

## Lesson 3: God Is—Evidence from the Cosmos

- I. The question of whether there is a God is a fundamental, universally human question that has significant consequences, both for this life and the one to come (that is, if you believe there is a life to come)
  - A) During the next two lessons, we're going to study, in part, some very powerful pieces of evidence for the existence of God.
  - B) Today, we'll introduce the "Cause and Effect" argument
  - C) Next time, we'll contrast Random Events with Intelligent Design
- II. Note that, in accordance with what we learned in the first two classes is that, while some of the evidence we'll consider today considers scientific facts, mathematical arguments, and natural objects, we are not scientifically proving the existence of God. "Science" is a manmade creation and the created cannot be greater than the Creator, but we can use what I'll call scientific reasoning to raise questions about science that have significant theological ramifications.
  - A) This is not to say that we are simply talking human philosophy. Rather, the questions that we'll raise have answers that belong in a realm that is different than the scientific realm. Call it theology, call it philosophy or call it truth, the name doesn't matter. As long as we understand that we are not scientifically proving the existence or non-existence of God
  - B) There are many real things that we believe—without doubt—exist. Can you measure the love you have for your children or your spouse? Can you reproduce its effects in the laboratory? Does that make it any less real?
- III. The Cosmological Argument (AKA the Cause and Effect Argument )
  - A) The argument is relatively simple: We humans exist. Our universe exists. There must be some reason that we exist.
  - B) In short, what Christians call creation is the effect. This argument raises the question what *caused* that effect?
  - C) What are the possible causes?
    1. The universe itself is eternal
    2. The universe spontaneously created itself
    3. The universe was created by something or someone
  - D) Is the universe eternal?
    1. For something to exist eternally, two conditions are necessary. First, it must have always existed in the time before now. Second, it must always exist in the time after now. We have a natural law—the second law of thermodynamics—that states this cannot be the case.
    2. What is thermodynamics? Simply put, it is the study of the laws that govern the conversion of energy from one form to another. For example, the two most familiar forms of energy are potential energy and kinetic energy. An egg sitting on top of your counter has a small amount of potential energy because it is slightly farther away from the center of the earth than if it were on the floor. If you knock the egg off the counter, gravity causes it to accelerate—until it smashes on the floor. While the egg is falling, it has kinetic energy—kinetic meaning it is produced by motion.
    3. Now, the 2<sup>nd</sup> law states that, in any isolated system (such as our universe), the state of disorder (the technical term is entropy) must increase with time. This is a direct result of the fact there are many more states of disorder than there are states of order. Hawking in his book *A Brief History of Time* uses an illustration of shaking up a completed jigsaw puzzle in a box. Each time you shake it, the pieces become more and more randomly

displaced—it no longer makes the picture represented by the single ordered state. Our universe is becoming more and more disordered. Shiny new metals rust or tarnish. Ice melts into water which evaporates into vapor. The disorder, or entropy, in those two systems has increased during those processes.

4. But, it's not just about disorder. Related to entropy is a so-called “arrow of time,” which demands that time “proceed” in a certain direction—the arrow of time points in the direction in which things tend to become more disordered. If this were not the case, we could, for example, remember the future. Because time *must* go in the direction it is going and because the universe itself is becoming more disordered, the implication is that the universe must have both a beginning (when perfect order ruled) and an end (when “perfect” disorder must rule). Of course, having a beginning and an end is, by definition, finite rather than eternal.

E) Did the universe spontaneously create itself?

1. We can look to the medical profession and to microbiology for the answer to this question. Even as late as the middle 1800's, most medical doctors believed that disease-causing organisms could spontaneously generate. Louis Pasteur showed in his experiments that microorganisms were present *in the air* but were not *created* by the air.
2. This and other experiments by other well-known scientists led to the germ theory of disease, which is touted as the single most important contribution to the practice of modern medicine. This, in turn, led to the field of microbiology, a field in which we'll find our answer.
3. Cell theory simply states that all organisms are composed entirely of similar units of organization called cells. Until the mid-1800's, cell theory said that cells spontaneously generated. The idea that all cells arise from pre-existing cells was formalized in an 1858 book, and this fact, combined with the experiments by Pasteur and others obliterated the notion of spontaneous generation.
4. We now know that there is no known natural process—chemical, physical or otherwise—through which matter can spontaneously generate itself. As T.D. Moyer states, it is axiomatic that from nothing, nothing comes.

F) Therefore, the universe must have been created by some thing or some being. Essentially, some “uncaused cause” effected the beginning/creation of the universe.

1. Theoretical physicists and cosmologists believe that the universe was created in a Big Bang. The big bang simply states that, at the beginning of time, the entire universe was contained in an infinitesimally small point—a so-called “singularity”. The universe experienced rapid expansion and is continuing to expand today. Much of the field of cosmology is geared toward measuring how quickly the universe is expanding today and many theoretical physicists are consumed with trying to ascertain whether the universe will continue to expand, whether it will slow down and begin to contract, and the like.
2. It's all a somewhat amusing pursuit, that is if you're a nerd like I am, but there is one question that, for all the bluster and hot air these guys are producing, they cannot answer. And that is, what happened right before the Big Bang? That is, how did a singularity suddenly come into being a decide to explode?
3. Of course, we know the reason they cannot answer it is because the act of creation—the act of God speaking the universe into existence—was a supernatural event that cannot be explained by man's description of science and nature. Physicists have a more “techno-speak” sounding reason.
4. Do you recall from our discussion of whether the universe is eternal the so-called “arrow of time?” The direction in which time must proceed (that is, from the past to the future) is inextricably linked to the direction in which disorder increases. The instant of the Big

Bang was, in physicists terms, a time of very high order—a time when the puzzle was arranged into its picture—thus, before that time, it would, of course, follow that the universe could not be more ordered than at that instant. Therefore, the time before the Big Bang becomes, by definition, undefined. They cannot see past that event because time has no meaning—in our terms, the “period” before the universe was created was part of eternity. Thus, physicists are forced to assume that this Big Bang singularity just existed. Even before becoming a Christian, that always smacked to me of spontaneous generation, doesn't it to you? How did that “singularity” get there in the first place? God says He made it. I believe Him.

5. Background radiation and Creation—in 1965, two American physicists working at Bell Telephone Laboratories were testing a very sensitive microwave detector. They became concerned because the sensor was picking up more microwave noise than it ought to. After some troubleshooting, they concluded nothing wrong with the sensor and began to look for other explanations. The puzzle became more interesting when they discovered that the noise was the same in every direction, day or night, every day of the year. The noise didn't vary by more than 1 part in 10,000. Because of this, they concluded (and physicists now also conclude) that the radiation was coming from outside our solar system, and even outside the Milky Way. In fact, they say, it is coming from a remarkable uniform universe—a universe that looks the same, regardless of the direction you are looking (and, presumably, from whatever corner of the universe you happen to be in).
  - a) Now, the Big Bang theory holds that at the moment of the Big Bang, the universe was very, very hot—so hot that it glowed visible light. And, if that were true, that light should still be visible today, though changed in frequency due to the velocity at which the universe is expanding (Doppler shift, exactly the same physics the police use to “shoot radar” and catch speeding cars).
  - b) Physicists have since shown that the microwave noise first detected in 1965 is indeed that “left over” light from the moment of the creation of the universe. This is very powerful evidence in favor of a moment of creation, which most do not like, because it substantiates claims that the universe is not eternal.
  - c) However, the story does not stop there, and the implications are equally profound. For this background radiation to be as uniform as we measure it to be today, mathematics shows two things. First, the initial temperature of the universe at the moment of the big bang had to be exactly the same everywhere. Second, the universe has also to be expanding at a certain—and exact—critical rate, which calculations show that it is.
  - d) Let's let Stephen Hawking comment on that subject: “This means that the initial state of the universe must have been very carefully chosen indeed if the hot big bang model was correct back to the beginning of time. It would be very difficult to explain why the universe should have begun in just that way, except as the act of a God who intended to create beings like us.”