

Dr. Stephen Barr, professor of Particle Physics at the Bartol Research Institute and the Department of Physics and Astronomy at the University of Delaware: Science and Religion

St. Francis of Assisi Catholic Church, the University of Alabama, 31 March 2011.

I typed these notes on my iPhone and reformatted them. I hope to one day find that Dr. Barr has published this lecture.

Conflict between science and religion: Is there a conflict?

"Religion:" biblical religion, i.e. the religions of Judaism and Christianity.

Materialism is not science; it is a philosophical doctrine. It says matter alone exists. It's an ideology to free men's minds from religion. Religion serves as a necessary enemy.

3 elements:

1. Religion is hostile to science
2. Inherent incompatibility between science and religion.
3. Actual discoveries of science debunks religion.

1. Materialists say that Christians snuffed out science after Christianity's rise. Science arose in Renaissance. Battle intensified in Enlightenment, accelerated in Darwin.

Actual: Genesis is a polemic against pagan superstitions. Genesis attacked paganism and its ignorance. Jews taught God is author of nature, not in it. There is a natural order that pointed to its creator. Quote: Minucius. Doesn't point to miraculous but to order as evidence of God. If there's a law, there must be lawgiver. Ex: Psalm 148. The ancient rabbis taught that the Torah was a law in the mind of God.

Science wasn't high on Christian agenda, but the glory days of ancient science had ended 200 years before Jesus. Awareness of ancient Greek science permeated the Church academic world. Church called science "natural philosophy" a made its study a prerequisite for study of theology. Science was institutionalized by the medieval universities; origin of scientific community. Without the scientific community created and nurtured by the Church, the scientific revolution could not have occurred. Galileo was a blunder, but not a rejection of science.

Fact: large number of Catholic priests who made noteworthy contributions to science:

- St. Albert the Great
- Robert Bellarmy
- Thomas Bradwardine, archbishop of Canterbury
- Nicholas of Arezma
- Nicholas Copernicus, canon (not priest)
- 4 Jesuit astronomers and phycists,

- Giovanni Battista Riccioli: first person to measure the rate of acceleration of a freely falling body.
- Giovanni, Gimalfi, Psuchi
- Marin Mersenne: father of acustics
- Bonaventura Francesco Cavalieri (in Latin, Cavalerius) (1598 – November 30, 1647) was an Italian mathematician. He is known for his work on the problems of optics and motion, work on the precursors of infinitesimal calculus, and the introduction of logarithms to Italy. Cavalieri's principle in geometry partially anticipated integral calculus.
- Neil Stenson: anatomy, geology: understood and developed a theory of fossils and geological strata
- Lazzaro Spallanzani: biologist: disproved spontaneous generation
- Giuseppe Piazzi, a monk in Sicily and the founding director of the Palermo Astronomical Observatory: discovered Ceres.
- Jesuits ran 1/4 of the astronomical observatories in the world in c. 1800.
- Gregor Mendel: father of genetics.
- Monsignor Georges Henri Joseph Édouard Lemaître: one of originators of the Big Bang theory.

If the Church were hostile to science, why does history record so many priests in science?

The Catholic Church never attacked Darwin: look up article on evolution in old Catholic encyclopedia (found at <http://www.newadvent.org/cathen/05654a.htm>). [Note: Barr also discussed this in an article in First Things. Link: <http://www.firstthings.com/article/2007/01/the-design-of-evolution-22>.] Darwin was buried in Westminster Abbey, an honor accorded him by the Anglican Church.

Is science an enemy of religion? Not quite. Most scientists were Christians. Boyle, Newton, Pascal, Kepler, etc. Faraday and James Clark Maxwell were devout Christians. Has scientists rendered religion as bunk? No.

5 themes of materialism:

1. Overturning of religious cosmology: creation had a beginning, with the earth and humanity at its center.
2. Overthrow of design. Laws of physics and probability replaced God.
3. Overthrow of man's place in the world
4. Physical determinism. Every event can be precisely determined by the laws of physics.
5. Emergence of a completely mechanistic view of human existence.

The story of materialism's rise cannot be lightly dismissed. 20th century physics developments were highly effective in the supposed debunking of religion, but science really debunked the materialists' old story of science as held by the ancient Greeks.

Science invalidated materialism in:

1. Copernican heliocentrism: space having a center came from Greek science, not the Bible. Almost all ancient Greek philosophers believed in an eternal universe. 1916: relativity theory and the Big Bang debunked the eternal universe. 1964 discovery of cosmic microwave background radiation ended the debate. Burbage: "I guess the Bible is right after all."

2. Overthrow of design: debunked by 20th century "aesthetic turn". Physics looks for rules underlying the laws. As the deepening has occurred:

- increasing unification of physics. We now believe the laws of physics may be related.
- laws of physics are as beautiful as elegant: Dirac equation, 1920's. "pretty math." Heisenberg: beauty is a requirement. Edward Whitten, superstring theory: often called elegant and beautiful. When physicists ask questions about beauty, it almost demands a cosmic designer.

3. Dethronement of man: debunked in last few decades. Debunked by anthropic coincidences: universe seems highly designed for life in the universe. Examples: strong force; Carbon 12. It seems we were built in from the beginning. Most people working on anthropic coincidences are atheists; they've proposed the multiverse theory as a counterbalance to a possible Creator of a universe just for humanity. Can the multiverse idea explain all anthropic principles? Not likely; it would require an extremely large number of universes. Not just any universe, or any laws of physics, can support life. The Mind that conceived the laws cares about life.

4. Determinism: debunked in 1920's by quantum revolution. Shocking to physicists. Einstein: "God does not play dice." Niels Bohr to Einstein: "Stop telling God what to do with His dice." Human freedom seems released from determinism.

5. Mechanistic view of human beings: debunked in the mind. Can the mind really explain everything?

- Quantum mechanics: to avoid paradoxes, there must be outside observers. The observer must have a rational mind. Mechanistic mind is not logical in light of quantum mechanics. Quantum theory involves probabilities that require state of knowledge. "Somebody who knows" is required. We can't know because our knowing would create a paradox. There must be Someone outside Creation that knows the probabilities.
- Second discovery of something non-material of mind: inherent limitations of formal systems. Kurt Gödel's theorem. John R. Lucas, in paraphrase: Gödel's theorem says human minds as mechanistic are false. If you understand the program, you can outwit the program. If a human is a computer, then we can never know our own consistency.
- Sir Roger Penrose has picked up the argument. Human mind is more than a mere machine.

Jews and Christians find ourselves in a universe with a beginning, ruled by beautiful laws, designed for us. Physicist James Jeans: "The universe looks less and less like a great machine and more and more like a great thought."

Other Stephen Barr articles, *First Things*:

- “The End of Intelligent Design?” Feb 9, 2010: <http://www.firstthings.com/onthesquare/2010/02/the-end-of-intelligent-design>
- “Dawkins, Unfortunately” Oct 20, 2006: <http://www.firstthings.com/onthesquare/2006/10/barr-dawkins-unfortunately>
- “Much Ado About ‘Nothing’: Stephen Hawking and the Self-Creating Universe” Sep 10, 2010: <http://www.firstthings.com/onthesquare/2010/09/much-ado-about-ldquonothingrdquo-stephen-hawking-and-the-self-creating-universe>

Note: Stephen Hawking and Sir Roger Penrose mathematically proved the existence of black holes in 1970, but Hawking then set about disproving his own work when he realized that singularities could imply a beginning to creation. From Wikipedia:

“In 1975, cosmologist Stephen Hawking bet fellow cosmologist Kip Thorne a subscription to *Penthouse* magazine for Thorne against four years of *Private Eye* for him that Cygnus X-1 would turn out not to be a black hole. It was, so Hawking lost. It has been said that Hawking hoped to lose the bet, since so much of his own work depended upon the existence of black holes. For Hawking, then, the bet was a type of hedge.” http://en.wikipedia.org/wiki/Scientific_wager