhard de Chardin's **Point Omega**

Integration

Systematic Synthesis: Process Theology

- Process / change is the fundamental basis of reality (not matter, substances, essences. . .)
- Reality is composed of building blocks of processes called “actual occasions,” or “actual entities,” each with a certain degree of freedom to develop and influence adjacent processes
- God is the permanent, imperishable background of order for the developing processes

Integration

Systematic Synthesis: Process Theology

- God can act to influence and persuade the processes, but cannot violate the rules governing the processes.
- God can try to persuade the murderer not to kill, but ultimately cannot violate the murderer's "free will."
- God can try to persuade the processes of nature involved in an avalanche, but ultimately cannot violate the rules of nature's "free process"

Integration

Systematic Synthesis: Process Theology

- God both influences processes and is influenced by the processes. God is thus “a fellow-sufferer who understands” (Alfred North Whitehead)

Integration

Systematic Synthesis: Pierre Teilhard de Chardin's Point Omega

- Universe is an *evolutionary* process constantly moving towards states of greater complexity and higher levels of consciousness
- There are no radical discontinuities or innovations in this evolution. There is a “biological layer” inherent in the fabric of universe, a “rudimentary consciousness” in all physical matter (“there is a Within to things”) that is the basis for the development of life and consciousness

Integration

Systematic Synthesis: Pierre Teilhard de Chardin's Point Omega

- “Critical points” of transitions include emergence of life on earth, emergence of human consciousness
- The universe's evolution is ascending towards **Point Omega**, which is both:
 - a union with God
 - the “force” attracting the evolutionary process
- God is at work both
 - within the process of evolution
 - as the “attractive” force drawing the process to its divine goal and fulfillment

Primary Reference

Religion and Science. Historical and Contemporary Issues, Ian Barbour. Harper, San Francisco, 1997. Chapter 4: Ways of Relating Science and Religion