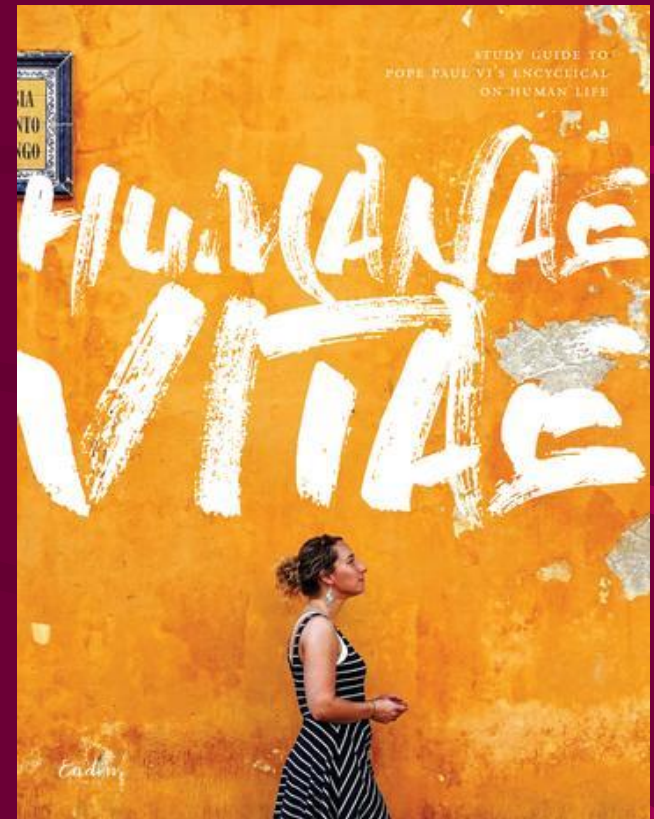
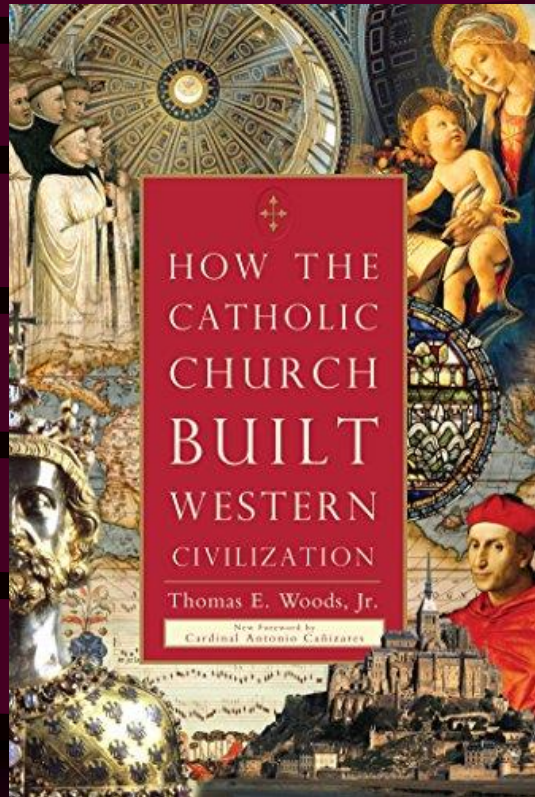


# The Church and Science



# DEBUNKING THE MYTH

Is the Church anti-science?

# Science and the Ancient World

- The underpinning of the scientific method is the conviction that natural phenomena can be explained by predictable laws of nature.
- Early civilizations did not achieve this. They conceived of the universe as a huge organism dominated by deities. In their view, the universe had a mind of its own!
- Even Aristotle believed that the “sub-lunar” world was subject to chaos and therefore unpredictable. He also believed that the universe was eternal.

# How the Church gave birth to modern science

- **FIRST**, the Judeo-Christian belief in a transcendent God who created an inanimate physical universe subject to his laws led to the birth of modern science. Nature had to be “de-animated” in order to be studied scientifically.



- **SECOND**, the Judeo-Christian belief in creation *ex nihilo et in tempore* led to the concept of inertia.
- **Dr. John Buridan**, a Catholic professor at the Sorbonne in the mid-1300's, refuted Aristotle's doctrine of eternal motion.
- Buridan hypothesized that material things acted according to a certain principle put in them by God, an "impetus" as he called it, which kept them in motion once started. Thus the planets and stars, once set in motion by God, would stay in motion indefinitely in the absence of friction. Furthermore, impetus was proportional to velocity and mass.



- Buridan's hypothesis provided the “spark” that led to the principles of momentum and inertial motion, which in turn allowed **Isaac Newton** to formulate his first law (objects in motion tend to stay in motion; objects at rest tend to stay at rest).
- Newton's other two laws derive from the first, and all three together constitute the basis of physics.

### **1. Inertial Motion**

### **2. $F = m \cdot a$**

### **3. Action/Reaction**

- The Church thus facilitated the birth of modern Physics.

- **THIRD**, Catholic scientists have always upheld the intrinsic rationality of the universe (cf. Wisdom 11:21) and the autonomy of nature's laws, which can usually account for phenomena without recourse to supernatural explanations.
- **William of Conches** (12th-century): "I take nothing away from God. He is the author of all things, evil excepted. But the nature with which He endowed His creatures accomplishes a whole scheme of operations, and these too turn to His glory since it is He who created this very nature."

- The Church has always encouraged science as the study of God's beautiful and well-ordered universe. Studying nature's autonomous laws helps us to understand the beauty of her Creator.



- Many Catholics, especially priests, have made great contributions to science...



# St. Albert the Great (1200-1280)

Dictionary of Scientific Biography:



“Albertus Magnus was one of the most famous precursors of modern science in the High Middle Ages.”

His insistence on direct observation was an essential contribution to the formulation of the scientific method.

Blessed Nicholas Steno

(1638-1686)

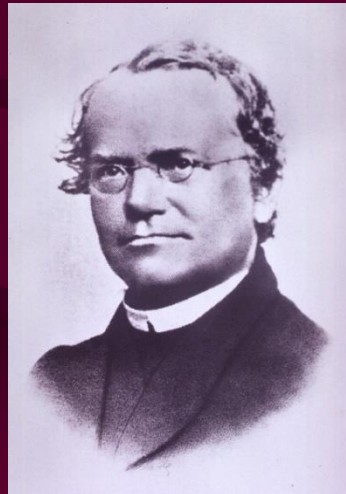


The father of  
modern Geology  
and Paleontology

(handout)

Fr. Gregor Mendel

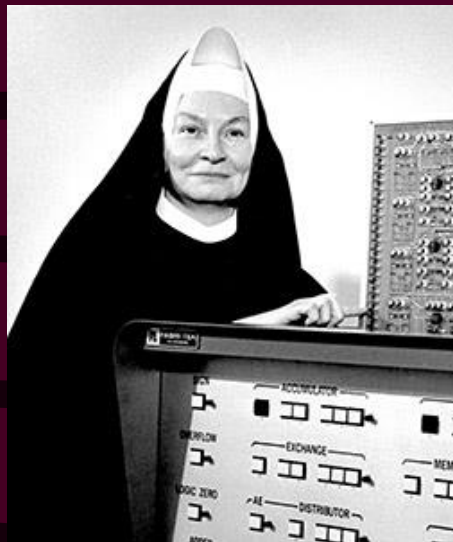
(1822-1884)



The father of  
modern Genetics

Sister Mary Kenneth Keller

(1913-1985)



First American woman to earn Ph.D. in Computer Science, helped develop the BASIC programming language

Fr. Georges Lemaître

(1894-1966)



Proponent of the Big Bang Theory, author of Hubble-Lemaître Law

(IAU Oct. 26, 2018)

**Pope Sylvester II**  
(946-1003)

Invented the  
mechanical clock

**Abbot Richard of  
Wallingford**  
(1292-1336)

Developed the  
best astronomical  
clock in Europe

**Friar Roger Bacon**  
(1214-1294)

Father of the  
Scientific Method

# Moon craters named for Jesuit scientists

Bettinus

Billy

Blancanus

Boscovich

Cabaeus

Clavius

Cysatus

De Vico

Fenyi

Furnerius

Grimaldi

Gruemberger

Hagen

Hel

Kircher

Kugler

Malapert

Mayer

McNally

Moretus

Petavius

Riccioli

Riccus

Rodes

Romana

Scheiner

Schomberger

Secchi

Simpelius

Sirsalis

Stein

Tacquet

Tannerus

Zucchius

Zupus



# Jesuit scientist-priests

Fr. Giambattista Riccioli	Astronomy (gravity)
Fr. Francesco Grimaldi	Optics
Fr. Roger Boscovich	Atomic Physics
Fr. Athanasius Kircher	Egyptology
Fr. J.B. Macelwane	Seismology
Fr. Stanley Jaki	Physics

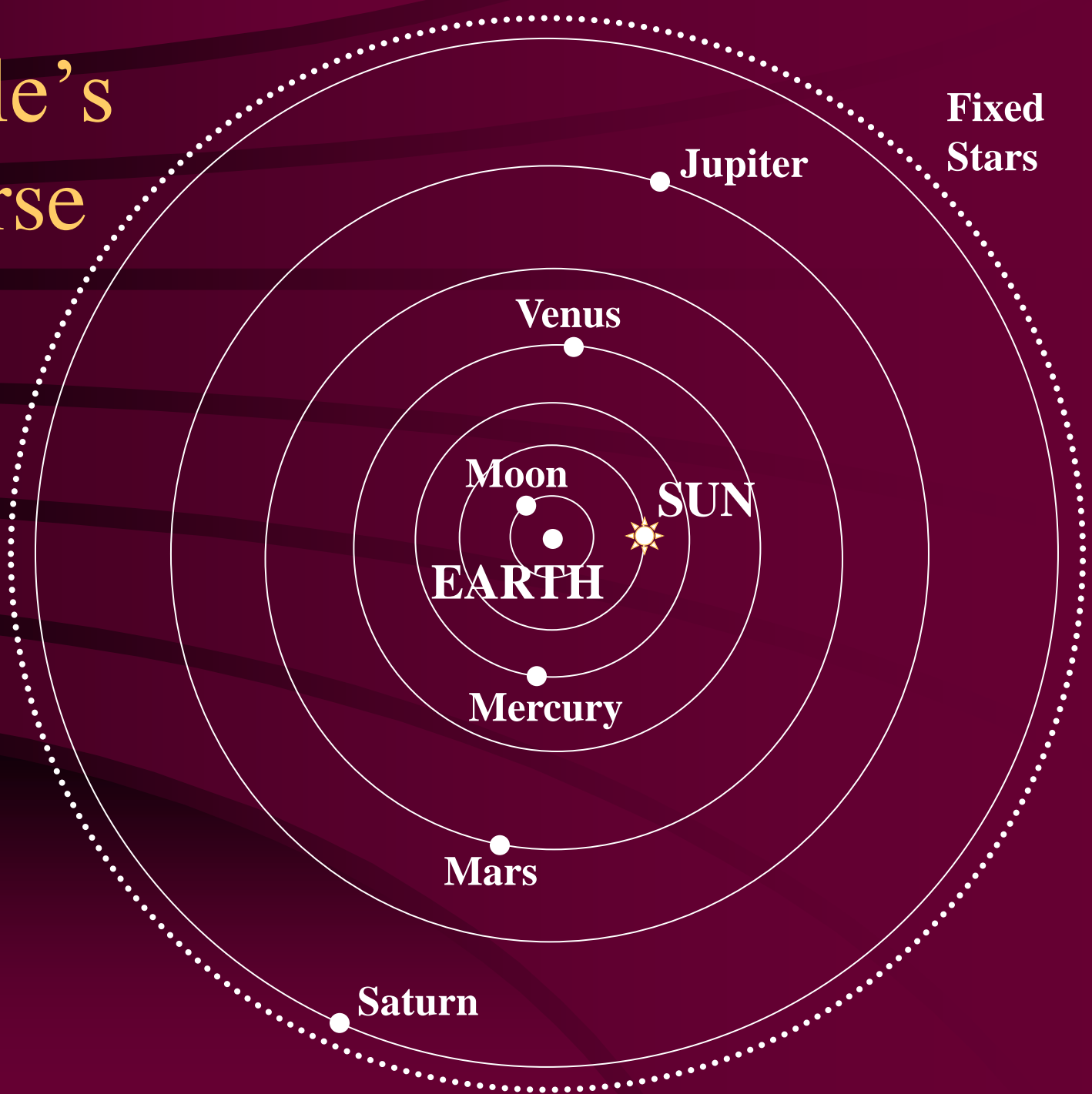


Clearly the Church is Not Anti-Science!

# The Galileo Controversy

- Aristotle's universe, based on Ptolemy's observations, coincided with the geocentric view of the solar system.
- The Bible seems to convey a geocentric view, but we must remember that the inspired writers of Scripture lived in a time when little was known about science.
- Moreover, the writers of Scripture didn't really CARE about science; their objective was to write about God and his dealings with mankind, not to teach science.

# Aristotle's Universe



Ptolemy

- Copernicus' (1473-1543) work on the heliocentric universe was much lauded by Catholic churchmen. His *Six Books on the Revolutions of the Celestial Orbits* was dedicated to Pope Paul III.
- He received many attacks from Protestants who believed his theories contradicted the Bible, but no formal Catholic censure until the Galileo case.

- Galileo's work to confirm Copernicus' theories met with wide approval in Rome.
- 1611: "I have been received and shown favor by many illustrious cardinals, prelates, and princes of this city."
- 1612: *Letters on the Sunspots*, espousing the Copernican system, received a letter of praise from the future **Pope Urban VIII**.

- As long as Copernicanism was treated as a hypothesis and theory, Catholic scientists were free to make use of it in their work.
- At first Galileo agreed to do this, but his later insistence on teaching it as a LAW brought him into conflict with the Church.
- Without conclusive proof, Galileo's insistence on heliocentrism seemed to contradict Scripture (Josh 10:12-13; Eccles. 1:5) and incurred a charge of heresy.



# The Church vs. Galileo

**“Eppur si muove!” (“And yet it moves.”)**  
These words have been attributed to Galileo after his abjuration. It was his way of defiantly holding to his belief that the Earth moved, no matter what his written statement said. But there’s no proof that he said it.



**"The proposition that the sun is in the center of the world and immovable from its place is absurd, philosophically false, and formally heretical; because it is expressly contrary to the Sacred Scriptures."**

**- From the tribunal that sentenced Galileo, 1633; signed by seven cardinals, this document does NOT meet the criteria for papal infallibility.**

- Oct. 31, 1992, **Pope J.P. II**, *Lessons on Galileo*:

“Thanks to his intuition as a brilliant physicist and by relying on different arguments, Galileo, who practically invented the experimental method, understood why only the sun could function as the centre of the world, as it was then known, that is to say, as a planetary system. The error of the theologians of the time, when they maintained the centrality of the Earth, was to think that our understanding of the physical world's structure was, in some way, imposed by the literal sense of Sacred Scripture.”

- However, in the face of Protestant charges that Catholics ignored the Bible, the Church had understandably hesitated to abandon geocentrism (implied by the literal meaning of Scripture) in favor of heliocentrism, a recent and still unproven scientific theory.
- Starting with St. Augustine, the Church has always been willing to adjust its interpretation of Scripture's literal sense in light of clear scientific facts. But the Church at the time of Galileo did not yet have enough facts to determine this.

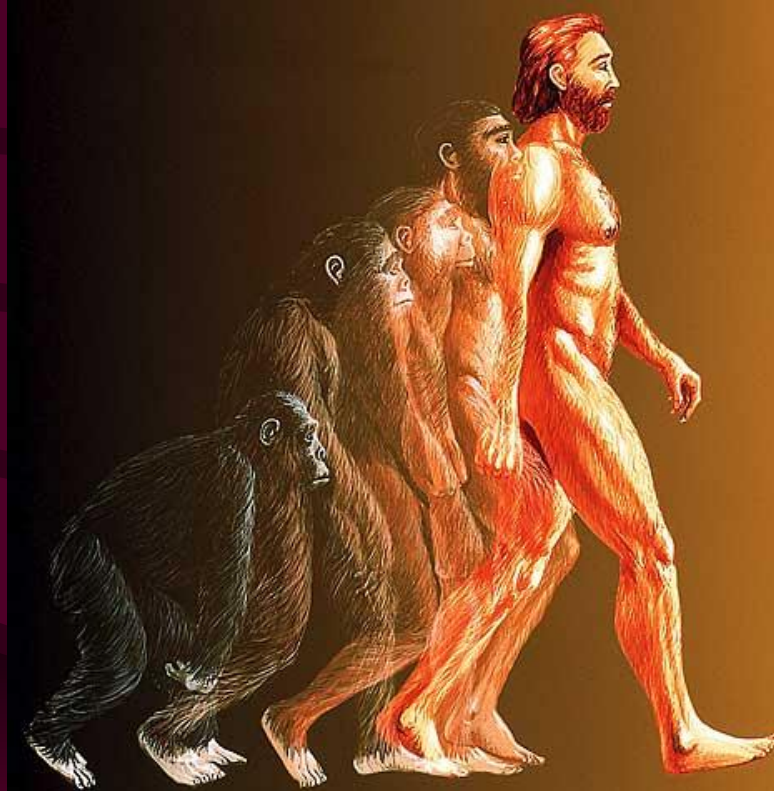
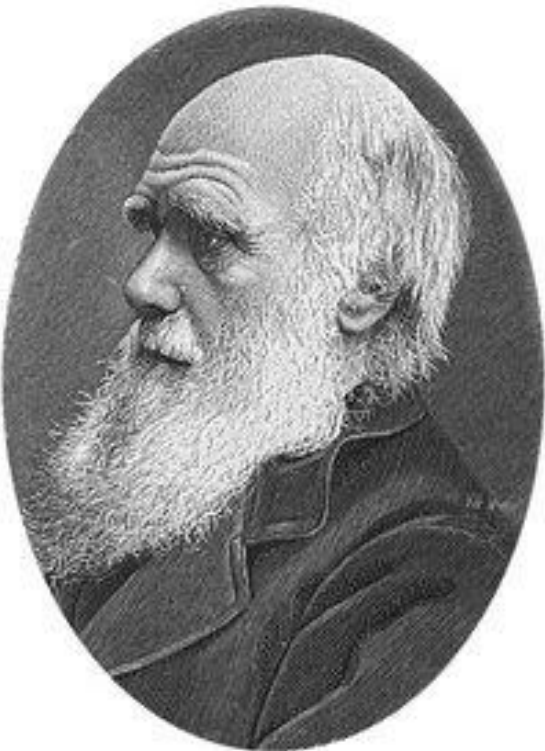
- Galileo erred by stubbornly and defiantly insisting on teaching heliocentrism as a law when it was only a theory.
- For this reason he was punished with a very comfortable home “imprisonment.” The rumors that Galileo was tortured or exiled are completely false.
- And, for the record, Galileo was eventually proven partly wrong: he had posited that the sun was the fixed center of the universe; we know now that it is the center of the solar system, not the universe, and it isn't fixed.

- As more recent science has shown, both Galileo *and* his opponents were partly right and partly wrong. Galileo was right in asserting the mobility of the earth and wrong in asserting the immobility of the sun. His opponents were right in asserting the mobility of the sun and wrong in asserting the immobility of the earth.
- Had the Catholic Church rushed to endorse Galileo's views—and there were many in the Church who were quite favorable to them—the Church would have embraced what modern science has now disproved.



HOT TOPIC:

Charles Darwin and the  
Theory of Evolution





# A continuing debate...



VS.



# Evolution and Catholicism

- Different theories can be used to explain the emergence of the human species.
- Evolution within species has been demonstrated; evolution between species has never been proven.
- The spiritual faculties of the soul (the capacity to know, to choose, to love) cannot be explained through merely biological processes.
- Chimps and bonobos share 99% of our DNA, but they don't exhibit spiritual behavior.

# The Cambrian Explosion

The “Cambrian explosion” refers to the great quantity and diversity of life found in what is called the Cambrian layer of the geologic column. The Cambrian age in the geologic time scale is dated by scientists as being about 540 million years old. It lasted 20-25 million years. What is really interesting is not just what is found in this layer, but what is found in the layers above it, and what is not found in layers under it. The Cambrian layer has virtually every phyla known to man. Yes, all major body plans and enormous varieties of each all coexist in this layer. No evolutionary sequence here, they are all coexistent simultaneously.

## Layers Above and Below

Remarkably the layers below the Cambrian have practically nothing with regard to fossilized specimens. The few creatures that are found in pre-Cambrian strata are all soft-bodied organisms like worms. So essentially you have nothing along the lines of organic complexity and diversity pre-Cambrian, and then suddenly everything. But wait, it gets even more interesting. To compound this huge problem the number of species fossilized in the layers above the Cambrian period gradually decrease with each successive layer. Once you reach the most recent layers approximately 98% of everything that has ever lived is extinct.

## Conclusion

A reasonable and honest person must conclude from the evidence that the fossil record is diametrically opposed to the predictions of evolutionary theory. It is noteworthy that these conclusions are derived from a geologic time framework that is put forth by scientists' own interpretation of geologic evidence. In fact, the belief that the strata represent different geologic ages is just that, a belief. Nevertheless, it is a belief held among scientists worldwide.

# God created the human soul

- “Directed evolution” is compatible with Catholic doctrine. God could have guided the course of evolution and infused Adam and Eve with souls.
- But evolution remains a theory, not a law. Even if it does become a law, it will not contradict the creation story of Genesis.
- To say that evolution depends only on chance rather than purposeful design is self-contradictory: DNA is complex code, and code requires a coder.



# Faith and Science Need Each Other

- Science cannot answer the questions about WHY anything (including human life) exists, how we differ in nature from irrational animals, and how we ought to conduct our lives.
- Only Philosophy and Theology can answer these questions! Science, whose competence extends to observable things but *not* to invisible realities, must therefore respect the jurisdiction of faith and reason.
- Against empiricism (Locke, Berkeley, Hume): it can't be demonstrated empirically. It is a self-defeating proposition like *Sola Scriptura*).

# Jurisdiction of Science

- Science has a certain jurisdiction of its own in regard to observable things. Faith, whose competence extends to unseen realities but *not* to visible things, must therefore respect the jurisdiction of science. As **St. Augustine** explained, faith may entail adjusting a particular interpretation of the Bible when empirical evidence (not mere theory) contradicts it.

# Jurisdiction of Faith

Faith—that is, faith in the Bible, in the Church, in Revelation—has a certain jurisdiction over truth, in regard to those realities which *remain unseen*.

# Militant Atheists

RICHARD  
DAWKINS

THE  
GOD  
DELUSION

THE #1 NEW YORK TIMES BESTSELLER

"Written with tremendous brio and great wit ...  
an all-out attack on all aspects of religion."  
—Michael Kinsley, *New York Times Book Review*

god



is not

Great

How Religion Poisons Everything

Christopher  
Hitchens

With a New Afterword  
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**“Faith is the great cop-out, the great excuse to evade the need to think and evaluate evidence. . . . Faith, being belief that isn’t based on evidence, is the principal vice in any religion.”**

**Richard Dawkins** *The God Delusion*

“Modern science directly implies that the world is organized strictly in accordance with deterministic principles or chance. There are no purposive principles whatsoever in nature.

There are no gods and no designing forces rationally detectable.”

(Neo-Darwinist **Will Provine**)

“Those who devote themselves to the purpose of proving that there is no purpose constitute an interesting object for study.” (Alfred North Whitehead)

Competent, truth-seeking scientists know that  
God is a more reasonable explanation for the  
universe than random chance

“This supremely exquisite structure that is visible to us, comprising the sun, the planets, and the comets, could come into being solely through the decision and under the dominion of an intelligent and powerful, truly existing being. He steers everything, not as a world-soul, but as the Lord of all things.” (Isaac Newton, in *Principia Mathematica*, 1713)