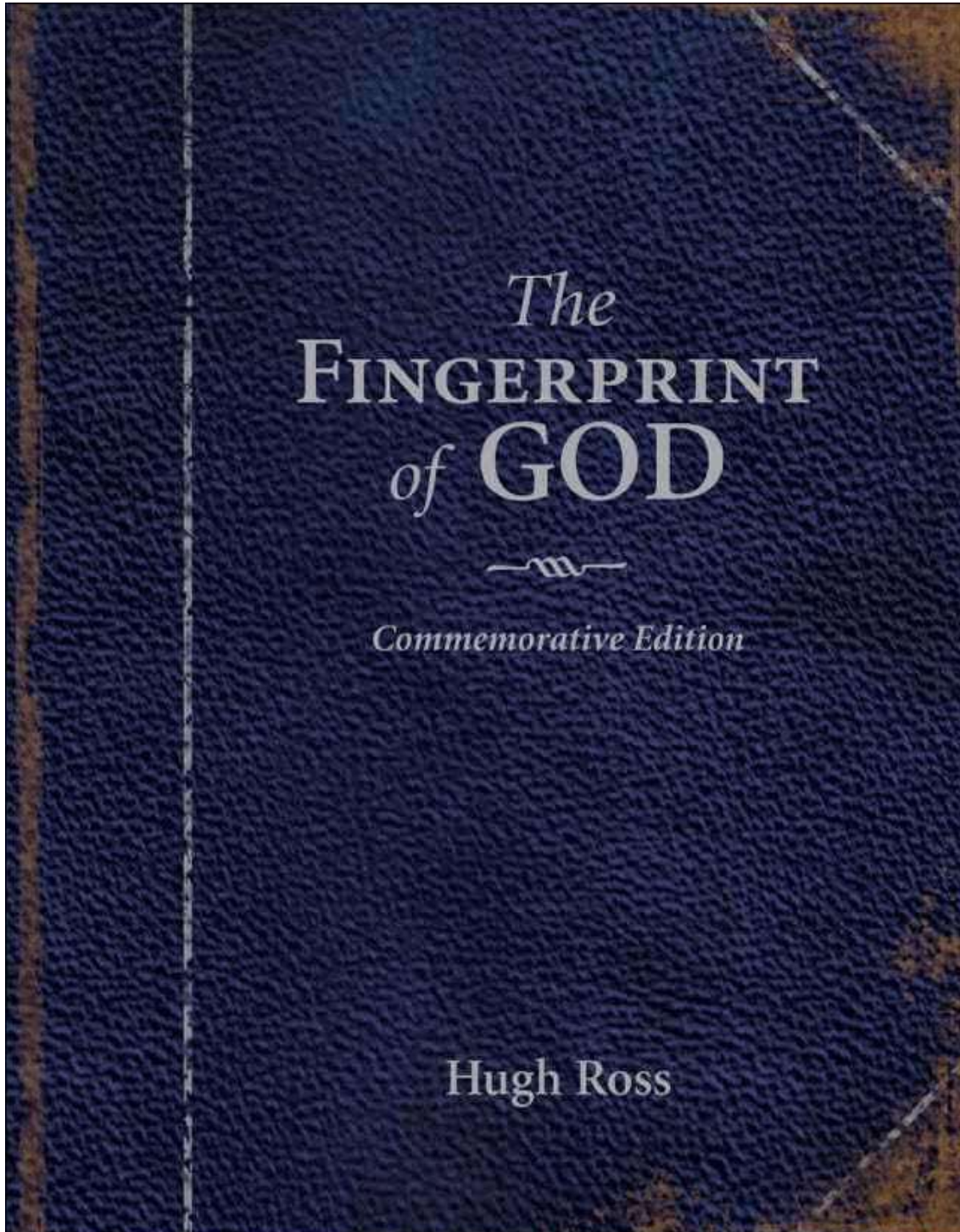


بِسْمِ اللَّهِ الرَّحْمَنِ الرَّحِيمِ

The Fingerprint of God

Recent Scientific Discoveries Reveal the Unmistakable Identity of the Creator

By: Hugh Ross



من كُتِب «هيو روس» القديمة، ولكنه كتاب نافع جداً، رغم أن العُنْوان لا يدُلُّ على المُحتوى!

تناول «هيو روس» في هذا الكتاب مُشكلة التَّعارض المزعوم بين العِلْم والإيمان، خُصُوصاً في مجال

الكوسمولوجي، ويحاول «هيو روس» جاهداً إزالة التَّنَاقض بين النَّظَريَّات العِلْمية الحديثة وبين الكتاب المُقدَّس!

يتناول «هيو روس» الموضوع من ناحية تاريخية أولاً، فيقوم بذكر التَّصوُّرات الكوسمولوجية المُختلفة، بدءاً

بالحضارات القديمة، مُروراً بالأفكار التي كانت سائدة في العُصور الوسطى، وُصُولاً إلى نظرية الانفجار العظيم!

وهكذا يُحاول «هيو روس» بيان أن الكتاب المُقدَّس مُوافق للحقِّ من البداية، على خلاف مَنْ قال بأزلية الكون والمادَّة!

(«هيو روس» يختزل نظرية الانفجار العظيم في مسألة واحدة فقط وهي حُدُوث الكون!).

الكتاب في كثير من الأحيان يتطرَّق لتفاصيل علمية دقيقة، ويستعرض قوانين رياضية ويقوم بشرحها، ممَّا

سيجعل مثل هذه المعلومات غير مفهومة إلاَّ للمُتخصِّص في هذا المجال العلمي، ولكنَّ الكتاب في كثير من الأحيان

يُقدِّم اقتباسات جيِّدة لأقوال بعض العُلَّماء المشاهير، ويعرض بعض المعلومات الصَّعبة بشكل بسيط وسهل!

الرسالة الرئيسية للكتاب هي أنَّ وجهات النظر الفلسفية حاکمة على العُلَّماء بشكل كبير جداً، وأنَّ نظرية

الانفجار الكبير مُتَّسقة تماماً مع فكرة الخلق من عدم الوجود في ديانات المذهب الألوهي، وأنَّ عُلَّماء كُثُر رفضوا

نظرية الانفجار الكبير، لا لشيء إلاَّ لدواعي فلسفية ورفض لتبعتها اللاهوتية.

من أهمِّ مُميَّزات الكتاب: طرح الأدلة على صحَّة نظرية الانفجار الكبير باستفاضة، مع نقد النظريات الأخرى

باستفاضة، والتي افترضها العُلَّماء بدافع فلسفي لإزالة لحظة خلق من عدم!

الفصل ١٢ من الكتاب يحتوي على عرض مُستفيض لأشهر الأدلَّة على الضَّبْط الدَّقِيق، والإحكام والإتقان

في الكون، وللعلم، فإنَّ «هيو روس» يُعدُّ من أهمِّ العُلَّماء الذين بحثوا في هذه المسألة، وحصرُوا أدلتها. (أعتقد أنَّ

هناك تكرار بين الأدلَّة المعروضة في هذا الكتاب، وكتابه الآخر بعنوان: الخالق والكون.)

Chapter Two: Early Historical Roots

- The Mesopotamians described the earth as a floating vessel on the “waters of the deep.” Above it stood a solid dome, covered with the “waters above,” which occasionally seeped through—rain. The sun, moon, and stars whirled around on the inner surface of the dome. [Hugh Ross: *The Fingerprint of God (Recent Scientific Discoveries Reveal the Unmistakable Identity of the Creator)* (Kindle Locations 161-163). Reasons To Believe. Kindle Edition.]
- Virtually all ancient cosmologists conceived of the physical universe as finite in extent and in age. Existence beyond the physical universe was accepted by all. One (or more) of the deities or creative agents was credited with bringing into existence physical matter, plants, animals, and human beings. [Hugh Ross: *The Fingerprint of God (Recent Scientific Discoveries Reveal the Unmistakable Identity of the Creator)* (Kindle Locations 164-166). Reasons To Believe. Kindle Edition.]
- To be sure, gods did exist in their various philosophical systems, but these gods were said to originate after the formation of the universe or to play no part in forming the universe, which arose, rather, from some nonpersonal spirit or power. According to the majority of these Indian cosmologists, the universe proceeded through an infinite number of cycles. At the end of each cycle every particle “dissolved into the primal, pure waters of eternity” from which everything once again emerged, phoenix-like, from its own ashes. Scientists or not, these ancient theorists preempted the modern proponents of the oscillating theory (see chapter 10), even to the setting of the period of the cycles at several billions of years. [Heinrich Zimmer, *Myths and Symbols in Indian Art and Civilization*, ed. Joseph Campbell (Washington, D.C.: Bollingen Foundation, 1946), 3–22; R. F. Gombrich, “Ancient Indian Cosmology,” in *Ancient Cosmologies*, ed. Carmen Blacker and Michael Loewe (London: Allen and Unwin, 1975), 120–23.] [Hugh Ross: *The Fingerprint of God (Recent Scientific Discoveries Reveal the Unmistakable Identity of the Creator)* (Kindle Locations 168-173). Reasons To Believe. Kindle Edition.]
- China, Egypt, Mesopotamia, and India were not alone in spawning cosmological hypotheses. Virtually every culture generated its own account of the origin of the universe. Clearly, the question of ultimate origins proves

irresistibly intriguing to mankind. [Edith Hamilton, *Mythology* (New York: Mentor, 1969), 312; Marie-Louise Franz, *Patterns of Creativity Mirrored in Creation Myths* (Zurich: Spring, 1972); Wendell M. Oswalt, *Alaskan Eskimos* (New York: Chandler, 1967), 212–14; Albert R. Kilzhaber and Stoddard Malarkey, eds., *Myths, Fables, and Folktales* (New York: Holt, Rinehart, and Winston, 1974), 113–14.] [Hugh Ross: *The Fingerprint of God (Recent Scientific Discoveries Reveal the Unmistakable Identity of the Creator)* (Kindle Locations 176-178). Reasons To Believe. Kindle Edition.]

- The first significant scientific efforts to determine the structure of the universe were made by the ancient Greeks. Ionian astronomer Thales in the seventh century B.C. noted that while the Big Dipper constellation never dropped below the horizon in Greece, it did in Egypt. His pupil (according to tradition), Anaximander, concluded that the earth could not be flat, but must be a sphere floating free within a sky of stars, itself spherical in shape. [Hugh Ross: *The Fingerprint of God (Recent Scientific Discoveries Reveal the Unmistakable Identity of the Creator)* (Kindle Locations 179-182). Reasons To Believe. Kindle Edition.]
- Born late in the fourth century B.C., Aristarchus actually calculated (relative to the earth's diameter) the distances from earth and the sizes of the sun and the moon. He did this through geometric measurements of the moon's phases and of the size of the earth's shadow relative to the moon's diameter during a lunar eclipse. [At exactly the first and third quarters of the moon's phases, the angles earth-moon-sun are 90 degrees. Measuring the angles sun-earth-moon at these times permits the geometric solution of the triangles. When the moon is partially eclipsed by the earth's shadow, the curved shape of the shadow yields the earth's diameter relative to the moon's.] [Hugh Ross: *The Fingerprint of God (Recent Scientific Discoveries Reveal the Unmistakable Identity of the Creator)* (Kindle Locations 182-184). Reasons To Believe. Kindle Edition.]
- Though his measurements for the sun were twenty times too small, they still revealed the sun to be enormously larger than the earth. In fact, the size difference was so great that Aristarchus concluded that the sun, not the earth, occupied the center of the universe. [George Abell, *Exploration of the Universe* (New York: Holt, Rinehart, and Winston, 1964), 16–19.] [Hugh

Ross: *The Fingerprint of God (Recent Scientific Discoveries Reveal the Unmistakable Identity of the Creator)* (Kindle Locations 185-187). Reasons To Believe. Kindle Edition.]

- Aristarchus also determined that the stars must be at least many millions of miles away. He based this determination on his total inability to observe parallaxes for any of the stars. In short, Aristarchus established a remarkably accurate picture of the solar system, and of the system of visible stars, some two thousand years ahead of Copernicus. [Parallax is the apparent change in the position of an object relative to much more distant objects due to the motion of an observer. For example, as an observer allows the earth in its orbit about the sun to move him some 180 million miles, he will be able to detect with the aid of a medium-sized telescope what seems to be a slight change in position for a nearby star relative to much more distant stars.] [Hugh Ross: *The Fingerprint of God (Recent Scientific Discoveries Reveal the Unmistakable Identity of the Creator)* (Kindle Locations 187-190). Reasons To Believe. Kindle Edition.]
- Eratosthenes in the third century B.C. converted Aristarchus' relative distances and diameters into actual length measurements by determining the earth's diameter. This he accomplished by measuring the angle of sunlight at locations of known distances apart. [Marshall Clagett, *Greek Science in Antiquity* (New York: Collier Books, 1955), 116–18; Irene Fischer, "Another Look at Eratosthenes' and Posidonius' Determinations of the Earth's Circumference," in *Quarterly Journal of the Royal Astronomical Society* 16 (June 1975): 152–67.] [Hugh Ross: *The Fingerprint of God (Recent Scientific Discoveries Reveal the Unmistakable Identity of the Creator)* (Kindle Locations 190-193). Reasons To Believe. Kindle Edition.]
- Subsequently, Lucretius adopted from Democritus (4th century B.C. Greek philosopher) the concept of "atoms" as the fundamental, eternal components of all matter. Rather than theorizing just an infinite number of universes, he postulated an infinite number of universes going through unending cycles of formation, dissolution, and reformation. He acknowledged that the random assembly of atoms would not always form a well-ordered life-bearing world, but reasoned that an infinite number of cycles in an infinite number of universes would overcome the improbability. He did concede, however, the

need for a mechanism to guarantee the longevity of a cycle. The modern “molecules to man” hypothesis, now routinely taught in the biological sciences, has its roots in the ideas of Lucretius. [T. Lucretius Carus, “Nature of the Universe,” 41–57.] [Biological Sciences Curriculum Study, Biological Science: Molecules to Man, blue version, rev. ed. (Boston: Houghton Mifflin, 1968).] [Hugh Ross: *The Fingerprint of God (Recent Scientific Discoveries Reveal the Unmistakable Identity of the Creator)* (Kindle Locations 222-228). Reasons To Believe. Kindle Edition.]

- Not content to have merely silenced the opposition on this one point, Augustine proceeded to develop five “irrefutable” proofs of God’s existence: 1. the cosmological argument—the effect of the universe’s existence must have a suitable cause. 2. the teleological argument—the design of the universe implies a purpose or direction behind it. 3. the rational argument—the operation of the universe according to order and natural law implies a mind behind it. 4. the ontological argument—man’s ideas of God, his God-consciousness, implies a God who imprinted such a consciousness. 5. the moral argument—man’s built-in sense of right and wrong can be accounted for only by innate awareness of a code of law, awareness implanted by a higher being. [These proofs, compiled and summarized by later generations of Roman Catholic scholars, were discussed at great length in Augustine’s *Confessions*, *City of God*, and *On the Free Choice of the Will*. These works may be found in Augustine, vol. 18 in *Great Books of the Western World* (Chicago: Encyclopædia Britannica, 1952).] [Hugh Ross: *The Fingerprint of God (Recent Scientific Discoveries Reveal the Unmistakable Identity of the Creator)* (Kindle Locations 242-251). Reasons To Believe. Kindle Edition.]
- Jewish philosopher Moses Maimonides, in *Guide for the Perplexed*, sought to establish God’s existence through proofs for a “primary mover,” a “primary cause,” a “necessary being.” His starting point was that motion requires a cause. Reasoning that the series of its causes cannot be infinite, he concluded that there must be a first cause, hence a being to initiate motion. [Étienne Gilson, *History of Christian Philosophy in the Middle Ages* (New York: Random House, 1955), 229–31, 650–51.] [Hugh Ross: *The Fingerprint of God (Recent Scientific Discoveries Reveal the Unmistakable Identity of the Creator)* (Kindle Locations 253-256). Reasons To Believe. Kindle Edition.]

- In the thirteenth century Thomas Aquinas, building on Maimonides' proofs for God's existence, extended and subdivided Augustine's cosmological argument: a. Where there is motion, there is a mover, and ultimately a first mover, itself unmoved. b. Things here are produced by their causes; these causes in turn were produced by their causes, and so on. Ultimately, there must be a first cause that is itself uncaused. c. Contingent things demand as their ultimate explanation a noncontingent being. d. Where there are degrees of perfection, there must ultimately be absolute perfection. e. There are design and government in the world. Hence there are ultimately a first designer and a first governor. [Paul J. Glenn, *A Tour of the Summa* (St. Louis: Herder Book, 1960), 5; Thomas Aquinas, "The Summa Theologica," in *Great Books of the Western World* (Chicago: Encyclopædia Britannica, 1952), 19:12–14.] [Hugh Ross: *The Fingerprint of God (Recent Scientific Discoveries Reveal the Unmistakable Identity of the Creator)* (Kindle Locations 259-267). Reasons To Believe. Kindle Edition.]

Chapter Three: Rebirth of Science

- Outside Europe, Muslims were the most advanced in astronomy but contented themselves with those studies that would give them the direction to Mecca, the times for prayer, and a predictable calendar. By the thirteenth century, however, Muslim scholars had exported to Europe the new mathematics from India, including trigonometry, algebra, and the counting of numerals from zero. [Hugh Ross: *The Fingerprint of God (Recent Scientific Discoveries Reveal the Unmistakable Identity of the Creator)* (Kindle Locations 280-282). Reasons To Believe. Kindle Edition.]
- Copernicus then picked up the works of the ancient Greeks and Romans, discovering their heliocentric theories and their measurements of vast distance to the stars. Their ideas made sense to him. He studied diligently and produced a book, *De Revolutionibus*, published posthumously. In it Copernicus not only revived the heliocentric theory but, in referring geocentric observations of the planets to a heliocentric coordinate system, showed that the nearer a planet to the sun, the greater its orbital velocity. He thereby worked out the correct scale for the solar system. [Hugh Ross: *The Fingerprint of God (Recent Scientific Discoveries Reveal the Unmistakable Identity of the Creator)* (Kindle Locations 288-292). Reasons To Believe.

Kindle Edition.]

- The Roman Catholic curia interpreted heliocentrism as a direct assault on its doctrines. Therefore, when Galileo, the Renaissance father of experimental science, produced several observational evidences for the heliocentric theory, he established himself as an enemy of the church. [George Abell, *Exploration of the Universe* (New York: Holt, Rinehart, and Winston, 1964), 43–45; James Hansen, “The Crime of Galileo,” *Science* 81 (March 1981): 14–19.] [Hugh Ross: *The Fingerprint of God (Recent Scientific Discoveries Reveal the Unmistakable Identity of the Creator)* (Kindle Locations 292-295). Reasons To Believe. Kindle Edition.]
- The generation following Galileo understood intellectually the resolution of this conflict. However, emotional resolution came much more slowly. Galileo’s published works on heliocentrism remained on the church’s Index of Prohibited Books until 1835, and not until 1981 did the Roman Catholic Church officially forgive Galileo. Scientists’ forgiveness of the church has been just as slow, if not slower, in coming. Some scientists report that past mistreatment of Galileo by the Roman Catholic Church still stirs their indignation towards Christian churches and theologians, in general. [Hugh Ross: *The Fingerprint of God (Recent Scientific Discoveries Reveal the Unmistakable Identity of the Creator)* (Kindle Locations 305-309). Reasons To Believe. Kindle Edition.]
- Observational astronomy was reborn through Tycho Brahe (1546–1601), who devoted his entire adult life to making precise measurements of the positions of stars and planets. In the last year of his work, Tycho challenged his assistant, Johannes Kepler, to solve the problem of planetary motion. Using Tycho’s copious data, Kepler derived three laws of planetary motion (published between 1609 and 1619), which enabled Isaac Newton to formulate his laws of motion and of universal gravitation (1687). Subsequent observations of stellar systems substantiated the pervasive validity of Newton’s laws and indicated a size for the universe much vaster than any imagined by the ancient astronomers. [Hugh Ross: *The Fingerprint of God (Recent Scientific Discoveries Reveal the Unmistakable Identity of the Creator)* (Kindle Locations 310-314). Reasons To Believe. Kindle Edition.]
- The cosmological pioneers of the scientific revolution (Copernicus, Galileo,

Tycho, Kepler, Newton, and others) were all devout men. To them, it was clear that God not only created the universe, but also had continually maintained its order and harmony. [Hugh Ross: *The Fingerprint of God (Recent Scientific Discoveries Reveal the Unmistakable Identity of the Creator)* (Kindle Locations 315-317). Reasons To Believe. Kindle Edition.]

- One such seed was Newton's suggestion of an infinite universe. He noted in his theory of gravitation that every particle in the universe has an innate attraction toward all the rest. Hence, in a finite universe the matter at the outside edges would fall towards the matter inside. His proposal for a way out of this gravitational collapse was to suggest that matter is evenly distributed throughout an infinite space, a hypothesis that he thought would remove both the edges and the center of the universe. [Isaac Newton, "To the Reverend Dr. Richard Bentley, at the Bishop of Worcester's House, in Park Street, Westminster from Cambridge, December 10, 1692," in *Theories of the Universe*, by Milton K. Munitz (Glencoe, IL: Free Press, 1957), 211–12.] [Hugh Ross: *The Fingerprint of God (Recent Scientific Discoveries Reveal the Unmistakable Identity of the Creator)* (Kindle Locations 319-323). Reasons To Believe. Kindle Edition.]
- A second seed was planted by Cambridge University scholar John Lightfoot and by James Ussher, the Anglican archbishop of Ireland. In 1642, just 31 years after publication of the King James translation of the Bible, John Lightfoot authoritatively proclaimed September 17, 3928 B.C., as the date of the creation. A few years later Archbishop Ussher adjusted Lightfoot's date to October 3, 4004 B.C., and proceeded to derive specific dates for every historical event in the Bible. Both Ussher and Lightfoot unfortunately assumed that 1) no generations were omitted from the biblical genealogies, and 2) the numbered days of the Genesis creation account were consecutive 24-hour days. [Paul Johnson, *A History of Christianity* (New York: Atheneum, 1976), 413.] [Hugh Ross: *The Fingerprint of God (Recent Scientific Discoveries Reveal the Unmistakable Identity of the Creator)* (Kindle Locations 323-328). Reasons To Believe. Kindle Edition.]

Chapter Four: Rise of Non-theism

- Kant's Theology In *Critique of Pure Reason* and in his other works, including *Critique of Practical Reason*, *Critique of Judgment*, *Only Possible Ground of*

Proof for the Being of God, Religion Within the Limits of Reason Alone, and Dreams of a Spirit Seer, Kant more fully developed and explained the theological foundation for his cosmology. He began by sweeping away all accepted proofs for the existence of God, both the philosophical proofs of Augustine and Aquinas and the newer rational developments on these proofs by Kepler, Newton, Lessing, and Herder. [Johannes Kepler, “The Harmonies of the World,” in *Great Books of the Western World*, ed. Robert Maynard Hutchins (Chicago: Encyclopædia Britannica, 1952), 16:1005–85; Isaac Newton, “Mathematical Principles of Natural Philosophy, Book III, General Scholium,” in *Great Books of the Western World*, ed. Robert Maynard Hutchins (Chicago: Encyclopædia Britannica, 1952), 34:369–32; Geoffrey W. Bromiley, *Historical Theology* (Grand Rapids: Eerdmans, 1978), 343–56.] [Hugh Ross: *The Fingerprint of God (Recent Scientific Discoveries Reveal the Unmistakable Identity of the Creator)* (Kindle Locations 395–401). *Reasons To Believe*. Kindle Edition.]

- In summary, Kant began with an unstated fundamental axiom: God’s existence is not provable. Therefore, he deduced, 1. man’s knowledge is limited to that which he can obtain through the five human senses, 2. a cause can never be proved from its effect, 3. man has no innate ideas, 4. no existence beyond the humanly experienced dimensions can be proved, 5. no absolute can ever be established to exist, and 6. miracles are illusory and cannot be proven. Hence, a. the development of the universe is strictly mechanistic, b. the universe has no beginning in time, c. the universe is infinite in extent, d. time and space are strictly relative, and e. everything about and in the universe can be explained by the laws of physics. Conclusion: The question of God’s existence lies beyond the reach of man’s knowledge. [Hugh Ross: *The Fingerprint of God (Recent Scientific Discoveries Reveal the Unmistakable Identity of the Creator)* (Kindle Locations 439–449). *Reasons To Believe*. Kindle Edition.]

Chapter Five: Scientists Rediscover God

- gravitational potential paradox Not until 1871 did anyone formally attempt to calculate the gravitational potential within an infinite Newtonian universe. In that year Johann Friedrich Zöllner demonstrated that at any point within an infinite, homogeneous universe the gravitational potential would be

infinite—a conclusion at odds with all observations. However, despite Zöllner’s fame as professor of astrophysics at Leipzig, his objection to the infinite Newtonian universe received no attention. Only when his objection was independently raised by Hugo Seeliger in 1895 and by Carl Neumann in 1896 did astronomers acknowledge a significant problem. [J. D. North, *The Measure of the Universe* (Oxford: Clarendon, 1965), 16–18.] [Hugh Ross: *The Fingerprint of God (Recent Scientific Discoveries Reveal the Unmistakable Identity of the Creator)* (Kindle Locations 509-514). Reasons To Believe. Kindle Edition.]

- Special Relativity As the twentieth century dawned, the only conclusions consistent with all observations of the velocity of light were these two: 1. There is no absolute reference system from which absolute motions in space can be measured. 2. The speed of light with respect to all observers is always the same. In 1905 Albert Einstein, who at that time worked as an engineer in the Swiss patent office and studied physics in his spare time, conceded these conclusions in his paper on the theory of special relativity. [Albert Einstein, “Zur Elektrodynamik bewegter Körper,” *Annalender Physik* 17 (1905): 891–921, as “On the Electrodynamics of Moving Bodies,” in *The Principle of Relativity* by H. A. Lorentz, A. Einstein, H. Minkowski, and H. Weyl with notes by A. Sommerfeld, trans. W. Perrett and G. B. Jeffrey (1923; repr., New York: Dover, 1952), 35–65; Albert Einstein, “Ist die Trägheit eines Körpers von seinem Energieinhalt abhängig? *Annalen der Physik* 18 (1905): 639–41, as “Does the Inertia of a Body Depend Upon Its Energy Content?” in *The Principle of Relativity*, 67–71.] [Hugh Ross: *The Fingerprint of God (Recent Scientific Discoveries Reveal the Unmistakable Identity of the Creator)* (Kindle Locations 529-535). Reasons To Believe. Kindle Edition.]
- During the May 1919 total solar eclipse, British astronomer and mathematician Arthur Eddington catapulted Einstein to worldwide fame. Eddington and his colleagues determined that starlight was bent by the sun’s gravitational field by 1.8 ± 0.2 arcseconds. Einstein’s theory had predicted a bend of 1.751 arcseconds. [One arcsecond is 1/3600th of a degree or about .06 percent of the angular diameter of the moon.] [F. W. Dyson, A. S. Eddington, and C. Davidson, “A Determination of the Deflection of Light by the Sun’s Gravitational Field, from Observations Made at the Total Eclipse of May 29, 1919,” *Philosophical Transactions of the Royal Society of*

London A 220 (1920): 291–333.] [Hugh Ross: *The Fingerprint of God (Recent Scientific Discoveries Reveal the Unmistakable Identity of the Creator)* (Kindle Locations 584-587). Reasons To Believe. Kindle Edition.]

- Through the years the general theory of relativity has been confirmed by the observational tests proposed by Einstein, and other effects derived since, to better than one-hundredth of a percent precision. A summary of results from observational tests is given in table 5.1. Needless to say, so much evidence now has been accumulated that no one seriously doubts the validity of the general theory of relativity. [Hugh Ross: *The Fingerprint of God (Recent Scientific Discoveries Reveal the Unmistakable Identity of the Creator)* (Kindle Locations 590-593). Reasons To Believe. Kindle Edition.]
- Theological Implications While general relativity implies an age for the universe vastly beyond 6,000 years, it also implies that there is, indeed, a creation date. Expansion, coupled with deceleration, indicates a universe that is exploding outward from a point. [Hugh Ross: *The Fingerprint of God (Recent Scientific Discoveries Reveal the Unmistakable Identity of the Creator)* (Kindle Locations 605-607). Reasons To Believe. Kindle Edition.]
- The implications can only be described as monumental. Atheism, Darwinism, and virtually all the “isms” emanating from the eighteenth to twentieth century philosophies are built upon the assumption, the incorrect assumption, that the universe is infinite. The singularity has brought us face to face with the cause—or Causer—beyond/behind/before the universe and all that it contains, including life itself. [Hugh Ross: *The Fingerprint of God (Recent Scientific Discoveries Reveal the Unmistakable Identity of the Creator)* (Kindle Locations 612-615). Reasons To Believe. Kindle Edition.]

Chapter Six: The Expanding Universe

- Einstein postulated a cosmic force of repulsion to cancel off the attractive force of gravity, despite the body of evidence that gravity was predominant in its influence throughout our galaxy and its vicinity. Einstein had to develop a repulsive force that would have imperceptible consequences for nearby objects but overwhelming effects over extreme distances. The easiest way this could be expressed consistently was to add a term, Λ , to the right hand side of equation 5.3, $\Lambda/3$ to the right hand side of equation 5.4, and $2\Lambda/3$ to

equation 5.5. In each case Λ represents a cosmological repulsive property, or what Einstein termed the cosmological constant. [For perfect cancellation of the effects of gravity upon the universe, a value for Λ equal to $4\pi G(\rho + 3p/c^2)$ must be assigned.] [Hugh Ross: *The Fingerprint of God (Recent Scientific Discoveries Reveal the Unmistakable Identity of the Creator)* (Kindle Locations 631-636). Reasons To Believe. Kindle Edition.]

- In 1931, following the publication of Hubble's law of redshifts, Einstein finally discarded the cosmological constant from his field equations and conceded that its introduction was "the greatest mistake of his life." [A. Vibert Douglas, "Forty Minutes with Einstein," *Journal of the Royal Astronomical Society of Canada* 50 (June 1956): 100.] [Hugh Ross: *The Fingerprint of God (Recent Scientific Discoveries Reveal the Unmistakable Identity of the Creator)* (Kindle Locations 691-692). Reasons To Believe. Kindle Edition.]
- Einstein gave grudging acceptance to "the necessity for a beginning" and, eventually, to "the presence of a superior reasoning power," but never did he accept the doctrine of a personal God. [A. Vibert Douglas, "Forty Minutes with Einstein," *Journal of the Royal Astronomical Society of Canada* 50 (June 1956): 100.] [Lincoln Barnett, *The Universe and Dr. Einstein* (New York: Sloane, 1948), 106.] [Albert Einstein, *Out of My Later Years* (New York: Philosophical Library, 1950), 27–28.] [Hugh Ross: *The Fingerprint of God (Recent Scientific Discoveries Reveal the Unmistakable Identity of the Creator)* (Kindle Locations 693-696). Reasons To Believe. Kindle Edition.]

Chapter Seven: Cosmic Hesitation

- Arthur Eddington, nonetheless, remained agitated: The difficulty of applying this case [Lemaître's expansion] is that it seems to require a sudden and peculiar beginning of things. Philosophically, the notion of a beginning of the present order of Nature is repugnant to me.... I should like to find a genuine loophole. [Arthur S. Eddington, "On the Instability of Einstein's Spherical World," *Monthly Notices of the Royal Astronomical Society* 90 (1930): 668–78.] [Arthur S. Eddington, "The End of the World: From the Standpoint of Mathematical Physics," *Nature* 127 (March 21, 1931): 450.]

[Hugh Ross: *The Fingerprint of God (Recent Scientific Discoveries Reveal the Unmistakable Identity of the Creator)* (Kindle Locations 744-749). Reasons To Believe. Kindle Edition.]

- Eddington worked hard to create a loophole. He stretched Lemaître’s quasi-static period to infinity (see figure 7.4), putting that “repugnant” beginning point all but out of the picture: We allow evolution an infinite time to get started; but once seriously started its time-scale of progress is not greatly different from case (b) [Lemaître’s expansion]. [Eddington, “Instability of Einstein’s Spherical World,” 672.] [Hugh Ross: *The Fingerprint of God (Recent Scientific Discoveries Reveal the Unmistakable Identity of the Creator)* (Kindle Locations 750-754). Reasons To Believe. Kindle Edition.]
- Lemaître conjectured that the present universe came from the disintegration of a single atom: We could conceive the beginning of the universe in the form of a unique atom, the atomic weight of which is the total mass of the universe. This highly unstable atom would divide in smaller and smaller atoms by a kind of super-radioactive process. [Lemaître, Primeval Atom, 99–100.] At the origin, all the mass of the universe would exist in the form of a unique atom; the radius of the universe, although not strictly zero, being relatively very small. The whole universe would be produced by the disintegration of this primeval atom. [Lemaître, “British Association Discussion,” 706.] [Hugh Ross: *The Fingerprint of God (Recent Scientific Discoveries Reveal the Unmistakable Identity of the Creator)* (Kindle Locations 763-770). Reasons To Believe. Kindle Edition.]

Chapter Eight: Steady State Cosmology

- Hermann Bondi spoke openly of the steady state theory as an expedient tool for answering questions about God, specifically for answering questions about origins. In his book, *Cosmology*, he says that with his steady state theory “the problem of the origin of the universe, that is, the problem of creation, is brought within the scope of physical inquiry and is examined in detail instead of, as in other theories, being handed over to metaphysics.” [Herman Bondi, *Cosmology*, 2nd ed. (Cambridge: Cambridge University Press, 1960), 140.] [Hugh Ross: *The Fingerprint of God (Recent Scientific Discoveries Reveal the Unmistakable Identity of the Creator)* (Kindle Locations 879-882). Reasons To Believe. Kindle Edition.]

- Sir Fred Hoyle has never made any pretense about the personal philosophical motivation behind his cosmological models. In the introduction to his 1948 paper, he makes this statement: This possibility [steady state] seemed attractive, especially when taken in conjunction with aesthetic objections to the creation of the universe in the remote past. For it seems against the spirit of scientific enquiry to regard observable effects as arising from ‘causes unknown to science,’ and this in principle is what creation-in-the-past implies. [Fred Hoyle, “A New Model for the Expanding Universe,” *Monthly Notices of the Royal Astronomical Society* 108 (1948): 372.] [Hugh Ross: *The Fingerprint of God (Recent Scientific Discoveries Reveal the Unmistakable Identity of the Creator)* (Kindle Locations 882-887). Reasons To Believe. Kindle Edition.]
- In his undergraduate text on general astronomy written in 1975, Hoyle attacks Friedmann’s relativistic model on what seem to be wholly theological grounds: Many people are happy to accept this position [Friedmann’s] ... without looking for any physical explanation of the abrupt beginning of the particles. The abrupt beginning is deliberately regarded as meta-physical—i.e., outside physics. The physical laws are therefore considered to break down at $\tau = 0$, and to do so inherently. To many people this thought process seems highly satisfactory because a “something” outside of physics can then be introduced at $\tau = 0$. By a semantic maneuver, the word “something” is then replaced by “god,” except that the first letter becomes a capital, God, in order to warn us that we must not carry the enquiry any further.... I do not believe that an appeal to metaphysics is needed to solve any problem of which we can conceive. [Fred Hoyle, *Astronomy and Cosmology* (San Francisco: Freeman, 1975), 684–85.] [Hugh Ross: *The Fingerprint of God (Recent Scientific Discoveries Reveal the Unmistakable Identity of the Creator)* (Kindle Locations 893-900). Reasons To Believe. Kindle Edition.]
- In 1982 he declares his rejection of God by defining the universe as “everything there is,” and the first letter of the word universe becomes a capital, Universe. [Fred Hoyle, “The Universe: Past and Present Reflections,” *Annual Review of Astronomy and Astrophysics* 20 (September 1982): 1.] [Hugh Ross: *The Fingerprint of God (Recent Scientific*

Discoveries Reveal the Unmistakable Identity of the Creator) (Kindle Locations 901-903). Reasons To Believe. Kindle Edition.]

- There is no need, then, to look beyond the universe itself for anything. By so deifying the universe, Hoyle must, of course, argue against its finite age: The attribution of a definite age to the Universe, whatever it might be, is to exalt the concept of time above the Universe, and since the Universe is everything this is crackpot in itself. I would argue the need for the Universe to take precedence over time as a knockout argument in favor of a negative answer to the above question. [That question: Did the whole Universe come into being, all in a moment, about ten billion years ago?] ... One could then dismiss cosmologies of finite age because they were offensive to basic logical consistency. [Fred Hoyle, “The Universe: Past and Present Reflections,” *Annual Review of Astronomy and Astrophysics* 20 (September 1982): 3.] [Hugh Ross: *The Fingerprint of God (Recent Scientific Discoveries Reveal the Unmistakable Identity of the Creator)* (Kindle Locations 903-909). Reasons To Believe. Kindle Edition.]
- In further support of his semantical proof for “God is identically equal to the universe” (i.e., God is the universe, and the universe is God), Hoyle points out that oppression, suffering, and death are expected, even guaranteed, if strictly natural biological evolution operates, but not if an all-loving, all-powerful God is in charge. [Fred Hoyle and Chandra Wickramasinghe, *Evolution from Space* (New York: Simon and Schuster, 1981), 143.] [Hoyle, *Astronomy and Cosmology*, 522.] [Hugh Ross: *The Fingerprint of God (Recent Scientific Discoveries Reveal the Unmistakable Identity of the Creator)* (Kindle Locations 910-913). Reasons To Believe. Kindle Edition.]
- By Hoyle’s own admission neo-Darwinian evolution would be impossible within a time scale of only ten or twenty billion years: I estimated (on a very conservative basis) the chance of a random shuffling of amino acids producing a workable set of enzymes to be less than $10^{-40,000}$. [The improbability of random assembly of life molecules was demonstrated in detail in 1981 by Hoyle and Indian authority on interstellar matter, Chandra Wickramasinghe, in their book *Evolution From Space*. (See pages 14–31 and 129–43.) Their conclusion has since been corroborated in greater detail in *The Mystery of Life’s Origin* (1984) and a paper by chemists Walter Bradley,

Randall Kok, and John Taylor (1988), in *Origins* by chemist Robert Shapiro (1986), and *Origins of Life* by biochemist Fazale Rana and astrophysicist Hugh Ross (2004). (Charles B. Thaxton, Walter L. Bradley, and Roger L. Olsen, *The Mystery of Life's Origin* [New York: Philosophical Library, 1984], 2–179; Randall A. Kok, John A. Taylor, and Walter L. Bradley, “A Statistical Examination of Self-Ordering of Amino Acids in Proteins,” *Origins of Life and Evolution of the Biosphere* 18 (March 1988): 135–42; Robert Shapiro, *Origins* [New York: Summit Books, 1986], 117–31, 155–89; Fazale Rana and Hugh Ross, *Origins of Life* [Colorado Springs: NavPress, 2004]).] [Hugh Ross: *The Fingerprint of God (Recent Scientific Discoveries Reveal the Unmistakable Identity of the Creator)* (Kindle Locations 916-919). Reasons To Believe. Kindle Edition.]

- Since the minuteness of this probability wipes out any thought of life having originated on the Earth, many whose thoughts are irreversibly programmed to believe in a terrestrial origin of life argue that the enzyme estimate is wrong. It is—in the sense of being too conservative. [Hoyle, “Universe: Past and Present,” 4–5.] [Hugh Ross: *The Fingerprint of God (Recent Scientific Discoveries Reveal the Unmistakable Identity of the Creator)* (Kindle Locations 919-922). Reasons To Believe. Kindle Edition.]
- Since the evolution of life is fundamental to Hoyle’s “faith,” he concludes that the only way to deal with probabilities as small as 10-40,000 is to banish the beginning of the universe and make it everlasting. In the same spirit, Brazilian physicists M. Novello and H. Heintzmann as recently as 1984 justified a revival of the Newtonian analogues to relativistic models (developed by Edward Milne, William McCrea, Otto Heckmann, and Engelbert Schücking) on no other basis than that 1040,000 years—or more—would be the minimum time required for the evolutionary development of life. [Hoyle, “Universe: Past and Present,” 5–6.] [E. A. Milne, “A Newtonian Expanding Universe,” *Quarterly Journal of Mathematics, Oxford series*, 5 (1934): 64–72; W. H. McCrea and E. A. Milne, “Newtonian Universes and the Curvature of Space,” *Quarterly Journal of Mathematics, Oxford series*, 5 (1934): 73–80; O. Heckmann and E. Schücking, “Bemerkungen zur Newtonschen Kosmologie. II,” *Zeitschrift für Astrophysik* 40 (1956): 81–92.] [M. Novello and H. Heintzmann, “An Eternal Universe,” *General Relativity and Gravitation* 16 (1984): 535–39.] [Hugh Ross: *The Fingerprint*

of God (Recent Scientific Discoveries Reveal the Unmistakable Identity of the Creator) (Kindle Locations 923-929). Reasons To Believe. Kindle Edition.]

Chapter Nine: Overthrow of Hesitation and Steady State

- Evidence now is accumulating that the deceleration in the expansion of the universe is more than negligible. With q_0 , the deceleration parameter, between +0.1 and +0.2 (currently the favored values), the age of the universe would lie between 14 and 15 billion years. [Hugh Ross: *The Fingerprint of God (Recent Scientific Discoveries Reveal the Unmistakable Identity of the Creator)* (Kindle Locations 955-958). Reasons To Believe. Kindle Edition.]
- There is now no question that the universe expands. Spectral lines of galaxies of all types and at all distances show a consistent wavelength shift toward the red according to the law of redshifts. [Hugh Ross: *The Fingerprint of God (Recent Scientific Discoveries Reveal the Unmistakable Identity of the Creator)* (Kindle Locations 995-996). Reasons To Believe. Kindle Edition.]
- A surprise came in 1965 when scientists at Bell Laboratories—Arno Penzias and Robert Wilson—intending to measure radio emission from our galaxy, calibrated their antenna at 7 centimeters wavelength (where galactic emission is negligible) and found an unexpected excess of about 3 Kelvin in their antenna temperature. This excess did not vary with time of day, year, or direction. The indication was that the entire cosmos must be the source of the mysterious radiation. Amazingly, two cosmologists, Robert Dicke and James Peebles, had just determined that the radiation left over from the big bang would be observable at radio wavelengths of a few centimeters. What they predicted closely matched the excess temperature found by Penzias and Wilson. Since then, this match has been confirmed to much greater precision over a full range of wavelengths. [A. A. Penzias and R. W. Wilson, “A Measurement of Excess Antenna Temperature at 4080 Mc/s,” *Astrophysical Journal* 142 (July 1965): 419–21; R. H. Dicke et al., “Cosmic Black-Body Radiation,” *Astrophysical Journal* 142 (July 1965): 414–19.] [Rainer Weiss, “Measurements of the Cosmic Background Radiation,” *Annual Review of Astronomy and Astrophysics* 18 (September 1980): 489–535; George F. Smoot, “Comments and Summary on the Cosmic Background Radiation,” in *Proceedings of the International Astronomical Union Symposium No. 104*:

Early Evolution of the Universe and Its Present Structure, ed. G. O. Abell and G. Chincarini (Boston: Reidel, 1983), 153–58.] [Hugh Ross: *The Fingerprint of God (Recent Scientific Discoveries Reveal the Unmistakable Identity of the Creator)* (Kindle Locations 1018-1025). Reasons To Believe. Kindle Edition.]

- In the early 1960s, astronomical observations revealed that the helium content of our galaxy and of other galaxies was not only large (about 27 or 28 percent by mass), but also virtually constant from place to place. If this helium were produced by stars or by other current astrophysical sources, the helium content would vary considerably with location. [R. J. Tayler, “The Origin of the Elements,” in *Astrophysics*, ed. R. J. Tayler, W. Davidson, and J. V. Narlikar (New York: Benjamin, 1969), 4–16.] [Hugh Ross: *The Fingerprint of God (Recent Scientific Discoveries Reveal the Unmistakable Identity of the Creator)* (Kindle Locations 1042-1045). Reasons To Believe. Kindle Edition.]
- The very existence of natural radioactive isotopes is evidence that atomic elements are not infinitely old. [Hugh Ross: *The Fingerprint of God (Recent Scientific Discoveries Reveal the Unmistakable Identity of the Creator)* (Kindle Locations 1073-1074). Reasons To Believe. Kindle Edition.]

Chapter Ten: Oscillating Universe

- British physicist John Gribbin voiced the opinion of many: The biggest problem with the Big Bang theory of the origin of the Universe is philosophical—perhaps even theological—what was there before the bang? This problem alone was sufficient to give a great initial impetus to the Steady State theory; but with that theory now sadly in conflict with the observations, the best way round this initial difficulty is provided by a model in which the universe expands from a singularity, collapses back again, and repeats the cycle indefinitely. [John Gribbin, “Oscillating Universe Bounces Back,” *Nature* 259 (January 1, 1976): 15–16.] [Hugh Ross: *The Fingerprint of God (Recent Scientific Discoveries Reveal the Unmistakable Identity of the Creator)* (Kindle Locations 1197-1202). Reasons To Believe. Kindle Edition.]
- To review briefly, that evidence includes the following: 1. Cyclical expansion and contraction of the universe, if such did take place, would result in an

ever-increasing radius, traceable backward to a first cycle. 2. The observed density of the universe appears to be at most only one-half of what is needed to force a collapse. 3. The density implied by the inflationary model will not force a collapse. 4. No physical mechanism is known that could realistically be expected to reverse a cosmic contraction. 5. Isotropic compression becomes violently unstable near the end of the collapse phase. 6. If the universe were to collapse, a bounce would be impossible because the universe is so entropic. [Hugh Ross: *The Fingerprint of God (Recent Scientific Discoveries Reveal the Unmistakable Identity of the Creator)* (Kindle Locations 1297-1305). Reasons To Believe. Kindle Edition.]

Chapter Eleven: Transcendence and Quantum Gravity

- As far back as 1973, Ed Tryon suggested that a quantum mechanical fluctuation in “the vacuum” created the universe. [Edward P. Tryon, “Is the Universe a Vacuum Fluctuation?” *Nature* 246 (December 14, 1973): 396–97.] [Hugh Ross: *The Fingerprint of God (Recent Scientific Discoveries Reveal the Unmistakable Identity of the Creator)* (Kindle Locations 1376-1377). Reasons To Believe. Kindle Edition.]
- As Pagels puts it: This unthinkable void converts itself into the plenum of existence—a necessary consequence of physical laws. Where are these laws written into that void? What “tells” the void that it is pregnant with a possible universe? It would seem that even the void is subject to law, a logic that exists prior to space and time. [Pagels, *Perfect Symmetry*, 347.] [Hugh Ross: *The Fingerprint of God (Recent Scientific Discoveries Reveal the Unmistakable Identity of the Creator)* (Kindle Locations 1385-1389). Reasons To Believe. Kindle Edition.]

Chapter Twelve: Design and The Anthropic Principle

- Now that limits and parameters for the universe can be calculated—some, directly measured—astronomers and physicists have begun to see a connection between these factors and the existence of life. They have found it impossible to hypothesize a universe containing life in which any one of the fundamental constants of physics or any of the several parameters of the universe is more than slightly different in one way or another. From this recognition arises the anthropic principle, which says that everything about

the universe tends toward man, toward making life possible and sustaining it. The first popularizer of the principle, American physicist John Wheeler, describes it in this way: “A life-giving factor lies at the centre of the whole machinery and design of the world.” [John A. Wheeler, foreword to *The Anthropic Cosmological Principle*, by John D. Barrow and Frank J. Tipler (New York: Oxford University Press, 1986), vii.] [Hugh Ross: *The Fingerprint of God (Recent Scientific Discoveries Reveal the Unmistakable Identity of the Creator)* (Kindle Locations 1464-1470). Reasons To Believe. Kindle Edition.]

- Of course, design in the natural world has been acknowledged since the beginning of recorded history. Divine design is the message of each of the several hundred creation accounts that form the basis of the world’s religions. The idea that the natural world was designed especially for mankind is the very bedrock of the Judaic, Greek, and Christian worldviews. Western philosophers of the post-Roman era went so far as to formalize a discipline called teleology—the study of the evidence for overall design and purpose in nature. [Marie-Louise Franz, *Patterns of Creativity Mirrored in Creation Myths* (Zurich: Spring, 1972); Albert R. Kitzhaber and Stoddard Malarkey, eds., *Myths, Fables, and Folktales* (New York: Holt, Rinehart, and Winston, 1974), 113–14.] [Hugh Ross: *The Fingerprint of God (Recent Scientific Discoveries Reveal the Unmistakable Identity of the Creator)* (Kindle Locations 1470-1474). Reasons To Believe. Kindle Edition.]
- It is not just the universe that bears evidence for design. The earth itself reveals such evidence. Frank Drake, Carl Sagan, and Iosef Shklovsky were among the first astronomers to concede this point in attempting to estimate the number of planets (in the universe) with environments favorable for life support. In the early 1960s they recognized that a certain kind of star with a planet just the right distance from that star would provide the necessary conditions for life. [I. S. Shklovskii and Carl Sagan, *Intelligent Life in the Universe* (San Francisco: Holden-Day, 1966), 343–50.] [Hugh Ross: *The Fingerprint of God (Recent Scientific Discoveries Reveal the Unmistakable Identity of the Creator)* (Kindle Locations 1633-1636). Reasons To Believe. Kindle Edition.]

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