

A young boy with short brown hair is sitting on the grass, reading a book. He is wearing a white t-shirt with a logo that says "ZEST QUEST FOR YOUR BEST". The background shows a brick wall and some green plants.

# Evolution, Creation, & Intelligent Design

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**C**learly, it is important to give our children a perspective on our origins that is in keeping with our Faith. What may be less obvious is that the information we present to them should also be reasonable in light of the scientific evidence available. Why? While the danger to our children's faith is more apparent in the first case, it is no less real in the second. Both faith and reason are important, and we must be careful not to put our children in the position of having needlessly to choose between the two.

## Creationism

Creationism is the belief that the account of creation in Genesis 1 is to be taken literally. It goes along with a view of the earth as being rather young—anywhere from 6000–10,000 years old. Certain groups of Protestants and indeed some Fundamentalist churches hold to this view.

A problem with interpreting Genesis chapter 1 as a completely literal history is that it disagrees with the account in chapter 2 on certain particulars such as the order in which creation occurred. For example, in Gen. 1, man is not created until the sixth day, after the plants and animals; however, in Gen. 2:4–7, man is created "in the day that the Lord God made the earth and the heavens," and *before* the plants and animals. Clearly both cannot simultaneously be totally literal histories of creation.

Also, in order to accept a literal reading of Genesis 1, we have to ignore the evidence of a number of fields of science from geology to astrophysics (radiometric dating

of rock layers to distance scale measurements), which all place the age of the universe at billions (not thousands) of years. Of course it is *possible* that God could have created the world a few thousand years ago, and merely made it *appear* to be a lot older. However, this flies in the face of reason, a faculty for which the Catholic Church has always had a healthy respect. We need never fear to seek the truth in scientific investigations since God will not contradict Himself (see CCC 159).

As Catholics, we are blessed to have the Magisterium of the Church to interpret the Scriptures infallibly. We need not rely on our own understanding, which to my mind is the fatal flaw of Protestantism. Catholic Scriptural exegesis affirms the importance of the literal meaning of a passage; however, this refers to what the human author was trying to convey (see CCC 106–110). The Church has not definitively spoken on this aspect of the creation account; therefore we are not required to accept a literal 6-day creation as part of our faith. In fact, there is a long history including writers of the stature of St. Augustine of interpreting the "days" in Genesis as not literal 24-hour days, for example in reference to God's statement to Adam that he would die on the very day that he ate of the forbidden fruit. (Gen. 2:17) This makes sense since Adam and Eve did not literally die that same day, although they did suffer a spiritual death by cutting themselves off from God's grace and eventually did die bodily.

The Church does teach that the Genesis account is historical in some sense and not merely mythological. Clearly,

God's creation of the universe from nothing is a historical fact revealed in Genesis. Another is the creation of man in God's image. A third is the fact that God has given man dominion and stewardship over the world. All these are points of definite Catholic teaching. Further, the Genesis accounts show that God's hand is involved in the design of every living thing.

## Evolution: Darwinism and its Successors

Although the term "evolution" has come to mean a broad range of concepts, it is still the term used by biologists. The following summarizes the development of evolutionary theories since Darwin.

- Darwin's proposal in *The Origin of Species* contained two key pieces: (1) *common descent*: that all the forms of life seen today arose from a common ancestor, and (2) *natural selection*: the mechanism by which this occurred.
- Darwinism *per se* has been acknowledged to be insufficient for a significant period of time; for one thing, it did not include a method for generating variation. The theory was therefore updated in the mid-20th century, producing "neo-Darwinism." The main change was the addition of random genetic mutation as the mechanism to generate variation.
- Over time, additional mechanisms, such as genetic drift and gene flow, have been included in the theory. Some refer to the result as the "modern synthesis," while others continue to call this "neo-Darwinism."
- The unwritten rule is that all mechanisms must operate solely by natural processes.

Evolution can be broadly divided into two categories, with the species level as the defining boundary. "Micro-evolution" refers to events below this boundary, while "macro-evolution" refers to those above it. Further, biologists refer to the "fact" of evolution as well as to the "theory" of evolution. More on this in a moment.

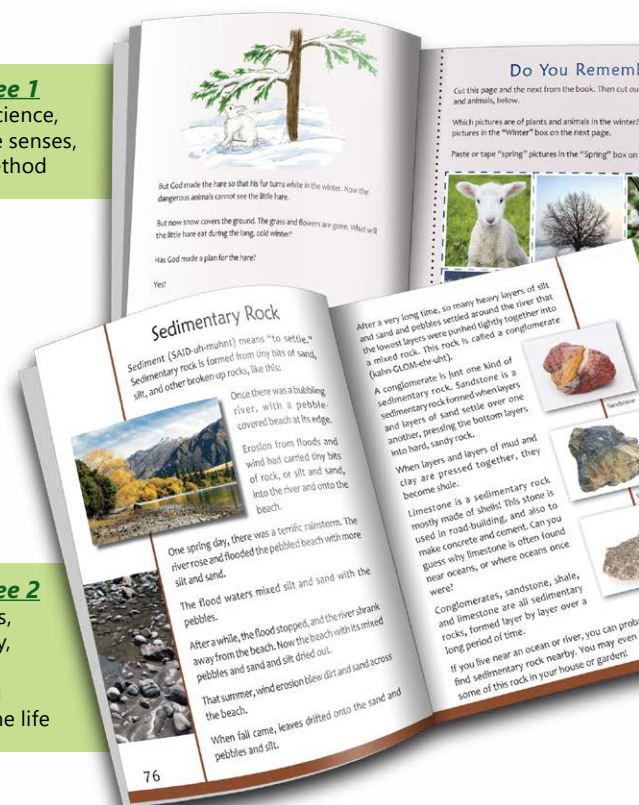
It is vital to understand that biologists define "evolution" as a change in the frequency of genes in a population over time. At the micro-evolutionary level, such changes have been observed on numerous occasions. Examples include bacteria developing resistance to antibiotics, insects becoming resistant to pesticides, and heritable changes in coloration or size of animals. No one, including creationists, disputes this. This is one aspect referred to as the "fact" of evolution—i.e. "evolution happens."

At the macro-evolutionary level is where creationists generally have a problem with evolution. However, here too, there is strong evidence pointing to common descent; examples include (1) fossil sequence, including transitional forms; and (2) gene sequence comparisons. Speciation events have been observed in several instances, including in plants, yeast cultures, and fruit flies. This too is referred to as the "fact" of evolution—i.e. "evolution has happened."

Why, then, is evolution also called a "theory"? When biologists speak of the "theory" of evolution, they are speaking of the mechanisms by which the observed changes in organisms might have occurred. In general, the currently known mechanisms are thought adequate for micro-evolutionary changes; however, whether they are adequate for macro-evolutionary changes is hotly debated within the community of scientists working in the field of evolutionary biology. The general pattern seen in the fossil record is one of very rapid differentiation of groups of creatures near the time of their origin, followed by long periods of stability. This does not fit well with the gradualism envisioned by the modern synthesis. While some contend that macro-evolution is simply cumulative micro-evolution, others (especially paleontologists) contend that additional mechanisms are needed to explain macro-evolution. Ironically, the actual "origin of species" remains poorly understood today.

**Behold and See 1**  
Biology, earth science, weather, the five senses, the scientific method

**Behold and See 2**  
Simple machines, work and energy, the water cycle, geology, natural resources, marine life





## Intelligent Design

The basic concept of Intelligent Design is that even though we can't always tell by looking at an object *who* made it, we can still tell *whether* someone designed it or whether it came to be by chance. For example, if you saw a watch or a car, you would immediately conclude that someone had made it, not that it had been constructed by random events. Similarly, scientists in the Intelligent Design community see design in the natural world.

Another important concept concerns the question of detecting design. We already know that God did design living beings, but can we detect that design? An artifact may be designed without that design being detectable; modern art comes to mind. Conversely, non-intelligent processes may create an orderly pattern. Scientists working in the area of intelligent design therefore look for both complexity and specificity in order to detect design.

These scientists see design in many places. For example:

- *"Irreducible Complexity" on a Biochemical Level.* An irreducibly complex system has to have all parts in place and functioning in order to work. If the system only has some subset of the parts, it will not perform the function imperfectly—rather, it will not perform the function at all! The idea here is that it is not possible for such a system to evolve each part separately, since it doesn't make sense for an organism to retain several components that have no useful function. Thus, irreducibly complex systems imply design rather than evolution as their origin. For more on this, see *Darwin's Black Box* by Michael Behe.
- *The "Anthropic Fine Tuning" of the Universe.* There are many universal constants which we tend to take as a given; yet, if any one of them were changed even a little, life would cease to exist. So, many scientists (especially physicists) have asked, Why are these values so conveniently set? It is perhaps a measure of the desperation of those who reject the design hypothesis that they resort to extra-evidential theories such as the existence of infinite parallel universes to explain this fine-tuning.



### Behold and See 4

Human anatomy, nutrients, disease, hygiene, diet & exercise, first aid

### Behold and See 3

Matter, force & energy, astronomy; plants, animals, interdependence; anatomy, the five senses, nutrition & health

### Behold and See 5

Biology, earth science, chemistry, & scientific reasoning

- *Origin of Information in DNA.* The probability of the development of these complex and specified (i.e. information bearing) structures purely by chance is vanishingly small even over a time scale of billions of years and given the most favorable (not necessarily realistic) conditions.

Intelligent Design in and of itself does not argue for or against any particular time frame. Nor does it posit that all possible variations were the direct result of design. Rather it contends that design rather than chance accounts for the increasing complexity of living creatures in the course of earth's history. In a sense, it may be thought of as a mechanism by which evolution has occurred.

As with any proposal in science, there are arguments against Intelligent Design, primarily from supporters of Darwinian evolutionary theories, which do not allow for intelligent agents. Many scientists, unfortunately, display an unwillingness to engage in discussion of these ideas on their own merits. For more on Intelligent Design, including responses to the major arguments against it, see *Science and Evidence for Design in the Universe*, by Behe, Dembski, and Meyer.

Intelligent Design is a plausible source for the sudden appearance of novel features in living creatures.

It makes sense of the scientific evidence and seeks the truth, regardless of its implications. And, although it does not make any direct statements about God, since He is outside the realm of scientific investigation, design clearly implies a Designer. However, even if these ideas are true, we may never prove them to everyone's satisfaction; sometimes God chooses to be in the whisper rather than the earthquake (cf. 1 Kings 19:12).

## What Does the Church Say about Evolutionary Theories?

The fullest teaching of the Church on this subject is in Pope Pius XII's encyclical *Humani Generis*:

The teaching authority of the Church does not forbid that in conformity with the present state of human science and sacred theology research and discussions on the part of men experienced in both fields take place with regard to the doctrine of evolution in so far as it inquires into the origin of the human body as coming into existence from preexistent and living matter—for Catholic faith obliges us to hold that souls are immediately created by God. However, this must be done in such a way that reasons for both opinions, that is, those favorable and those unfavorable to evolution, be weighed and judged with the necessary seriousness, moderation and measure and provided that all are prepared to submit to the judgment of the Church to whom Christ has given the mission of interpreting authentically the Sacred Scripture and of defending dogmas of faith.<sup>1</sup>

In addition, the *Catechism of the Catholic Church* says: "We believe that God created the world according to his wisdom. It is not the product of any necessity whatever, nor of blind fate or chance" (CCC 295).

In sum, we may believe in "theistic evolution" under the conditions that (1) God created the Universe, so that it is not eternal; (2) God intervened in a special way in the generation of the first man; (3) all men are descended from one man (monogenism); (4) the soul of every man is directly created by God and not evolved in any sense and (5) we are willing to submit to the judgment of the Church.<sup>2</sup>

God's creation of the universe is not, of course, provable by science. Nonetheless, an "eternal" universe (as was once believed by scientists) would be in contradiction with it, whereas the Big Bang theory is compatible with it.

Similarly, science cannot determine whether God intervened to give man a soul, making him a rational being. Nonetheless, the evolutionary theory in question must be compatible with this idea. Both critics and proponents (most notably Richard Dawkins) of neo-Darwinism, or the modern synthesis, note that the theory implies atheistic materialism; it not only does not explain the origin of the soul, but it effectively denies its existence. This in and of itself raises a red flag for faithful Catholics. St. John Paul II stressed this point in his October 22, 1996 address to the Pontifical Academy of Sciences: "Consequently, theories of evolution which, in accordance with the philosophies inspiring them, consider the mind as emerging from the forces of living matter, or as a mere epiphenomenon of this matter, are incompatible with the truth about man. Nor are they able to ground the dignity of the person."<sup>3</sup>

Another observation, made by Cardinal Ratzinger (now the late Pope Benedict XVI), is that our origins do not lie in "chance and error"; we are, rather, "something willed; ... the fruit of love."<sup>4</sup> Or, as the *Catechism of the Catholic Church* says, "man is the only creature on earth that God has willed for its own sake" (CCC 356). The point is that God designed the universe to make human existence not merely possible, but certain. We didn't just happen to come into being; God willed for us to exist.

**Behold and See 6**  
Physics, chemistry,  
biology, ecology,  
astronomy

**Life Science**  
Chemistry,  
biology,  
taxonomy,  
anatomy, nutrition,  
disease, ecology





Perhaps because of an animosity to creationism, most evolutionary biologists insist on polygenism, or the idea that there was a group of interbreeding individuals that were the “first parents” of the human race, rather than one couple (Adam and Eve). This is incompatible with the revealed truth of the dogma of original sin. (Incidentally, the mitochondrial DNA evidence harmonizes with monogenism, though it does not necessarily require it.)

The Church teaches that, subject to the above considerations, we may believe in a theory of the evolution of life on Earth, though of course she does not require us to do so. Such a theory must stand or fall on its own scientific merits. 🍏

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## Endnotes

1. Pope Pius XII, *Humani Generis*, Aug. 12, 1950.
2. Cf. John A. Hardon, SJ, *Pocket Catholic Dictionary*, Image Books, 1985, p 136. For more, see *Humani Generis*, op. cit.
3. St. John Paul II, “Address of Pope John Paul II to the Pontifical Academy of Sciences (October 22, 1996),” 1996.
4. Joseph Cardinal Ratzinger (Pope Benedict XVI), *In the Beginning*, Eerdmans, 1995, pp 56-7. cf. CCC 284, 295.

## Recommended Resource

*Creator and Creation* by Mary Daly

## CHC's Behold and See Science Series



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Photo submitted by Sarah, CO.