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THE ANTHROPIC PRINCIPLE

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The more scientists learn about the Universe, the more they are prone to speak of "the anthropic principle." The term "anthropic" derives from the Greek word *anthropos,* "man," hence the expression suggests that the Universe in general, and our solar system in particular, appears to have been specially designed for human existence. Agnostic evolutionist, Dr. Robert Jastrow conceded: "...[T]he Universe was constructed within very narrow limits, in such a way that man could dwell in it. This result is called the anthropic principle. It is the most theistic result ever to come out of science, in my view" (1984, p. 22). Dr. Henry Margenau, who was professor of physics for over forty years at Yale University, and a close associate of Albert Einstein, declared that the anthropic principle is "absolutely convincing" to him as an indication that the universe is not an accident, but rather had a Creator (1984, pp. 41-42).

The anthropic principle may be illustrated in a number of ways. Please consider the following examples (which are by no means exhaustive):

(1) The Sun's temperature (10,800 degrees Fahrenheit at the surface) is ideal for the right range of light wavelengths which allow for life on this planet. Higher temperatures would result in too much ultraviolet radiation, and lower temperatures in too much infrared.

(2) The Earth is situated the right distance from the Sun (93,000,000 miles) to maintain life. If the Earth were 10 per cent closer to the Sun, it would be an inferno; if it were 10 per cent farther away, it would be but an icy wasteland. Dr. A. Cressy Morrison, a past president of the New York Academy of Sciences, observed that if Earth's temperature "had changed so much as fifty degrees on the average for a single year, all vegetation would be dead and man with it, roasted or frozen" (1944, p. 16). Moreover, the Sun's size, in relation to our planet, facilitates a proper environment for earthly life. The diameter of the Sun at its equator is approximately 860,000 miles—about 109 times that of the Earth. If the Sun were a hollow ball, more than a million Earths could be put inside it.

(3) The Earth is balanced in a position relative to the Sun by the forces of gravity (pulling toward the Sun) and centrifugal force (an outward pushing due to the Earth's orbital movement in circling the Sun). It is traveling in its journey around the Sun (a distance of 600 million miles) at the speed of almost nineteen miles per second. In its orbital trip, the Earth varies from a straight line only one-ninth of an inch every eighteen miles. If its direction were altered by only one-tenth of an inch, the orbit would be so large that life on Earth would be impossible due to freezing conditions; if it changed by as much as one-eighth of an inch, we would be so close to the Sun as to exclude the possibility of life (see *Science Digest*, 1981, p. 124). Moreover, the Earth's orbit is not a perfect circle; rather it is elliptical. This means that sometimes we are closer to the Sun than at other times. In January we are closest to the Sun; in July we are farthest away. When we are closer, however, the Earth "speeds up" to avoid being pulled into the Sun, and when we are farther away, our planet slows down. This evinces an amazing system of mechanics. The Earth completes its orbit around the Sun once each three hundred and sixty-five and one-quarter days— making our year. This consideration, together with the fact that the Earth is tilted on its axis, allows for seasonal changes that enhance the Earth's productivity. Too, the Earth rotates on its axis at the rate of about 1,000 miles per hour (at the equator); this rotation with reference to the Sun provides for periods of light and darkness, a phenomenon so necessary for sustaining life in this our "home" in the Universe. If the Earth rotated much faster, fierce cyclones would stir the features of our planet like a mixer. If the Earth turned significantly slower, the days and nights would be impossibly hot or cold. Venus turns only once in 243 days, which accounts in part for some daytime temperatures as high as 500 degrees Celsius! And remember, water boils at 100 degrees C.

(4) The Earth's axis is inclined from the perpendicular to the plain of its orbit by twenty-three and one-half degrees This accounts for the seasons. If it were not tilted, the poles would be in perpetual twilight. Too,

> the water vapor from the ocean would move north and south, piling up continents of ice and leaving possibly a desert between the equator and the ice. Glacial rivers would erode and roar through canyons into the salt-covered bed of the ocean to form temporary pools of brine. The weight of the unbelievably vast mass of ice would depress the poles, causing our equator to bulge or erupt or at least show the need of a new waistline belt. The lowering of the ocean would expose vast new land areas and diminish the rainfall in all parts of the world, with fearful results (Morrison, 1944, p. 17).

(5) The Moon is 240,000 miles from Earth, circling our planet in its own orbit. The Moon's gravitational pull upon the Earth causes our tidal waves—two low tides and two high tides every twenty-four hours. These are valuable to the Earth.

> The lunar tides have the greatly beneficial effects of cleansing shorelines and diluting stream discharges from land by the large-scale mixing process of currents. These tidal currents regularly scour out shipping channels and keep them open. The high tide permits navigation of waters which are too shallow at other times (Whitcomb and DeYoung, 1978, p. 140).

In addition, the Moon's tidal-energy dissipation is nearly comparable to the world's power consumption, which may suggest a valuable energy source for the future. If the Moon were significantly closer to the Earth, huge tidal waves would daily devastate our globe.

(6) Wrapped around our Earth is a protective blanket that we call atmosphere. It is composesd mainly of nitrogen (78 per cent), oxygen (21 per cent), and carbon dioxide (0.03 per cent), along with water vapor and minute levels of several other gases. The proper balance of these elements is absolutely essential to life on Earth. Someone mixed them just right! The atmosphere of Venus is much too thick to sustain life, and that of Mars is far too thin. There are tremendous advantages to our atmosphere. For instance, it diffuses light so that you can read these words even if you are indoors and out of the direct sunlight. If there were no atmosphere, we never would have twilight (with its gorgeous sunsets). Without atmosphere, our solar heat would escape as soon as the Sun set and Earth's nights would be unbearably cold. Millions of meteors fall from space each day. Were it not for the fact that most of them are burned up by the friction of striking the atmosphere, think what awful devastation might be wrought upon the Earth. In one of the upper layers of the atmosphere (the mesosphere), there is a special form of oxygen called ozone. Ozone filters out most of the ultraviolet rays, which would be quite harmful in larger amounts. This is why scientists are concerned about the use of certain substances that tend to deplete the ozone layer. Electronically charged particles in the upper atmosphere (ionosphere), called ions, facilitate radio communication.

Our atmosphere also has weight. It exerts a pressure of about fifteen pounds per square inch at the surface of the Earth. This amounts to about thirty thousand pounds of pressure upon our bodies. If it were not for the fact that we have been designed with air inside our bodies to balance this pressure, we could not live upon the Earth. If the pressure were substantially more, we would "cave in," and if it were significantly less, we would simply explode. Someone has "fearfully and wonderfully" made us!

There are numerous other illustrations of the anthropic princple in the great Cosmos (the term means "order") of which we are a part. Materialists would attribute these amazing features to a fortuitous series of freak accidents; yet, occasionally they reveal more than they intend. One scientist wrote: "As we look out into the universe and identify the many accidents of physics and astronomy that have worked together to our benefit, it almost seems as if the universe must in some sense have known we were coming" (Dyson, 1971, p. 50). Others, while acknowledging that the world cannot be the result of mere chance, nevertheless contend that the order in our Universe is merely the result of "natural law," but that **order** need not imply an **orderer** (cf. Ricci, 1986, p. 190). Such rationalizations are totally without merit; natural law suggests a law-giver, and order does indeed imply an orderer. Compare the Greek terms *kosmos*, "order," and its kindred term *kosmetes*, "an orderer, arranger" (Liddell & Scott, *Greek-English Lexicon*, p. 874).

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