1<sup>st</sup> International Congress on Science and Faith: Incompatible or Complementary? November 7-9, 2018

#### What Is This Controversy About?

#### **Jonathan Wells**

Ph.D. in Theology, Yale University Ph.D. in Biology, University of California at Berkeley Senior Fellow, Discovery Institute, Seattle In this introductory talk I will not try to resolve the controversy over science and faith, but merely provide a sketch of the major issues. In this introductory talk I will not try to resolve the controversy over science and faith, but merely provide a sketch of the major issues.

Since we are asking whether science and faith are incompatible or complementary, we first need to ask what we mean by "science" and "faith."

 "Science" can refer to the "scientific consensus" – the majority opinion of professional scientists.

# But how reliable is the scientific consensus?

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- In 1700, the scientific consensus was that things burn by giving off phlogiston.
  - By 1800, the consensus was that things burn by combining with oxygen.
- In 1800, the scientific consensus was that some living things (such as maggots and fleas) could be spontaneously generated from nonliving things.
  - By 1900, the scientific consensus was that (except for the first origin of life) all living things come from other living things.

# There are many more examples like these in the history of science.

- 1. Atoms are like tiny solar systems, with electrons revolving in circular orbits around a nucleus (abandoned after 1900).
- 2. The continents have always been where they are now (abandoned after 1960).
- 3. Most human DNA is functionless junk (abandoned after 2012). And so on...

# Obviously, the scientific consensus is not reliable.

- "Science" can refer to the "scientific consensus" the majority opinion of professional scientists.
- For many people, "science" refers to the knowledge and techniques that have given us modern technology and medicine.

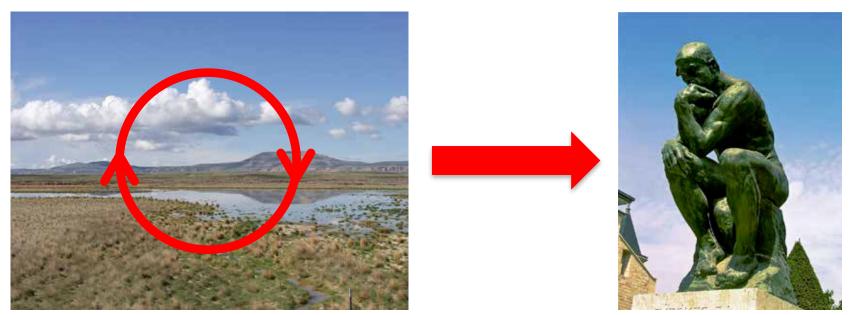


#### But how do scientists get their knowledge?



Source: USDA – Arrows Added

### (1) It assumes that there are cause-and-effect relations in nature.



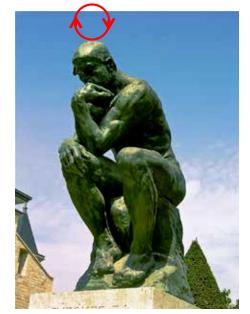
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Source: Andrew Horne (Wikipedia)

#### (2) We observe those causal relations.

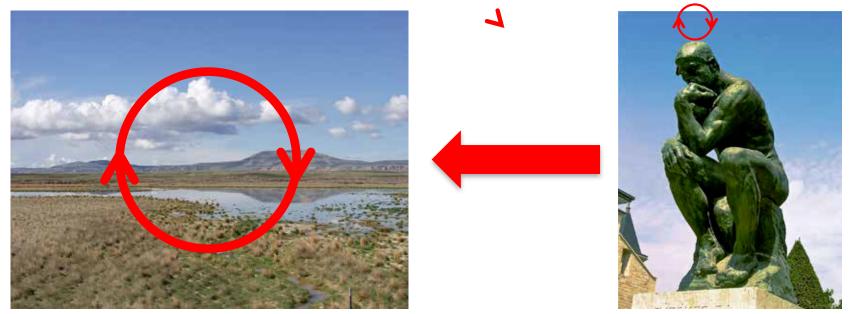


Source: USDA – Arrows Added



Source: Andrew Horne (Wikipedia) -- Arrows Added

## (3) In our minds we form a hypothesis in which logical relations represent the causal relations.



Source: USDA – Arrows Added

Source: Andrew Horne (Wikipedia) -- Arrows Added

### (4) Then we test our hypothesis by comparing it with what we observe in nature.

- "Science" can refer to the "scientific consensus" the majority opinion of professional scientists.
- For many people, "science" refers to the knowledge and techniques that have given us modern technology and medicine.
- This is "empirical science," which tests hypotheses against the evidence. Note that "mind" is essential to the process.

#### "Science is the search for the truth." Nobel Laureate (Chemistry & Peace) Linus Pauling

"The actual procedure of science is to operate with conjectures... Repeated observations and experiments function in science as *tests* of our conjectures or hypotheses, i.e., as attempted refutations."

Philosopher of Science Karl Popper, Conjectures and Refutations (1963)

**Science** 

But ever since Charles Darwin's Origin of Species (1859), another kind of science has become increasingly common.

(I will say more about Darwin in a few minutes.)

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- Some people distinguish between "methodological naturalism" and "metaphysical naturalism."
- According to methodological naturalism, science is limited to natural explanations because they are the only ones we can test in controlled experiments.

 But most scientists believe that if they search long enough they will eventually find natural explanations for everything. In other words, they implicitly assume that metaphysical naturalism is true.

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- But most scientists believe that if they search long enough they will eventually find natural explanations for everything. In other words, they implicitly assume that metaphysical naturalism is true.
- According to metaphysical naturalism, reality consist only of material objects and the forces among them. Mind, spirit, free will, and God are merely illusions.
- This is not empirical science but "naturalistic science." In effect, it is applied materialistic philosophy.

"It is not that the methods and institutions of science somehow compel us to accept a material explanation of the phenomenal world, but, on the contrary, that we are forced by our a priori adherence to material causes to create an apparatus of investigation and a set of concepts that produce material explanations, no matter how counter-intuitive, no matter how mystifying to the uninitiated. Moreover, that materialism is absolute, for we cannot allow a Divine Foot in the door."

Harvard biologist Richard Lewontin, New York Review of Books (1997)

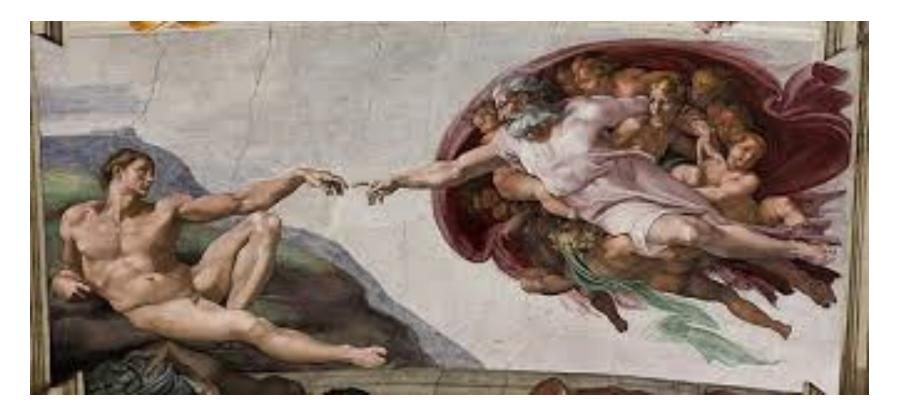
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- To understand the controversy we will have to look specifically at "creation" and "evolution."

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- For life on Earth, creation may have been finished at the beginning (with the biblical "kinds"), or it may have extended intermittently or continuously to the present.

#### **Natural Theology**

The idea that we can know some things about God without biblical revelation is in the Bible itself:

"For the invisible things of him from the creation of the world are clearly seen, being understood by the things that are made, even his eternal power and Godhead."

Romans 1:20 (KJV)

### **Natural Theology**

### Natural theology can mean knowledge of God gained through natural reason.

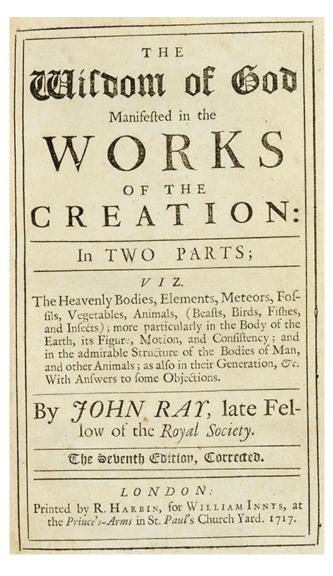


St. Thomas Aquinas Summa Contra Gentiles I:3:2

"There is a twofold mode of truth in what we profess about God. Some truths about God exceed all the ability of the human reason. Such is the truth that God is triune. But there are some truths which the natural reason also is able to reach. Such are that God exists, that He is one, and the like. In fact, such truths about God have been proved demonstratively by the philosophers, guided by the light of natural reason."

#### **Natural Theology**

### Natural theology can also mean knowledge of God gained through observing the natural world.



Two famous examples of this are John Ray's Wisdom of God Manifested in the Works of the Creation (1691) and William Paley's Natural Theology (1802)

OR, DVIDENCES OF THE EXISTENCE AND ATTRIBUTES OF THE DEITY, COLLECTED FROM THE APPEARANCES OF NATURE,

> BY WILLIAM PALEY, D. D. ARCHDEACON OF CARLISLE.

#### PHILADELPHIA:

PRINTED FOR JOHN MORGAN, NO. 51, SOUTH SECOND-STREET. BY H. MAXWELL, NO. 25, NORTH SECOND-STREET.

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- In biology, "evolution" can mean several different things.

 In biology, evolution can refer to minor changes within existing species.



(All Images Public Domain)

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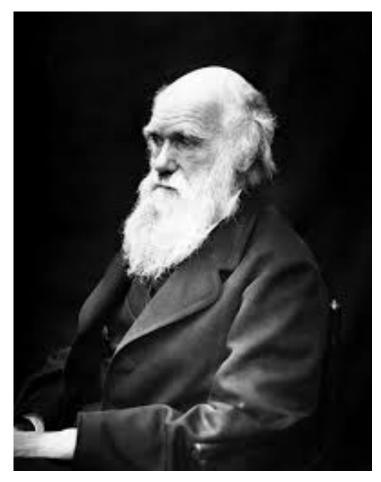
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- It can refer to the idea that <u>all</u> species are modified descendants of one common ancestor (universal common ancestry).

 Or it can refer to Darwin's theory of descent with modification solely by <u>unguided natural processes</u>.

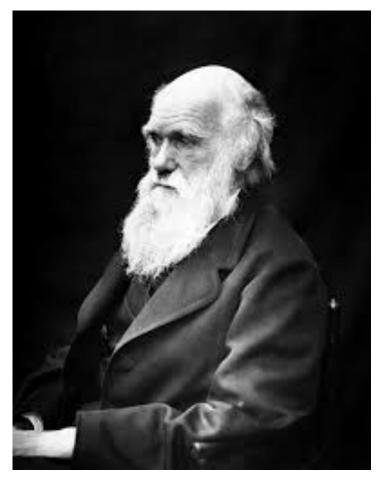
#### **An Important Distinction**

from evolutionary biologist Theodosius Dobzhansky (Genetics and the Origin of Species 1937)

- <u>Microevolution</u>: changes within existing species, observable within a human lifetime; and
- <u>Macroevolution</u>: the origin of new species, organs, and body plans, which require time on a geological scale.



**Charles Darwin** Origin of Species (1859) According to Charles Darwin, all living things are modified descendants of one or a few common ancestors that lived long ago. The main cause of modification has been natural selection (survival of the fittest) acting on small variations.



**Charles Darwin** *Life and Letters* (1887)

#### The Process is Unguided

"There seems to be no more design in the variability of organic beings, and in the action of natural selection, than in the course which the wind blows."

The Origin of Species was (among other things) an argument against design.

Darwin actually had no evidence for natural selection, and he did not know the origin of variations, but his exclusion of design fit the spirit of the times. Historian Neal Gillespie wrote, "It is sometimes said that Darwin converted the scientific world to evolution by showing them the process by which it had occurred," but "it was more Darwin's insistence on totally natural explanations than on natural selection that won their adherence."

Neal C. Gillespie, Charles Darwin and the Problem of Creation (1979)

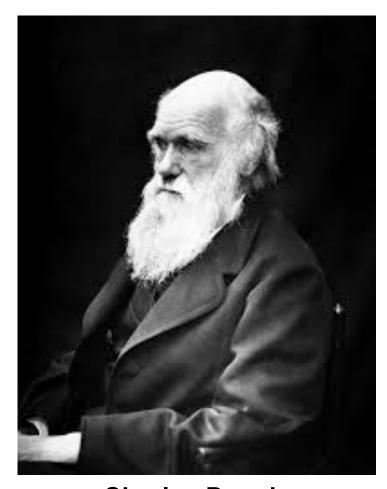
#### **The Warfare Thesis**

Before Darwin, Christianity and science got along quite well, despite what many people may think. Indeed, the founders of most modern disciplines in biology and other scientific fields such as chemistry and physics were Christians. The "warfare thesis" – the false idea that religion has always been at war with science – was promoted by two books written in the late 19<sup>th</sup> century by followers of Darwin who were hostile to Christianity: John Draper's History of the Conflict Between Religion and Science (1874), and Andrew Dickson White's A History of the Warfare of Science with Theology in Christendom (1896).

#### What Is This Controversy About?

There is no conflict between Christian faith and empirical science. But there <u>is</u> a conflict between Christian faith and naturalistic science – that is, materialism.

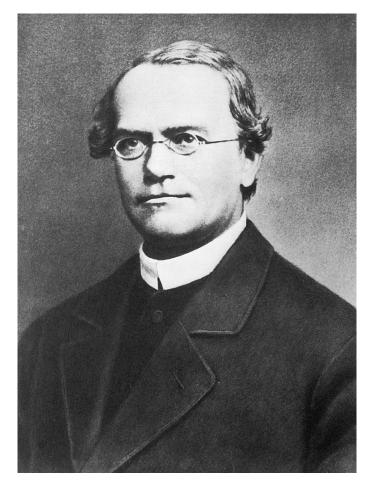
The question at the core of the controversy is this: Are we created in the image of God for a purpose? Or are we accidental by-products of unguided natural processes?



**Charles Darwin** The Variation of Animals and Plants Under Domestication (1868)

Darwin's theory needed a mechanism of inheritance. He thought that traits from all parts of the body were carried in "gemmules" or "pangenes" and blended together in the germ cells (egg and sperm) to be transmitted to the next generation - a mode of inheritance Darwin called "pangenesis."

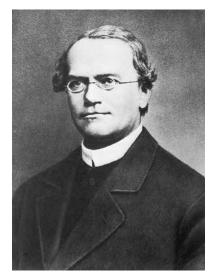
#### Mendelişm Darwin's contemporary,



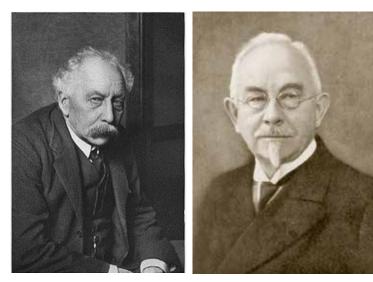
**Gregor Mendel** Versuche über Pflanzenhybriden (1865)

Augustinian friar and botanist Gregor Mendel (born in what is now the Czech Republic), came up with a different theory - that factors for traits he studied in pea plants were discrete and inherited separately rather than blended together.

> Darwin was not aware of Mendel's theory, and his followers ignored it for decades.



**Gregor Mendel** 



William Bateson Wilhelm Johannsen

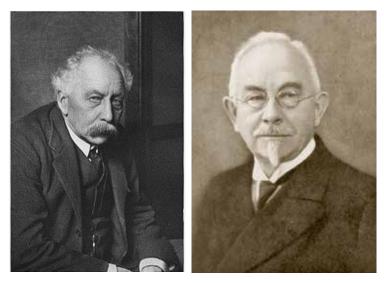
#### Mendelism

In 1905, English biologist William Bateson called the study of inheritance "genetics," and in 1909 Danish botanist Wilhelm Johannsen distinguished between the "phenotype" (the observable properties of an individual organism, which arise during development) and "genotype" (the stable underlying biological type, which is inherited and carries the information that specifies the phenotype). Johannsen also proposed the word "gene" to replace Darwin's "pangene."

### Mendelism



**Gregor Mendel** 



William Bateson Wilhelm Johannsen

Bateson and Johannsen (like Mendel) considered the hereditary factors (genes) to be immaterial.

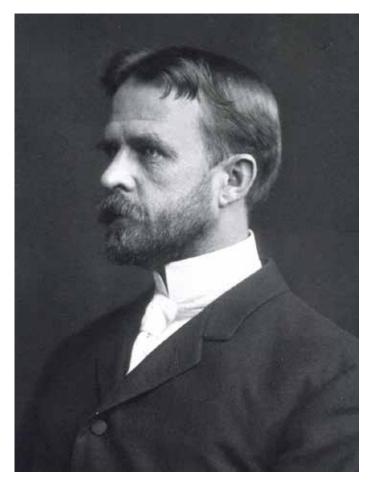


**Theodor Boveri** 



Walter Sutton

Around the same time, German biologist **Theodor Boveri and American biologist** Walter Sutton noticed that during the cell divisions that produce the sperm and the egg, the behavior of chromosomes (tiny thread-like structures in the nucleus) paralleled the patterns Mendel had observed. Indeed, Sutton wrote that chromosomes "may constitute the physical basis of the Mendelian law of heredity."

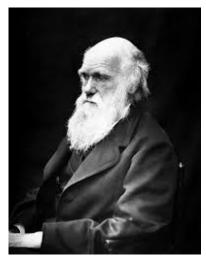


**Thomas Hunt Morgan** 

The chromosomal theory of inheritance (i.e., that Mendel's factors reside physically on chromosomes) was eventually championed by American geneticist Thomas Hunt Morgan. It replaced Darwin's theory of pangenesis, and the combination of Darwin's theory with the chromosomal theory of inheritance was called the "Modern Synthesis" or "Neo-Darwinism."

Each trait that Mendel studied in pea plants came in two forms, and 20<sup>th</sup> century geneticists called the two forms "alleles." The discipline of "population genetics" mathematically modeled the changes in frequencies of genes and alleles over space and time. For many people thereafter, evolution was reduced simply to a change in gene (or allele) frequencies.

(Note, however, that this doesn't tell us how new species originate. I will return to the origin of species tomorrow and the next day.



**Charles Darwin** 

A major ingredient of chromosomes is deoxyribonucleic acid (DNA). In 1953, James Watson and Francis Crick solved the molecular structure of DNA and explained how it could be duplicated in inheritance.

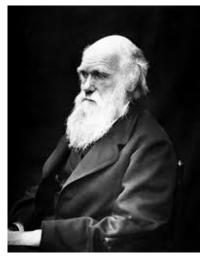


**James Watson** 



**Francis Crick** 

Crick announced at a nearby pub, "We have discovered the secret of life."



**Charles Darwin** 

In 1958, Crick proposed that the sequence of subunits in DNA specifies the sequence of an intermediate molecule, RNA, which in turn specifies the amino acid sequence of a protein.



**James Watson** 



**Francis Crick** 

In 1962, Watson and Crick were awarded the Nobel Prize for their achievement.



François Jacob



Jacques Monod

In 1965, French molecular biologists François Jacob and Jacques Monod received the Nobel Prize for discovering a mechanism that bacteria use to regulate the transcription of DNA into RNA. In 1970, Jacob wrote that DNA contains a "genetic program" that controls embryo development.

#### "DNA makes RNA makes protein makes us" became a popular saying.



François Jacob



**Jacques Monod** 

Monod said that with the notion of a genetic program "and the understanding of the random physical basis of mutation that molecular biology has provided, the mechanism of Darwinism is at last securely founded, and man has to understand that he is a mere accident. Not only is man not the center of creation; he is not even the heir to a sort of predetermined evolution."

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- Genes (understood materially as DNA sequences) carry all hereditary information and control embryo development.
- Accidental mutations in DNA are the source of the new variations that provide the raw materials for evolution.
- Although living things may appear to be designed, this is just an illusion.

## Over the next few days we will take a closer look at Neo-Darwinism and the scientific evidence.

Although the idea of design is ancient, in the 1980s and 1990s some modern scientists and philosophers revived it in what is now known as "intelligent design" (ID for short).

According to ID, it is possible to infer from evidence in nature that some features of the world, and of living things, are best explained by an intelligent cause, not by undirected natural processes.

 ID does not imply that design must be perfect; indeed, as human artifacts show, something can be designed and yet not be perfect.

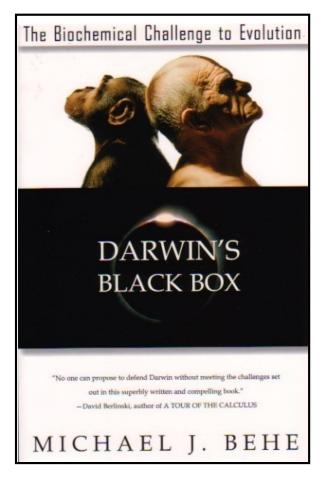
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- ID is not the same as creationism, which is based on the Bible and/or religious doctrines; ID is based only on evidence and logic.
- ID is not natural theology, which sets out to prove God's existence and attributes from evidence in nature—though ID is consistent with God's existence.

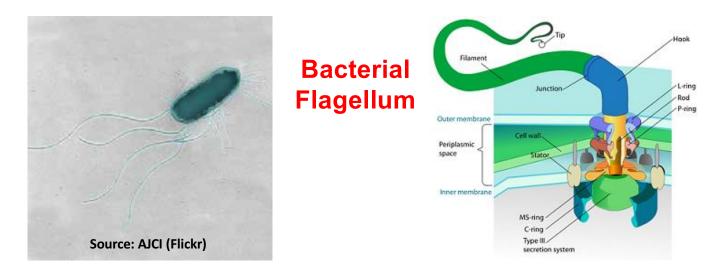
#### Scientists and philosophers have recently proposed several ways to infer design.



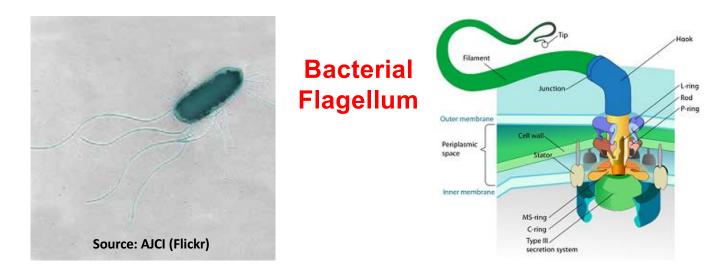
#### Michael Behe Ph.D., Biochemistry



"By irreducibly complex I mean a single system composed of several well-matched interacting parts that contribute to the basic function, wherein the removal of any one of the parts causes the system to effectively cease functioning."



One example Behe cites is the bacterial flagellum, a long whip-like structure that some bacteria use to propel themselves (left). The motor in the cell wall that drives the flagellum (right) is irreducibly complex.



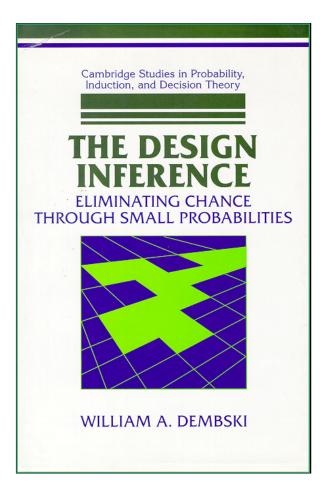
"Design is evident when a number of separate, interacting parts are ordered in such a way as to accomplish a function beyond the individual components."

Michael Behe, Darwin's Black Box (1996)

#### Intelligent Design (ID) Specified Complexity



William Dembski Ph.D., Mathematics Ph.D., Philosophy



# Intelligent Design (ID) Specified Complexity?

Not complex (simple repetition of "wlt"): WItwItwItwItwItwItwItwItwItwItwIt.

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#### Wdlmnlt dt jbkwirzrezlmqco p.

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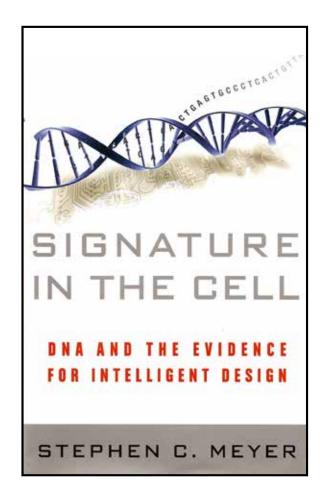
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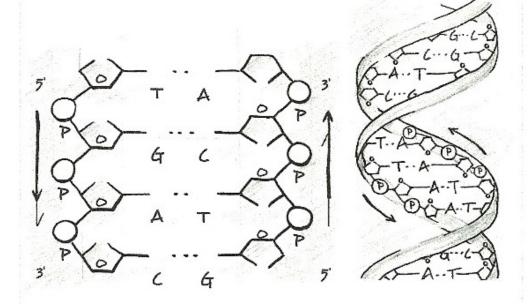
Complex <u>and</u> specified (corresponds to a sentence in "Hamlet"): Methinks it is like a weasel. Intelligent Design (ID) Specified Complexity

According to Dembski, complex specified information can be produced only by intelligence and justifies an inference to design.



Stephen Meyer Ph.D., Philosophy of Science





DNA consists of four subunits (T, A, G, C), and the sequence of subunits carries information in living cells. A cell uses this information to synthesize proteins and perform other functions.
Human DNA contains over three billion subunits.

"DNA is like a computer program but far, far more advanced than any software ever created."

Bill Gates, The Road Ahead (1995)

"Since we know that intelligent agents do produce large amounts of information, and since all known natural processes do not (or cannot), we can infer design as the best explanation of the origin of information in the cell."

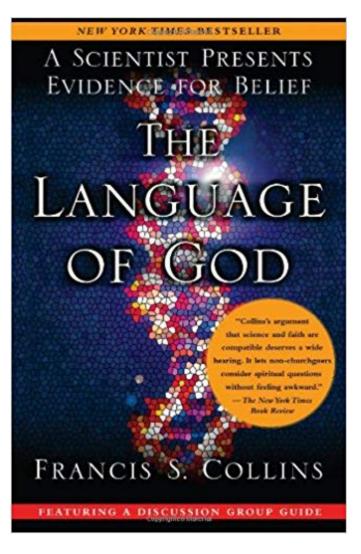
Critics of ID have objected to various aspects of all three of these approaches. One general criticism is that the overwhelming evidence for Neo-Darwinism proves that design in living things is an illusion, explainable by unguided natural processes.

Another general criticism is that by referring to a non-human intelligent cause ID violates the cardinal rule of (naturalistic) science: that "materialism is absolute, for we cannot allow a Divine Foot in the door."

Both of these criticisms, the first scientific and the second philosophical, will be addressed by various speakers in the course of this three-day conference.

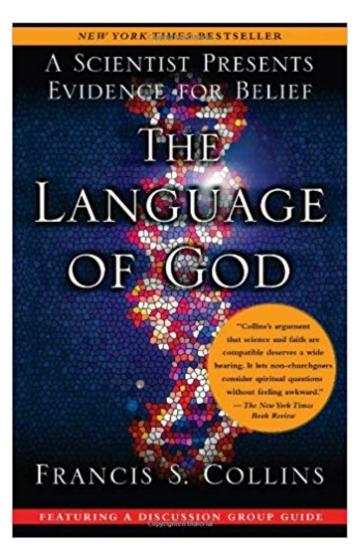
A third general criticism is that ID treats living things as though they were designed from the outside (like human artifacts), when they actually seem to design themselves from within.

Several ID advocates are currently working to address this criticism.



In 2006, American physician Francis Collins wrote that he found "theistic evolution" (TE) to be "enormously satisfying." In fact, he wrote, "theistic evolution is the dominant position of serious biologists who are also serious believers." One premise of TE is: "Once evolution got under way, no special supernatural intervention was required."

Francis Collins, The Language of God (2006)



But Collins found the terminology to be confusing, so he proposed the term "BioLogos" to replace "theistic evolution."

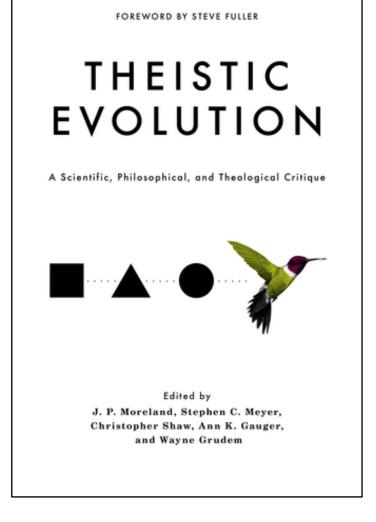
In 2007, he founded the BioLogos Foundation to promote the idea, but he resigned in 2009 to become director of the U.S. National Institutes of Health.

Francis Collins, The Language of God (2006)

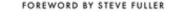
Straight Answers to Genuine Questions THE LANGUAGE OF SCIENCE AND FAITH KARL W. GIREF & FRANCIS S.

In 2011, Collins and Karl Giberson (then executive vice president of the BioLogos Foundation) wrote: "The model for divinely guided evolution that we are proposing here requires no 'intrusions from outside,' for its account of God's creative process, except for the origins of the natural laws guiding the process."

Karl Giberson & Francis Collins, The Language of Science and Faith (2011)

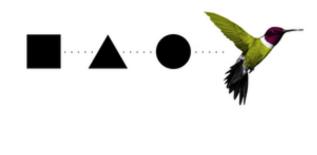


In 2017, two dozen scientists, philosophers and theologians published a 972-page critique of theistic evolution.



#### THEISTIC EVOLUTION

A Scientific, Philosophical, and Theological Critique



Edited by J. P. Moreland, Stephen C. Meyer, Christopher Shaw, Ann K. Gauger, and Wayne Grudem

The editors defined theistic evolution as the belief that "God created matter and after that did not guide or intervene or act directly or cause any empirically detectable change in the natural behavior of matter until all living things had evolved by purely natural processes."

The BioLogos Foundation now prefers the term "evolutionary creation" to "theistic evolution." According to the foundation's web site:

"We believe that the diversity and interrelation of all life on earth are best explained by the God-ordained process of evolution with common descent."

People affiliated with BioLogos reject the idea that this process is purposeless, but they also reject the idea that design can be empirically detected. In this, they differ from people who advocate ID.

#### **CONCLUSIONS?**

Speakers over the next few days will address many of the issues in this controversy.

For now, I would just like to leave you with a list of important concepts and some important questions for you to consider.

- Some important concepts
  - Science
  - Faith
  - Creation
  - Natural Theology
  - Evolution
  - Darwinism
  - Mendelism
  - Neo-Darwinism
  - Intelligent Design
  - Theistic Evolution

- Some important questions
  - Science
    - Is science a search for truth by comparing hypotheses with evidence?
    - Or is it a search for natural explanations that "cannot let a Divine Foot in the door"?
  - Creation
    - How should we interpret Genesis?
    - Is creation compatible with an exclusion of design?
    - Is natural theology possible?

- Some important questions
  - Biological Evolution
    - Is it simply minor changes within existing species (microevolution)?
    - Or is it the origin of new species, organs, and body plans (macroevolution)?
    - Most importantly, is it <u>unguided</u> macroevolution (Darwinism and Neo-Darwinism)?
    - What does the evidence show about universal common ancestry? About the power of natural selection and mutations?

- Some important questions
  - Intelligent Design (ID)
    - Can we infer design from evidence in nature?
    - Is ID science, or is it religion in disguise?
  - Theistic Evolution (TE)
    - In what sense(s) can theism and evolution be considered compatible?

#### For more information:

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