



Lesson Guide

Lesson 5 - Science: What is True?

Introduction

In this, our fifth worldview tour, we will head northwest, enter the cavern of nature, gaze upon the jewels of creation, and establish yet another important pillar in the Temple of Truth: *Science*. In the process, we will discover that whereas “the heavens declare the glory of God and the firmament shows His handiwork” (Psalm 19:1) so that the Creator’s “invisible attributes are plainly seen” (Romans 1:20), mankind has nevertheless chosen to ignore the obvious truth, twisting scientific investigation into a vehicle for propagating a godless philosophy of human independence and self-determination.

Themes

Having completed our brief and cursory discussion of the nature and character of God, we turn now to consider a very different question: what does “the stuff in the box” really tell us when we honestly look at it? Dr. Tackett argues that *scientific investigation* – “the systematic study of the structure and behavior of the physical and natural world through observation and experiment” – is also a valid way of ascertaining *truth*. For when we open the box, we find that it is filled with voices that speak to us loudly about the majesty and power of the One who has created the physical universe. Everywhere we look – whether up at the grandeur of the stars and galaxies or deep into the tiny and elegantly designed inner workings of a living cell – there is evidence that the cosmos is the handiwork of an intelligent, rational mind. In the contemplation of nature, we come face to face with the truth that *God exists* and that *He has revealed Himself to us*, not only through His written Word (*special revelation*) but also through the works of His hands (*general revelation*).

Our natural reaction to this experience should be like that of a child: wonder, marvel, and praise for the Creator. But because of the effects of the fall and the polarizing influence of the *Cosmic Battle*, man shows a tendency to deny what is plain to the senses and to “exchange the truth of God for a lie” (Romans 1:25). Driven by this impulse, he transforms straightforward scientific inquiry, which properly concerns itself with *particulars*, into an all-embracing *philosophy*, which claims to establish *universals* on the basis of the “stuff in the box.” The result is the propagation of a *worldview* that “scientifically” excludes the Creator, thus “freeing” mankind from accountability to a higher authority.

Central to this philosophy are the assertions of Darwinian evolutionary theory. By keeping the details of creation’s story completely inside “the box,” evolution effectively rules out the existence of God. Herein lies the *heart* of the debate over “Intelligent Design.” Atheist C. Richard Bozarth actually goes so far as to claim that “evolution destroys utterly and finally the

very reason Jesus' earthly life was supposedly made necessary." It is exactly this kind of *philosophical* assumption that inspires the visceral antagonism of evolutionists toward anyone who dares question the validity of their theory. This is why Darwinists so fervently assert that "evolution is no longer merely a theory, but an established *fact*." But the truth of the matter, as Dr. Tackett and his guest experts demonstrate in great detail, is that the theory is *not* supported by the evidence. Many inside the scientific community are beginning to recognize this. But they dare not acknowledge it publicly because of the worldview issues at stake. As Dr. David Berlinski says, "The consequences are serious."

Points to Watch For

The essence of Dr. Tackett's message may be summed up as follows: fallen man ignores the plain evidence of objective scientific inquiry and promotes the atheistic *philosophy* of evolutionary theory primarily because he is determined to do as he pleases without answering to a higher authority. This charge may make some group participants uncomfortable precisely because it hits so close to home. Dr. Tackett also illustrates the point that *ideas have consequences* by drawing a historical connection between Darwinian theory and the horrors of Nazi Germany. Some students may feel inclined to debate his assertions in this regard.

Discussion Questions (Pick 3 or 4 for your discussion time.)

(Make these questions your own. That is, don't just "read" them, but become familiar with them so that they don't appear as simply an item to get through. Go through them yourself before your group meets and ponder them.)

1) Opening question. This may be the only question that you need to ask.

A. Ask your guest to list what "jewels" they saw on the tour. Here are some of the key items: (The noisy box; God has revealed Himself plainly to all men through His creation; general and special revelation; thinking of nothing; from nothing comes everything; the great cosmological question: cosmos had a beginning or existed forever; why is there order rather than chaos; why is there music; what does the cosmos reveal: a creator or self-creation; time makes all things possible; definition of science; randomness; defining hypothesis, theory & law; Darwin's theory of evolution presented as a fact; examination of Darwin's theory against reality; Darwin's criteria for rejection; Paley's watch; recognizing intelligent design; peacock feather & blood clotting; evolution and the reality from molecular biology; Darwin's criteria for rejection; Francis Crick & directed panspermia; the trip into the inner cell; Wald's belief in spontaneous generation; the flagella motor; irreducible complexity; the mousetrap; evolution and the reality from the fossil record; punctuated equilibrium; a reality look at finch beaks; List your own.)

B. Ask your guest to point out the ones that were particularly interesting or striking to them and why.

C. Ask if this particular area struck anyone else as well.

D. Ask if there were other items that they saw that stood out to them. (You may want to read back through this list if you need to.)

- 2) **Have you ever experienced the wonder of God’s creation? If so, share that story briefly with us.**

(We will revisit this in a later question.)

- 3) **Jean-Paul Sartre said that the Great Philosophical Question is, “Why is there *something* rather than *nothing*?” Is science capable of answering this question? Why or why not?**

(The point here is that science, in spite of the confidence it inspires in the hearts of many people, *does* have very definite limits. Science, by definition, is concerned only with the “stuff in the box.” It *has* to begin with the assumption that there is *something*. Questions about possible alternatives, whether conceived in terms of “*nothing-nothing*” or “*the time before the beginning*” are unthinkable within the scientific framework, dealing, as they do, with things “outside the box.”

- 4) **In Romans 1:20, the apostle Paul tells us that God’s “invisible attributes are clearly seen, being understood by the things that are made, even His eternal power and Godhead, so that they are without excuse.” How is it possible to perceive *invisible* truths in tangible, physical realities? Have you ever had such an experience?**

(Wonder, majesty, grandeur, power, bounty, protection, variety, infinitude, grace – it is arguable that all of these qualities and more can be perceived in the works of nature. The idea here is to get participants to think about their own enjoyment of nature in terms of what it tells them about the nature of God.)

- 5) **In scientific terms, what do we mean by the words *hypothesis*, *theory*, and *law*? Given the definitions of these words, is there any basis for Carl Sagan’s assertion that “evolution is a *fact*?” At what point in the scientific process would such a statement become invalidated?**

(The key to this discussion is Dr. Tackett’s experiment with the jelly beans – “reaching into the bag of reality.” If your truth claim is that the bag contains only yellow jelly beans, and you pull out a green one, then your truth claim has been invalidated and must be revisited. Every hypothesis, theory, or law is a truth claim about reality that has the potential to be validated by the data or invalidated by the data. So, Sagan’s statement, along with many others, must be evaluated in light of unbiased observations of reality.)

- 6) **Discuss some of the “imaginative” ways in which scientists have managed to skirt around the problems inherent to evolutionary theory. Are their solutions tenable? Why or why not?**

(Examples given during the course of this Lesson include Francis Crick’s notion of “Directed Panspermia” [first living cell comes to earth from another planet]; “Spontaneous Generation;” and Stephen Jay Gould’s method of interpreting the fossil record in terms of “Punctuated Equilibrium.” In every case, the proposed theory ultimately fails to deal with the facts. Either it pushes the problem back to some more distant point in time [Crick], or it bases its explanation on the *absence* of facts [Gould].)

7) How have evolution-based *philosophical* assumptions led to *social* abuses in our own day?

(Open the discussion up for suggestions. Obvious examples would be issues such as abortion, euthanasia, embryonic stem cell research.)

SCIENCE
what is **True**?

1

SCIENCE
what is **Plain**?

2

The heavens **declare** the **glory of God**
 The skies **proclaim** the **work of his hands**
 Day after day they **pour forth speech**
 Night after night they **display knowledge**
 There is no **speech** or **language** where
 their **voice** is not **heard**
 Their **voice** goes out into all the earth,
 their **words** to the ends of the world

Psalm 19:1-4

3

**THE HEAVENS DECLARE
THE GLORY OF GOD**

...as countless as the stars of the sky (Jeremiah 33:22)

How many stars are there?

128 BC: Hipparchus = 1,026
 1600 AD: Kepler = 1,005

4

**THE HEAVENS DECLARE
THE GLORY OF GOD**

...as countless as the stars of the sky (Jeremiah 33:22)

How many stars are there?

2003 AD count:
 70 sextillion (70 x 10²¹)

70,000,000,000,000,000,000,000

5

Driver, Simon (2003). Star survey reaches 70 sextillion. *CNN.com/ Science & Space* (Online). July 23. www.cnn.com/2003/TECH/space/07/22/stars.survey/.

The wrath of God is being **revealed** from heaven against all the godlessness and wickedness of men who suppress the truth by their wickedness, since what may be **known** about God is **plain to them**, because God has **made it plain** to them. For **since the creation** of the world **God's invisible qualities**-his eternal power and divine nature-have been **clearly seen**, being **understood from what has been made**, so that men are **without excuse**...

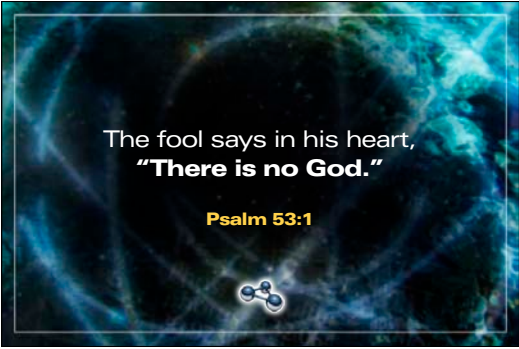
Romans 1:18-20

6

For **although they knew God**, they neither glorified him as God nor gave thanks to him, but their **thinking** became **futile** and their foolish **hearts were darkened**. Although they **claimed to be wise**, they became **fools** and **exchanged the glory of the immortal God for images** made to look like mortal man and birds and animals and reptiles...They exchanged the **truth** of God for a **lie**, and worshiped and served created things rather than the Creator...

Romans 1:21-23, 25

7



The fool says in his heart,
"There is no God."

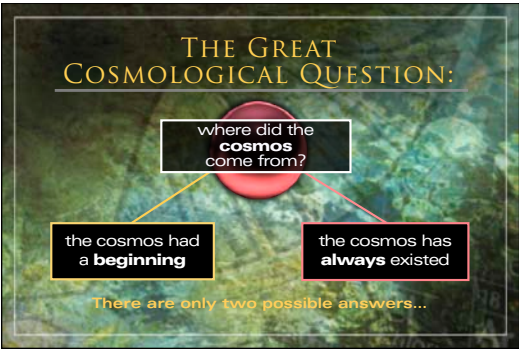
Psalm 53:1

8



thinking of **Nothing**...

9



THE GREAT COSMOLOGICAL QUESTION:

where did the **cosmos** come from?

the cosmos had a **beginning**

the cosmos has **always** existed

There are only two possible answers...

10

METAPHYSICAL QUESTIONS

why is there **something** rather than **nothing**?

why is **anything** in **motion** rather than everything **still**? (or hot/cold?)

11

METAPHYSICAL QUESTIONS

why is there **order** rather than **chaos**?

why is there **life** rather than **deadness**?

why is there **music**?

12

WHAT DOES THE COSMOS REVEAL?

Two choices...

Glory of God as transcendent creator

- or -

Glory of itself as the self-creator

13

time makes **all** things **possible**

"...Time is the hero of the plot... what we regard as impossible on the basis of human experience is meaningless here. Given so much time, the impossible becomes possible."

George Wald, *Scientific American*

14

Wald, George (1954). The origin of life. *Scientific American*, 190, No. 2, 44-53.

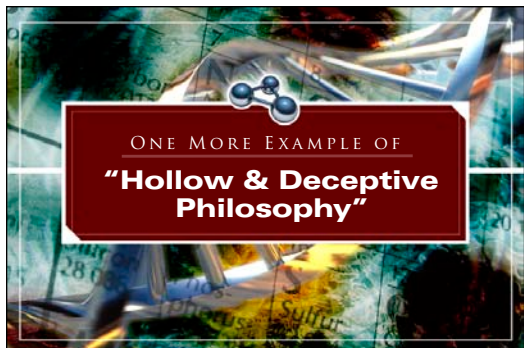
THE BATTLE OVER SCIENCE

what is **TRUE**?

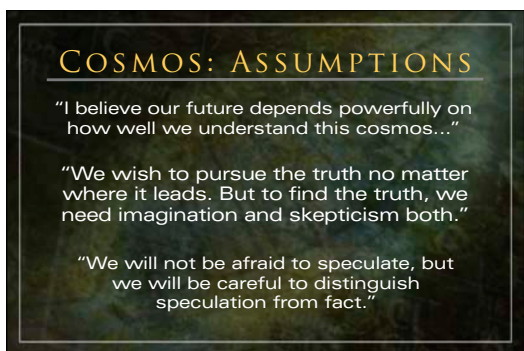
Truth Reality **VS** **Lie Illusion**

what is **PLAIN**?

15



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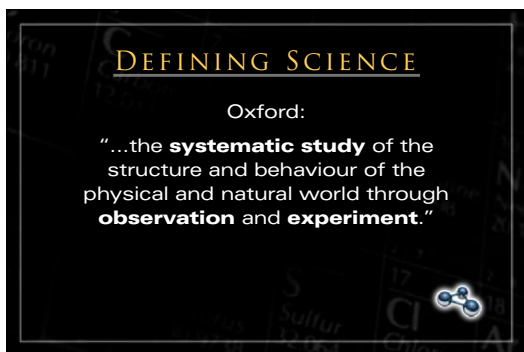


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Sagan, Carl (Producer). (1980). *Cosmos*. Los Angeles, CA: Cosmos Studios.

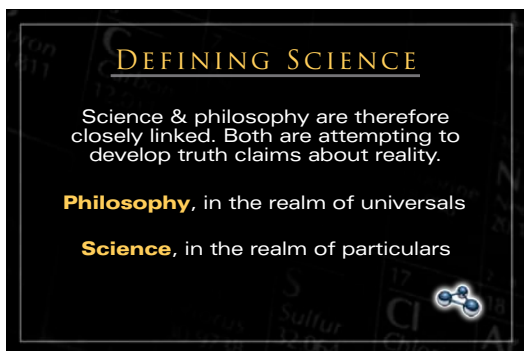


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19

Soanes, Catherine, and Hawker, Sara. *Compact Oxford English Dictionary of Current English*. Oxford: Oxford University Press, 2005.



20

JOHANNES KEPLER

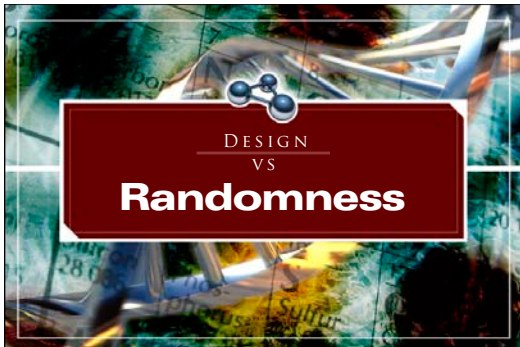
"The chief aim of all investigations of the external world should be to discover the rational order and harmony which has been imposed on it by God."

cited in Charles Colson, How Now Shall We Live?



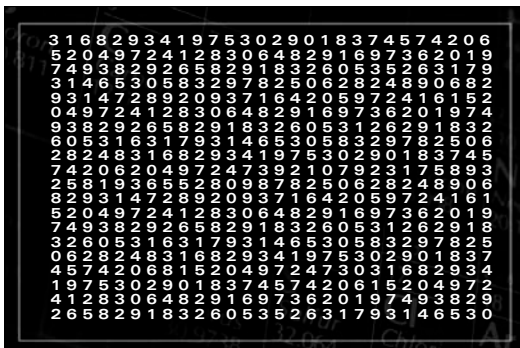
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Kepler, Johannes (1999). Cited in Charles Colson, *How now shall we live?* Wheaton, IL: Tyndale House Publishers, Inc., p. 51.



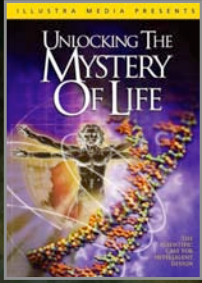
DESIGN
VS
Randomness

22




3 1 6 8 2 9 3 4 1 9 7 5 3 0 2 9 0 1 8 3 7 4 5 7 4 2 0 6
5 2 0 4 9 7 2 4 1 2 8 3 0 6 4 8 2 9 1 6 9 7 3 6 2 0 1 9
7 4 9 3 8 2 9 2 6 5 8 2 9 1 8 3 2 6 0 5 3 4 2 6 3 1 7 9
3 1 4 6 5 3 2 0 5 2 6 5 8 2 9 1 8 3 2 6 0 5 3 4 2 6 3 1 7 9
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2 6 5 8 2 9 1 8 3 2 6 0 5 3 5 2 6 3 1 7 9 3 1 4 6 5 3 0

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UNLOCKING THE MYSTERY OF LIFE

Example illustrating the problem of chance to produce information...



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THE BATTLE OVER SCIENCE

what is **TRUE?**

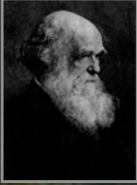
Truth Reality **VS** Lie Illusion

what is **PLAIN?**

what do we **really** hear from the **Cosmos?**

25

RULERS FROM THE GRAVE



Keynes (1883-1946)
 Dewey (1859-1952)
 Freud (1856-1939)
 Wellhausen (1844-1918)
 Marx (1818-1883)
 Kierkegaard (1813-1855)
 Darwin (1809-1882)

Enlightenment...Deism...Humanism...Modernism...Post-modernism

Breese, Dave. *Seven Men Who Rule the World From the Grave*. Chicago: Moody Press, 1990.

26

EXAMINING DARWIN'S THEORY

the most **influential theory** in **modern civilization**

does it match **Reality?**

27

HYPOTHESIS, THEORIES, LAW


Hypothesis
 Theory
 Law

what are they...really?

28

EXAMINING DARWIN'S THEORY

how does it stack up against **Reality?**




29

SIR JULIAN HUXLEY

"...Darwin's theory is... no longer a theory, but a **fact**...Darwinianism has come of age so to speak. We are no longer having to bother about establishing the **fact** of evolution."

cited in David Noebel, *Understanding The Times*



Noebel, David. *Understanding the Times*. Eugene, OR: Harvest House, 1991, p. 270.

Or, the original source:


Huxley, Julian. "At Random," a television preview on 11/21/1959. Also, Tax, Sol. *Evolution of Life*. Chicago: University of Chicago Press, 1960 p. 1.

30

ISAAC ASIMOV

“Today, although many educators play it safe by calling evolutionary ideas ‘theory’ instead of ‘**fact**,’ there is no reputable biologist who doubts that species, including *Homo sapiens*, have developed with time, and that they are continually, though slowly, changing.”

The Wellsprings of Life




Asimov, Isaac (1960). *The wellsprings of life*. New York, NY: New American Library, p. 56;

31

CARL SAGAN

“Evolution is a **fact** amply demonstrated by the fossil record and by contemporary molecular biology. Natural selection is a successful theory devised to explain the **fact** of evolution.”

The Dragons of Eden




Sagan, Carl (1977). *The dragons of Eden*. New York, NY: Random House, p. 6.

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DAWKIN’S PERSPECTIVE

“It is absolutely safe to say that if you meet somebody who claims not to believe in evolution, that person is **ignorant, stupid or insane** (or **wicked**, but I’d rather not consider that.)”

prominent Oxford scientist and author cited in M. Hartwig, Challenging Darwin’s Myths, Moody Monthly



Cited in Hartwig, Mark. “Challenging Darwin’s Myths.” *Moody Monthly*, May 1995.

Moody Monthly later became Moody magazine and has since ceased to be published. This article is also reprinted online at <http://www.arn.org/docs/moody.pdf>.


33

SAGAN, ASIMOV, HUXLEY

evolution is a

“Fact”

the **assumption** of virtually all school textbooks...



34

CREATING REALITY

“The theory of evolution is no less reliable than is the atomic ‘theory’ or the ‘germ theory of infectious disease.’ As with atoms, which cannot be directly observed, we cannot directly observe the production of new species by evolution. Biologists have gathered a tremendous amount of evidence in support of biological evolution, however,

Jane Reece, Biology: Exploring Life

Reece, Jane B. (2001). *Biology: Exploring life* (6th ed.). Menlo Park, CA: Benjamin-Cummings Publishing Company, p. 35.

35

CREATING REALITY

and not one major piece of evidence has ever been obtained that suggests it has not occurred...Conversely, the so-called theory of creationism proposes no testable hypothesis and thus cannot be proven right or wrong. Proponents simply accept it on faith. The theory of evolution, however, suggests many predictions that can be tested."

Jane Reece, Biology: Exploring Life

36

Reece, Jane B. (2001). *Biology: Exploring life* (6th ed.). Menlo Park, CA: Benjamin-Cummings Publishing Company, p. 35.

SEEING OUR OWN POSITION

**Touchdown
or
Incomplete?**

37

TWO BOOKS

Natural Theology
William Paley

The Blind Watchmaker
Richard Dawkins

38

RICHARD DAWKINS

"Natural selection, the blind, unconscious, automatic process which Darwin discovered, and which we now know is the explanation for the existence and apparently purposeful form of all life, has no purpose in mind. It has no mind and no mind's eye. It does not plan for the future. It has no vision, no foresight, no sight at all. If it can be said to play the role of watchmaker in nature, it is the blind watchmaker."

The Blind Watchmaker

39

Dawkins, Richard (2001). Cited in Hugh Ross, *The Creator and the Cosmos*. Colorado Springs, CO: Navpress Publishing Group, p. 101.

IGNORING THE OBVIOUS

Richard Dawkins

"Biology is the study of complicated things that give the appearance of having been designed for a purpose."

The Blind Watchmaker

40


Dawkins, Richard (1998). Cited in William Dembski, *Science and Design*, *First Things* 86 (Online), October, 21-27.

IGNORING THE OBVIOUS

Francis Crick

"Biologists must constantly keep in mind that what they see was not designed, but rather evolved."

cited in William Dembski, Science and Design



Crick, Francis (1998). Cited in William Dembski, Science and Design, *First Things* 86 (Online), October, 21-27.

41

RECOGNIZING INTELLIGENT DESIGN




42

CHARLES DARWIN


"I remember well the time when the thought of the eye made me cold all over, but I have got over this stage of the complaint, and now small trifling particulars of structure often make me very uncomfortable. The sight of a feather in a peacock's tail, whenever I gaze at it, makes me sick!"

Letter to Asa Gray, dated 3 April 1860, The Life and Letters of Charles Darwin



Darwin, Charles (1897) and Darwin, Francis, ed. *The Life and Letters of Charles Darwin, Part Two*. Whitefish, MT: Kessinger, 2004.

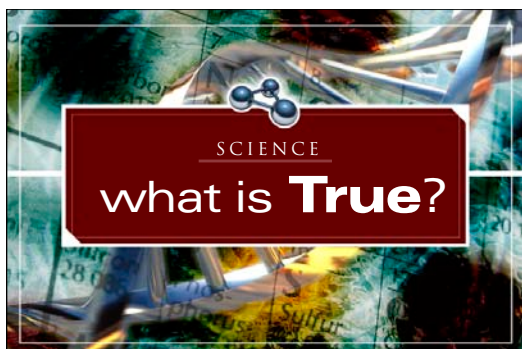
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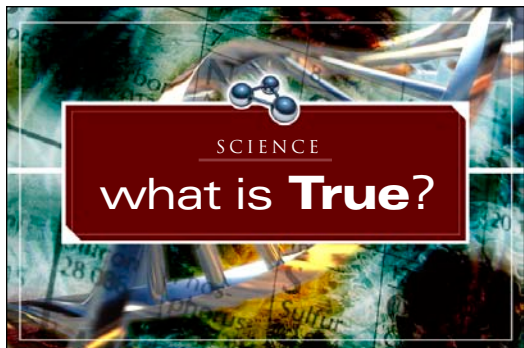
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SCIENCE

what is True?



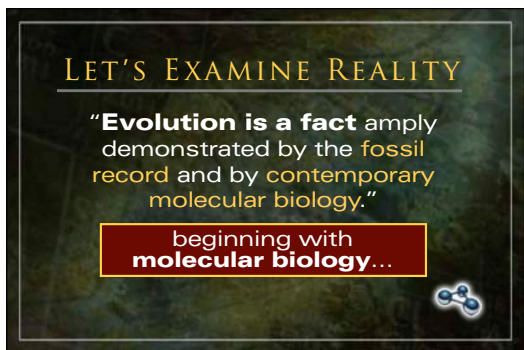
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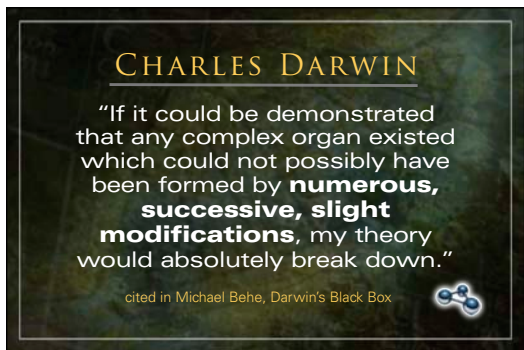


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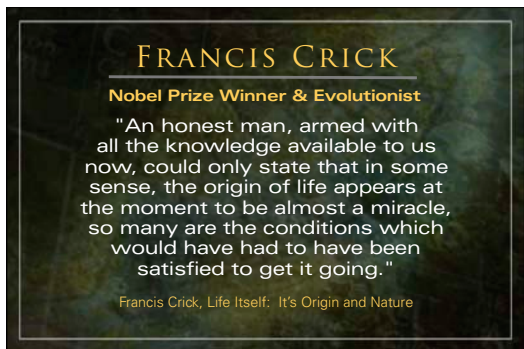
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Sagan, Carl (1977). *The dragons of Eden*. New York, NY: Random House, p. 6.



4

Darwin, Charles. (1998). Cited in Michael J. Behe, *Darwin's black box*. New York, NY: Free Press, p. 39.



5

Crick, Francis (1981). *Life itself: Its origin and nature*. New York, NY: Simon & Schuster, p. 88.

IGNORING REALITY

Directed Panspermia:

Theory that the first living cell must have been transported to earth from some other planet outside our solar system.

Francis Crick



6

BLIND FAITH

"Most modern biologists, having reviewed with satisfaction the downfall of the spontaneous generation hypothesis, yet unwilling to accept the alternative belief in special creation, are left with nothing. I think a scientist **has no choice** but to approach the origin of life through a hypothesis of spontaneous generation."

George Wald, *The Origin of Life*

7

Wald, George (1954). The origin of life. *Scientific American*, 190, No. 2, 44-53.

BLIND FAITH

"One has only to contemplate the magnitude of this task to concede spontaneous generation of a living organism is impossible. Yet here we are, as a result. I believe in spontaneous generation."

George Wald, *The Origin of Life*



8

Wald, George (1954). The origin of life. *Scientific American*, 190, No. 2, 44-53.

CHARLES DARWIN

"If it could be demonstrated that any complex organ existed which could not possibly have been formed by numerous, successive, slight modifications, **my theory would absolutely break down.**"

cited in Michael Behe, *Darwin's Black Box*



9

Darwin, Charles. (1998). Cited in Michael J. Behe, *Darwin's black box*. New York, NY: Free Press, p. 39.

DARWIN "BREAKING DOWN"

"To Darwin, the cell was a 'black box' -its inner workings were utterly mysterious to him. Now, the black box has been opened up and we know how it works. Applying Darwin's test to the ultra-complex world of molecular machinery and cellular systems that have been discovered over the past 40 years, we can say that Darwin's theory has **'absolutely broken down.'**"

Michael Behe, *Darwin's Black Box*



10

Darwin, Charles. (1998). Cited in Michael J. Behe, *Darwin's black box*. New York, NY: Free Press, p. 39.

ILLUSTRATION MEDIA PRESENTS
UNLOCKING THE MYSTERY OF LIFE
Flagellum demonstrating the complex machinery that exists within bacteria cells

11

DR. CHANDRA WICKRAMASINGHE
"The speculations of The Origin of Species turned out to be wrong...it is ironic that the scientific facts throw Darwin out, but leave William Paley, a figure of fun to the scientific world for more than a century, still in the tournament with a chance of being the ultimate winner."
Evolution from Space: A Theory of Cosmic Creationsim

12

Hoyle, Fred & Wickramasinghe, Chandra (1981) . *Evolution from space: A theory of cosmic creationism*. New York, NY: Simon & Schuster, pp. 96-97.

LET'S EXAMINE REALITY
"Evolution is a fact amply demonstrated by the fossil record and by contemporary molecular biology."
and now, the fossil record...

13

Sagan, Carl (1977). *The dragons of Eden*. New York, NY: Random House, p. 6.

CHARLES DARWIN
...[T]he number of intermediate varieties, which have formerly existed on the earth, [must] be truly enormous. Why then is not every geological formation and every stratum full of such intermediate links? Geology assuredly does not reveal any such finely graded organic chain; and this, perhaps, is the most obvious and gravest objection which can be urged against my theory.
cited in Of Pandas and People

14

Davis, Percival, and Kenyon, Dean H. *Of Pandas and People*. Dallas: Haughton, 1993, p. 93-94.

This citation is a reference to:

Darwin, Charles (1859). *The Origin of Species*, Penguin Classics Edition. London: Penguin, 1968, p. 292.

CHARLES DARWIN
"The geological record is extremely imperfect and this fact will to a large extent explain why we do not find intermediate varieties, connecting together all the extinct and existing forms of life by the finest graduated steps. He who rejects these views on the nature of the geological record, will rightly reject my whole theory."
The Origin of Species


15

Darwin, Charles (1872) *On the origin of the species by means of natural selection*. Sixth Edition. London: John Murray, pp. 341-342.

COLIN PATTERSON
 evolutionist, paleontologist
 London Museum of Natural History

"I will lay it on the line -
 there is not one such
 [transitional] fossil for
 which one could make a
 watertight argument."

cited in *Of Pandas and People*



16

Davis, Percival, and Kenyon, Dean H. *Of Pandas and People*.
 Dallas: Haughton, 1993, p. 106-107.

ARCHAEOPTERYX



17

DAVID RAUP
 Director, Field Museum of Natural History
 (one of the largest fossil collections in the world)

"We are now about 120 years after Darwin
 and the knowledge of the fossil record has
 been greatly expanded. We now have a
 quarter of a million fossil species but the
 situation hasn't changed much. The
 record of evolution is still surprisingly jerky
 and, ironically, we have even fewer
 examples of evolutionary transition than
 we had in Darwin's time."

cited in David Noebel, *Understanding the Times*

18

Noebel, David. *Understanding the Times*. Eugene, OR: Harvest
 House, 1991, p. 317.


Or, the original source:

Raup, David. "Conflicts Between Darwin and Paleontology." *Field
 Museum of Natural History Bulletin*. January 1979, p. 25.

STEPHEN JAY GOULD

"The extreme rarity of transitional
 forms in the fossil record persists as
 the trade secret of paleontology. The
 evolutionary trees that adorn our
 textbooks have data only at the tips
 and nodes of their branches; the rest
 is inference, however reasonable, not
 the evidence of the fossils."


Davis and Kenyon, *Of Pandas and People*



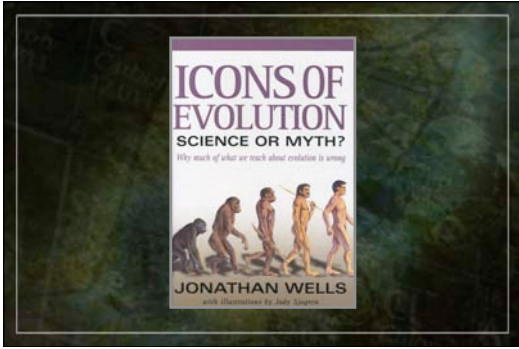
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Davis, Percival, and Kenyon, Dean H. *Of Pandas and People*.
 Dallas: Haughton, 1993, p. 106-107.

GOULD'S RESPONSE
Punctuated Equilibrium

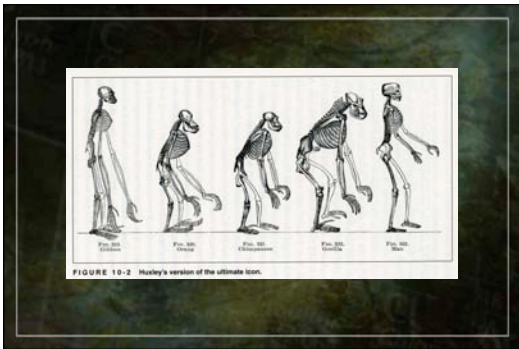


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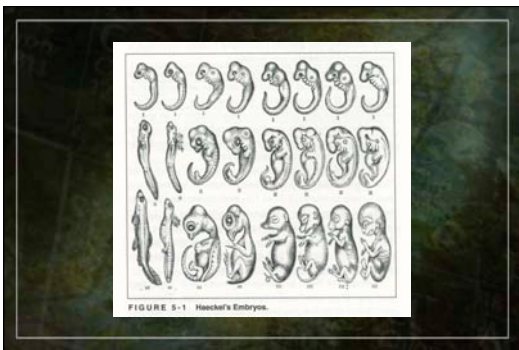
Wells, Jonathan. *Icons of Evolution*. Washington DC: Renergy, 2000.

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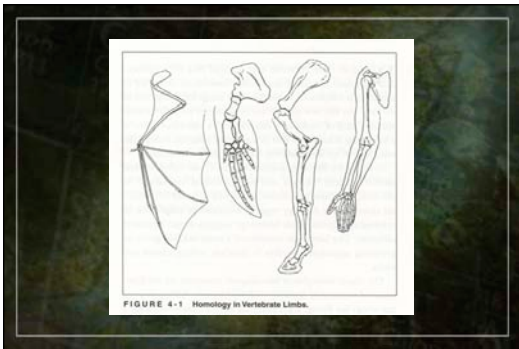
Wells, Jonathan. *Icons of Evolution*. Washington DC: Renergy, 2000.

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Wells, Jonathan. *Icons of Evolution*. Washington DC: Renergy, 2000.

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Wells, Jonathan. *Icons of Evolution*. Washington DC: Renergy, 2000.

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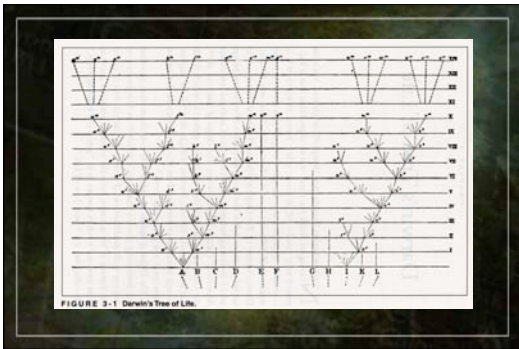
Wells, Jonathan. *Icons of Evolution*. Washington DC: Renergy, 2000.

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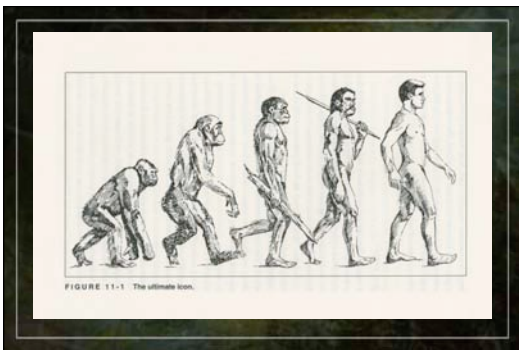
Wells, Jonathan. *Icons of Evolution*. Washington DC: Renergy, 2000.

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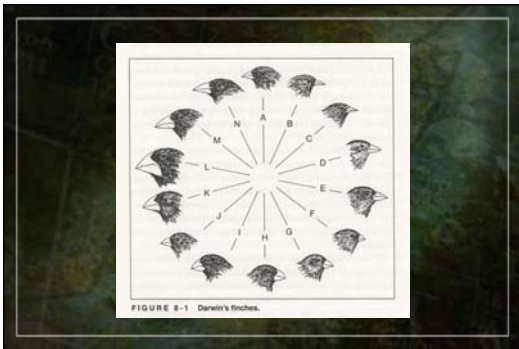
Wells, Jonathan. *Icons of Evolution*. Washington DC: Renergy, 2000.

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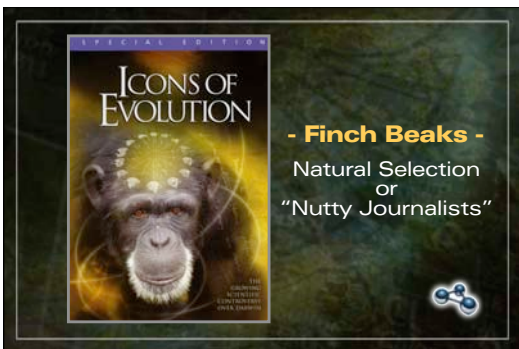
Wells, Jonathan. *Icons of Evolution*. Washington DC: Renergy, 2000.

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Wells, Jonathan. *Icons of Evolution*. Washington DC: Renergy, 2000.

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30

S. LOVTRUP

“I believe that one day the Darwinian myth will be ranked the greatest deceit in the history of science. When this happens many people will pose the question: How did this ever happen?”

Darwinism: The Refutation of a Myth




Lovtrup, Soren (1987). *Darwinism: The refutation of a myth*. London: Croom Helm Ltd., p. 422.

31

CARL SAGAN

“**Evolution is a fact** amply demonstrated by the **fossil record** and by **contemporary molecular biology**.”

The Dragons of Eden



Sagan, Carl (1977). *The dragons of Eden*. New York, NY: Random House, p. 6.

32

DAWKIN'S PERSPECTIVE

“It is absolutely safe to say that if you meet somebody who claims not to believe in evolution, that person is **ignorant, stupid or insane** (or **wicked**, but I'd rather not consider that.)”

prominent Oxford scientist and author cited in M. Hartwig, Challenging Darwin's Myths, Moody Monthly

Cited in Hartwig, Mark. “Challenging Darwin’s Myths.” *Moody Monthly*, May 1995.

Moody Monthly later became Moody magazine and has since ceased to be published. This article is also reprinted online at <http://www.arn.org/docs/moody.pdf>.

33

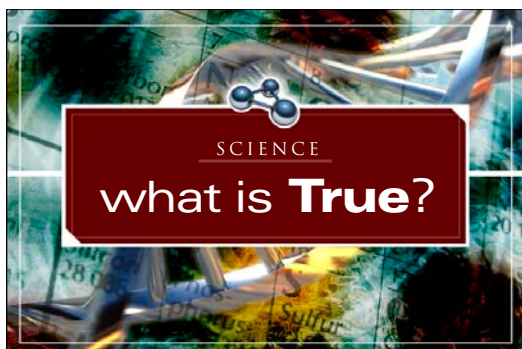
IMPORTANCE OF GENESIS

“Evolution destroys utterly and finally the very reason Jesus’ earthly life was supposedly made necessary. Destroy Adam and Eve and original sin, and in the rubble you will find the sorry remains of the son of God...and if Jesus was not the redeemer who dies for our sins, and this is what evolution means, then **Christianity is nothing**.”

G. Richard Bozarth, American Atheist

Bozarth, G. Richard (1978). The meaning of evolution. *American Atheist*, September, p. 30.

34



SCIENCE

what is True?

35



Outline

Lesson 5 - Science: What is True?

- I. Introduction
 - A. Psalm 19:1-4 – “The heavens declare the Glory of God” – General Revelation
 - B. Romans 1:18-20 – “God has made it plain to them...”
 - C. Only two possibilities: the cosmos has always existed or the cosmos had a beginning – either one poses a serious problem for those who deny a Creator
- II. Design vs. Randomness
 - A. Earliest scientists were convinced that the universe bore evidence of design
 - B. Scrabble Example – Where does the organized information in the genetic code come from?
 - C. Wald- “Time is the hero of the plot...the impossible becomes possible.”
- III. Examining Darwin’s Theory
 - A. Hypothesis, theory, law – data must confirm investigation of truth claims
 - B. Darwinian Evolution taught as “Fact” – Does his theory match reality?
 - C. Paley’s Argument – Anyone who looks at a pocket watch understands that it was designed with intelligent purpose
 - D. Ignoring the obvious – Francis Crick: You’ve got to keep in mind that all of this was not designed
- IV. Testing Carl Sagan’s Statement – “Evolution is a fact amply demonstrated by the fossil record and contemporary molecular biology.”
 - A. Contemporary Molecular Biology – testing Darwin’s statement that his theory would absolutely break down if it could be demonstrated that a complex organism could not come into existence without numerous, successive slight modifications

1. In the 19th century, the cell was viewed as a simple glob of plasma, a black box; today, micro technology reveals a cell filled with exquisite machinery
 2. Irreducible complexity – The cell cannot exist if one component of the machinery is missing – Examples: mouse trap and the flagellum motor
 3. It is in the realm of molecular genetics where we see the most compelling evidence of design on earth – evolution fails Darwin’s test
- B. The fossil record – testing Darwin’s statement that if one can’t find all of the fine, graduated evolutionary steps in the fossil record, then one can rightly reject the theory
1. If speciation requires many thousands of morphological changes, there should be some fossil evidence of those changes – Darwin agreed they weren’t there, but only because we hadn’t dug up enough fossils
 2. 120 years after Darwin’s time we have a lot more fossil evidence than he did, but we have even less support for his evolutionary theories
 3. Theory of punctuated equilibrium – offered by evolutionist Gould because of the lack of evidence in the fossil record; purports immediate speciation to account for the missing links
 4. Icons of Evolution – used for years as “proof” of evolution – all are inaccurate and outdated
 5. Theory of directed panspermia – purports that the first living cell was sent to earth from another planet – offered by Crick because evidence was overwhelmingly against spontaneous generation
 6. Evolution again fails Darwin’s own test

V. Conclusion

- A. Lovtrup: “I believe that one day the Darwinian myth will be ranked the greatest deceit in the history of science”
- B. This is a worldview battle – a battle that is much deeper than a scientific theory - Evolution destroys any foundation for a standard of ethics or morality – man has exchanged the truth of God for a lie (evolution) so that he may be free to follow his inner desires



Key Terms

Lesson 5 – Science: What is True?

Charles Darwin (1809-1882): British naturalist who proposed the theory of evolution through natural selection in his book *The Origin of Species* (1859). This book, and Darwin's theories, have had massive ideological and philosophical effects on our world and humanity.

Darwinian Evolution/Darwinism: A specific area of evolutionary biology involving natural selection proposed by Charles Darwin.

Directed Panspermia: Theory that suggests that highly-evolved life forms sent microorganisms or biochemical compounds from outer space to earth. Francis Crick developed this hypothesis to explain life on earth.

Fossil Record: The fossilized remains of plants and animals that provide the evidential means to understand when those organisms were alive, where they lived, and what they looked like.

Francis Crick (1916-2004): Co-discoverer of DNA who rejected the evidence of design. During the 1960s he became concerned with the origins of the genetic code and in the early 1970s proposed the theory of Directed Panspermia.

Great Cosmological Question: Where did the cosmos come from? The cosmos either had a beginning or has always existed.

Hypothesis: Very early assumption made on the basis of limited evidence used as a starting point for further investigation.

Intelligent Design: Scientific theory that nature and complex biological structures were intelligently designed and, as such, are not the result of chance. Proponents of intelligent design argue that there is empirical evidence that is subject to scientific investigation that complex biological systems and the information bearing properties of DNA could not have been created by natural selection.

Irreducible Complexity: A complex system that could not function if it were any simpler, and therefore could not possibly have been formed by successive additions to a precursor system with the same functionality. An analogy often given in support of irreducible complexity is the mousetrap.

Jonathan Wells: Biologist, senior fellow of the Discovery Institute, and author of *Icons of Evolution*. A prominent spokesperson for the intelligent design movement, Wells' book proves that many of the most commonly accepted arguments for evolution are invalid.

Law: A statement of scientific fact that a particular natural or scientific phenomenon is invariable under given circumstances

Michael Behe: American biochemist, senior fellow of the Discovery Institute's Center for Science and Culture, and author of *Darwin's Black Box*. Behe is a leading advocate and spokesperson for the intelligent design movement who is most well known for articulating the concept of irreducible complexity.

Molecular Biology: The branch of biology that deals with the formation, structure, and function of macromolecules essential to life; in particular the interactions between the various systems of a cell, including the interrelationship of DNA, RNA and protein synthesis and learning how these interactions are regulated

Paley's argument for design: Named after William Paley (1743-1805), this is sometimes referred to as the watchmaker analogy: it is plain to see that the parts in a watch are designed and placed in relationship with each other for a purpose and that the watch therefore must have a maker. In the same way, our universe bears evidence of design and purpose and, therefore, must have a maker.

Punctuated equilibrium: A theory in evolutionary biology that says the appearance of new species occurs suddenly and without continuous slow variations; species will show little or no evolutionary change throughout history

Science: The systematic study of the structure and behavior of the physical and natural world through observation and experiment. Science and philosophy are both attempting to develop truth claims about reality; philosophy in the realm of universals, science in the realm of particulars.

Stephen Jay Gould (1941-2002): American paleontologist and evolutionary biologist who taught at Harvard University and worked at the American Museum of Natural History. He was an influential and widely read author that developed the theory of punctuated equilibrium (see glossary entry) due to the lack of evidence in the fossil record for gradual Darwinianism.

Theory: Idea or belief about something formed by speculation, conjecture, or deduction from certain facts within certain parameters



Recommended Reading

Lesson 5 – Science: What is True?

Please note that not everything in these suggested resources should be considered endorsed by Focus on the Family. Nevertheless, Dr. Tackett has found this material helpful. Scripture should be your first and primary resource.

- Behe, Michael J. 1996. *Darwin's Black Box: The Biomedical Challenge to Evolution*. New York, NY: The Free Press.
- Behe, Michael J., William A. Dembski and Stephen C. Meyer. 2000. *Science and Evidence for Design in the Universe: The Proceedings of the Wethersfield Institute*. San Francisco, CA: Ignatius Press.
- Broom, Neil. 2001. *How Blind is the Watchmaker?* Downers Grove, IL: InterVarsity Press.
- Cold Water Media. 2004. *Icons of Evolution* (DVD). Palmer Lake, CO: Cold Water Media.
- Davis, Percival and Dean H. Kenyon. 1989. *Of Pandas and People*. Dallas, TX: Houghton Publishing Company.
- Dembski, William A. 1999. *Intelligent Design*. Downers Grove, IL: InterVarsity Press.
- Gonzalez, Guillermo and Jay W. Richards. 2004. *The Privileged Planet*. Washington DC: Regnery Publishing.
- Hawking, Stephen. 2001. *The Universe in a Nutshell*. New York: Bantam Books.
- Johnson, Phillip E. 1993. *Darwin on Trial*. Downers Grove, IL: InterVarsity Press.
- Johnson, Phillip E. 1995. *Reason in the Balance*. Downers Grove, IL: InterVarsity Press.
- Kaiser, Christopher. 1991. *Creation and the History of Science*. London, England: Marshall Pickering.

- Martin, Jobe. 1994. *The Evolution of a Creationist*. Rockwell, TX: Biblical Discipleship Publishers.
- Moreland, J. P. 1989. *Christianity and the Nature of Science*. Grand Rapids, MI: Baker Book House.
- Morris, Henry M. 1989. *The Long War Against God: The History and Impact of the Creation/Evolution Conflict*. Grand Rapids, MI: Baker Book House.
- Muncaster, Ralph O. 2003. *Dismantling Evolution: Building the Case for Intelligent Design*. Eugene, OR: Harvest House Publishers.
- Pearcey, Nancy R. and Charles B. Thaxton. 1994. *The Soul of Science: Christian Faith and Natural Philosophy*. Wheaton IL: Crossway Books.
- Taylor, Ian T. 1984. *In the Minds of Men: Darwin and the New World Order*. Toronto, Canada: TFE Publishing.
- Wells, Jonathan. 2000. *Icons of Evolution: Science or Myth?* Washington, DC: Regnery Publishing.
- Wiker, Benjamin. 2002. *Moral Darwinism: How We Became Hedonists*. Downers Grove, IL: InterVarsity Press.



Expert Biography: Stephen Meyer

Stephen C. Meyer is director and Senior Fellow of the Center for Science and Culture at the Discovery Institute, based in Seattle. Meyer earned his Ph.D. in the history and philosophy of science from Cambridge University (1991). Previously he worked as a geophysicist with the Atlantic Richfield Company after earning his undergraduate degrees in physics and geology.

In part one of Lesson 5 of The Truth Project, Meyer remarks, "The earliest scientists ... were very strongly committed to the idea of the existence of God and to Christianity, in many cases. They were convinced that the universe bore evidence of design and that it was, therefore, intelligible to the human intellect. The idea of design was one of the inspirations for the scientific revolution because the conviction that we could study nature and make sense of it ..."

In opposition to neo-Darwinian evolutionary theory, Meyer is a staunch supporter of Intelligent Design and, like Dr. Tackett, is well aware of the worldview implications that spring forth from naturalism and belief in macroevolution. The difference, as Dr. Tackett puts it, is "between something which has been designed," as in Christian theism, "and something which is truly random."

A past recipient of a Rotary International Scholarship, the American Friends of Cambridge scholarship and a Templeton Foundation science-religion teaching grant, Dr. Meyer has recently co-written or edited *Darwinism, Design, and Public Education* (Michigan State University Press) and *Science and Evidence of Design in the Universe* (Ignatius, 2000).

Meyer has contributed articles to several scholarly books and anthologies including *The History of Science and Religion in the Western Tradition*, *Darwinism: Science or Philosophy*, *Of Pandas and People*, *The Creation Hypothesis* and *Facets of Faith and Science*. He has also authored numerous technical articles as well as editorials in magazines and newspapers such as *The Wall Street Journal*, *The Los Angeles Times*, *The Houston Chronicle*, *The Chicago Tribune*, *First Things* and *National Review*.

Dr. Meyer has also appeared as a guest on several television programs including PBS's "Freedom Speaks" and "TechnoPolitics," and CNBC's "Hardball with Chris Matthews."

Recommended Resources*

- *Darwinism, Design, and Public Education*
- *Science and Evidence of Design in the Universe*
- *Unlocking the Mystery of Life* (DVD)

Links+

Discovery Institute, Center for Science and Culture

<http://www.discovery.org/csc/>

Access Research Network

<http://www.arn.org/authors/meyer.html>

"By Design," article about Dr. Meyer

http://www.arn.org/docs/meyer/sm_bydesign.htm

Sources

<http://www.discovery.org/scripts/viewDB/index.php?command=view&isFellow=true&id=11>

<http://www.arn.org/authors/meyer.html>

* Inclusion of an item in the Recommended Resources section does not constitute an endorsement of all the content in a resource.

+ Referrals to sites not produced by Focus on the Family are for informational purposes only, and do not constitute an endorsement of the sites' content.



Historical Figure: Charles Darwin

Whether you regard Charles Darwin as a dangerous revolutionary or an agent of enlightenment, there's no denying the pervasive influence of his life and work. As one biographer puts it, "Not only did he change the course of biological science, but he changed forever how philosophers and theologians conceive of man's place in nature."¹ "It is a fact," says another commentator, "that in the scientific world of the late 20th century, the displacement of God by Darwinian forces is almost complete."²

Charles Robert Darwin was born on February 12, 1809 at Shrewsbury, England, the second son and fifth child of Dr. and Mrs. Robert Darwin. The Darwin household was professional, prosperous, sophisticated, and skeptical: whereas Susannah Darwin's family, the Wedgwoods (of china manufacturing fame), were deeply devout, Charles's father, a highly successful physician, was a freethinker whose adherence to the Christian faith was purely nominal.

Charles's mother died when he was eight years old, an event of which he later professed to have very little memory aside from the fact that his father wept. An undistinguished scholar at the local Shrewsbury School, the young Darwin nevertheless exhibited a strong penchant for naturalistic pursuits and became an avid collector of minerals, rocks, and insects. He loved gardening, too, and as an adult confessed, "I ... invented some great falsehoods about being able to color crocuses as I liked."³

Sent to Edinburgh at age sixteen to study medicine, Darwin made the acquaintance of Robert Grant, lecturer in zoology, from whom he imbibed the evolutionary theories of French naturalist J. B. Lamarck (1744-1829). Two years later, having spent more time exploring tide pools than applying himself to coursework, he abandoned the idea of life as a physician and matriculated to Cambridge where, at his father's suggestion, he intended to prepare himself for a career in the church. Though attracted to the quiet existence of a country parson, Charles doubted his ability to pursue that calling in good conscience. "From what little I had heard and thought on the subject," he says, "I had scruples about declaring my belief in all the dogmas of the Church of England."⁴

In Cambridge he collected beetles and studied Charles Lyell's *Principles of Geology*, a groundbreaking work that explained the development of natural phenomena in terms of slow, gradual, cumulative change. He also read William Paley's *Natural Theology and View of the Evidences of Christianity* and came under the tutelage of Rev. John Henslow (Professor of Botany) and Rev. Adam Sedgwick (Professor of Geology), both of whom were Christian ministers (Sedgwick an evangelical) and highly respected men in the scientific community. It was through Henslow that Darwin, in 1831, received an invitation to join the crew of the HMS *Beagle*, a government survey ship, as naturalist and "gentleman companion" to Captain Robert FitzRoy.

Darwin spent the next five years circumnavigating the globe, traversing the South American continent, and exploring such far-flung sites as Tierra del Fuego, the Galapagos Islands, and the Pacific coral islands. Wherever he went he collected specimens – plant, animal, mineral, and fossil. These were carefully packed and sent home to Henslow in England. Though it's difficult to trace the precise development of his inner thought, it appears that observations made during the course of this journey led him to question many of his earlier assumptions about the origins and nature of life; this, at least, is the way the story is usually told. Possibly he found in his discoveries corroborating evidence for ideas that had taken hold in his mind sometime prior to the voyage. Whatever the explanation, Darwin increasingly felt compelled to conclude that *species* are not *immutable* – that is, that creatures have not been made, as Genesis claims, each "in its own kind," but that they rather represent fluid and changing types or categories, one blending into and giving rise to another over the course of long ages of time.

A theory to account for the mechanics of this process – what he eventually referred to as *natural selection* – was slow to take shape in his thinking. Only after returning to England in 1836, marrying his cousin Emma Wedgwood in 1839, and spending the next eight years writing a four-volume work on the classification of barnacles, was he able to work out the details to his own satisfaction. Not until 1859 did he publish his findings in one of the most controversial and epoch-making books of the Western world: *The Origin of Species By Means of Natural Selection*.

His thesis wasn't exactly new. As mentioned above, Lamarck had already propounded a doctrine of evolution in the 1700s. So had John Ray, the Comte de Buffon, and Charles's grandfather, the eminent Dr. Erasmus Darwin. But none of these thinkers had ever produced a body of evidence in support of their ideas comparable to the materials collected during the voyage of the *Beagle*. No doubt it was this combination of carefully articulated theory *and* accompanying "proof" that made the scientific community sit up and take notice of Darwin's work. But it was probably something else as well: the prevailing spirit of an age in which rationalism was increasingly supplanting faith as a key to truth, reality, and the meaning of life.

For Darwin was above all a rationalist. He had little tolerance for the "mysteries" of religion. Reflecting on his youthful brush with a possible life in the ministry, he once wrote, "It never struck me how illogical it was to say that I believed in what I could not understand and what is in fact unintelligible. I might have said with entire truth that I had no wish to dispute any dogma; but I never was such a fool as to feel and say '*credo quia incredibile*' [I believe because it is incredible]." ⁵ It's ironic that Darwin, a classic modernist, should remain one of the icons of the postmodern period – an era when pure reason appears to have fallen into disrepute and when all kinds of people seem willing and eager to believe all sorts of irrational and unbelievable things.

Three years after his marriage to Emma, Charles moved his growing family from London to Down House in Kent. There for the next forty years he lived a life of quiet seclusion, keeping to the same invariable routine: four hours of work a day, seven days a week, punctuated by intervals of exercise and light reading. His devoted wife did everything in her power to shield him from annoyances that might aggravate his chronic ill-health – Darwin suffered with gastric pain and heart palpitations, a condition most medical experts now believe to have been

psychosomatic in origin. His complaints seem to have been provoked by episodes of increased stress.

One of the most notable of these episodes centered around the death of his ten-year-old daughter Annie (1851). Darwin was never able to reconcile this tragedy with the concept of a loving Deity, and it led him to adopt a position of agnosticism with respect to the existence of God.

Additional stress was associated with the storm of controversy that followed the publication of *The Origin of Species*, a tempest that reached its climax at the 1860 meeting of the British Association for the Advancement of Science in Oxford, where Bishop Samuel Wilberforce, son of the famous evangelical abolitionist and parliamentarian, debated the claims of evolution with T. H. Huxley, nicknamed "Darwin's Bulldog." Interestingly enough, Robert FitzRoy, one-time captain of the *Beagle*, now an admiral in the Royal Navy and a former governor of New Zealand, was on hand to lend his support to Wilberforce. It's worth noting that FitzRoy, who had shared the very experiences that apparently drove Darwin to accept the mutability of species and to abandon his belief in Genesis, concluded his own *Narrative of the Beagle voyage* with a twenty-five page "affirmation of the biblical version of the Noachian Flood and a warning 'against assenting hastily to new theories.'"⁶

Charles Darwin died on April 19, 1882, survived by his wife and seven children with whom he was reputed to have been unusually "affectionate and delightful." He was known as a kind, pleasant, private, and unassuming man. His remains, by public decree, were interred beside Sir Isaac Newton in the church of Westminster Abbey.

¹ John Bowlby, *Charles Darwin: A New Life* (New York: W.W. Norton & Company, 1990), 1.

² Kenneth R. Miller, *Finding Darwin's God* (New York: HarperCollins, 1999), 15.

³ Ronald W. Clark, *The Survival of Charles Darwin* (New York: Random House, 1984), 7.

⁴ *Ibid.*, 11.

⁵ *Ibid.*, 12.

⁶ *Ibid.*, 19.



Historical Figure: Carl Sagan

"Poor Carl Sagan!" wrote a Pennsylvania viewer in reaction to the phenomenally successful 1980 PBS television series *Cosmos*. "He so desperately wants to find man's significance in the cosmos, but he simply cannot bear to speak the word that would give his grand search coherence and conclusion: *God*."¹ Thus in a few words this keen observer summed up the central problem of Sagan's life and work.

Carl Sagan was a study in inconsistencies and contradictions. Born in Brooklyn to Jewish parents on November 9, 1934, he inherited a skeptical, rationalistic outlook from his mother, Rachel – a hard-nosed, sharp-tongued woman who believed in God and was active in the local synagogue – and a sense of wide-eyed, childlike wonder from his father, Sam – an ambitious son of Ukrainian refugees who took pride in his Jewish ancestry but styled himself an atheist. Sagan was to spend much of his life in a less than successful attempt to reconcile and synthesize these conflicting elements in his heritage and personality.

It's a testament to the power of his father's upbeat temperament and his mother's protective care that Carl, a Jewish boy with relatives in Hitler's concentration camps, rapidly developed into an indefatigable optimist. This native optimism received a timely boost at the 1939 New York World's Fair, where the five-year-old Sagan was dazzled and delighted by bright and hopeful visions of America's coming techno-utopia. That visit to the fair was a defining experience. Through all the years that followed, Carl never lost faith in what he considered the redemptive power of science and technology.

Faith in God was another matter. He rejected religion from a very early age. "In exactly that period when I was sort of seriously reading the Bible," he wrote, "I found [in it] all sorts of obvious contradictions with reality."² Significantly, this loss of confidence in traditional spirituality was accompanied by a growing interest in mythology, science-fiction, and extraterrestrial life. As an adolescent Sagan devoured the space novels of Edgar Rice Burroughs, steeped himself in Percival Lowell's speculations about Martian civilization, and solidified his belief in the existence of benevolent alien super-beings. For all his rationalism, it seems that Carl simply could not be content with a purposeless and impersonal cosmos. He remained a proponent of the search for extraterrestrial life throughout the course of his professional career.

Not surprisingly, it was during this period that Sagan first became interested in astronomy. His mother, hearing him express his curiosity about the stars, advised him to go to the library and get a book on the subject. He followed her counsel and was astounded to discover that the stars are not merely tiny points of light but distant blazing suns. "The scale of the universe suddenly opened up to me," he said in retrospect. "[It was] kind of a religious experience."³

That "religious experience" became the prelude to Sagan's life work. From the moment he learned that astronomers actually get paid to study the heavens, his mind was made up and his course was set. He worked hard in high school, distinguishing himself as a student of exceptional ability, and upon graduation enrolled at the University of Chicago. There he went on to earn three degrees in astronomy and astrophysics: a Bachelor of Science in 1955; a Master's in 1956; and a Doctorate in 1960.

After completing a fellowship at the University of California at Berkeley, Sagan taught at Harvard until 1968. Refused tenure by the Harvard board of regents, he moved to Cornell University, where, in 1971, he was appointed David Duncan Professor of Astronomy and Space Sciences and Director of the Laboratory for Planetary Studies. In this role Sagan distinguished himself by conducting breakthrough studies of Venus and Mars, Saturn's moon Titan, and Jupiter's moon Europa. He also played a leading role in planning and executing the Mariner, Viking, Voyager, and Pioneer unmanned spacecraft expeditions, receiving NASA's Exceptional Scientific Achievement and Distinguished Public Service medals in the process.

But Sagan's greatest achievements did not come in the field of scientific observation and experimentation (an area in which some of his colleagues had doubts about his proficiency). Instead, he made his greatest mark as a television celebrity and a remarkably effective *popularizer* of scientific ideas. Through the publication of several mass-market oriented books, including *Intelligent Life in the Universe*, *The Dragons of Eden*, *Comet*, and *Shadows of Forgotten Ancestors*, and a series of appearances on Johnny Carson's *The Tonight Show*, Sagan gained notoriety as the hip, cool, and sexy young guru of a vaguely "spiritual" but solidly scientific *philosophy* of life. This aspect of his career reached its apex with the production of the thirteen-episode series *Cosmos*, which had an unprecedented impact upon the television-viewing world. In addition to winning an Emmy and a Peabody Award, *Cosmos* was seen by an estimated 600 million viewers in more than sixty different countries around the globe. The program's essentially monistic and materialistic understanding of reality – summed up in the statement, "The cosmos is all there is, all there ever was, and all there ever will be" – has since become part of the fabric of our cultural consciousness.

At the conclusion of Carl Sagan's novel, *Contact* (1985; film version 1997), astronomer Ellie Arroway – a mirror image of Sagan himself – uncovers evidence that a "super-intelligence" (probably a highly advanced form of alien life) has designed the universe.⁴ This fictional work was Sagan's final testament to the world, an expression of his hopeful expectation that mankind would soon establish contact with extraterrestrials. It is interesting that the man who rejected religion and clung to rigorous rationalism should have so readily embraced the unfounded notion of a cosmos burgeoning with intelligent life and populated with godlike aliens. Having closed the lid on the "cosmic cube," Sagan appears to have been eager to find a basis for some kind of transcendent experience *inside the box*. Herein lies part of the secret of his overwhelming popular appeal. It may also be the key to understanding the contradictions and inconsistencies that were such recurring features in his work and personal character.

Carl Sagan died on December 20, 1996 at the Fred Hutchinson Cancer Research Center in Seattle, Washington. The cause of death was complications of myelodysplasia. His last words, spoken to his daughter Sasha and his third wife, Ann Druyan, were, "I love you."

¹ From *Time* magazine letters page, November 10, 1980; quoted in Keay Davidson, *Carl Sagan: A Life* (New York: John Wiley & Sons, Inc., 1999), 332.

² Davidson., 55.

³ Ibid., 18.

⁴ Ibid., 350.