
DEVELOPING AND STRENGTHENING BELIEF IN GOD I

First Cause (Cosmological) and Design (Teleological) Arguments

The cornerstone of Jewish belief is that God created the universe ex nihilo with the Torah as His Divine plan and that He continually guides and supervises His creation. Nevertheless, there are many people who do not share this belief, or at least question it. There is a need, therefore, to present a range of approaches to developing and strengthening belief in God. The traditional Jewish approach to belief in God is based on the Exodus from Egypt and *hashgachah pratit* (Divine Providence). These approaches are discussed in the Morasha classes on Passover, Torah M'Sinai, and Hashgachah Pratit. The goal of this series of classes is to present additional approaches to belief – those based on logic and science – to help strengthen one's belief in God.

Specifically, this series will present three arguments for the existence of God. The first class, after defining the aim of the series on the whole, will explore two deductive arguments for the existence of God, namely the First Cause or Cosmological Argument, and the Design or Teleological Argument.

The second class in the series will explore the inductive approach, focusing on the Moral Argument. In order to help students digest the logical force of the arguments presented, the series will conclude with an exploration of the decision making process.

In this first class we will explore the following questions:

- ∞ Where did the world come from?
- ∞ Does it make sense that the world always existed?
- ∞ What does modern science have to say about the subject?
- ∞ Does the design found in nature imply that there is a Divine Designer?
- ∞ Does the Theory of Evolution explain this phenomenon?

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SECTION I. INTRODUCTION: ASSUMPTIONS AND EXPECTATIONS

PART A. A MOOT POINT?

The most fundamental concept in Judaism is the belief in the existence of God, the Creator of the Universe and the Master of its destiny. For many people, the question of whether or not God exists is a moot point: either they believe or they don't. And for most of us this issue was decided long ago by our parents, our teachers, and our society. It is not an issue at the forefront of our thought. We were either raised with religious belief or not.

Many people identify with the words of Huckleberry Finn, written by Mark Twain: *We had the sky, up there, all speckled with stars, and we used to lay on our backs and look up at them, and discuss about whether they was made, or only just happened.*

1. Max Anteby, *The Jewish Theory of Everything, Ch. 1 – God is in the eye of the beholder.*

On April 12, 1961, a young Russian cosmonaut stepped in front of the cameras, as he was about to board his spacecraft, Vostok 1, for what was going to be man's first voyage into outer space. Yuri Gagarin announced, "Now I go to meet nature face to face in an unprecedented encounter." For the next several hours, Gagarin encountered nature in a way that no man had done before, far beyond the reaches of the clouds, to a place bordering on the infinite. He had an awesome responsibility to chronicle for mankind what existed outside the Earth's realm and man's control.

Upon his return to Earth he remarked, "Now I know that God does not exist, because I was there and I didn't see him."

Less than one year later, John H. Glenn entered his spacecraft, Freedom 7, in America's attempt to beat the Russians in the race to space. He brought a Bible along with him. As he peered through the small window of his capsule, he looked out on the enormity of the universe and on the delicate fragility of our own Earth. He felt the presence of the "Hand of Almighty God" as he recited from the first chapter of Genesis.

Two men, with identical experiences, unprejudiced by anything that had gone before them. One saw God, the other denied His existence.

People today are in a position to re-evaluate their beliefs and deliberately choose those they find most compelling. This has led, over the last three hundred years or so, to the questioning of basic assumptions about religion. In particular, science has challenged many of the claims made in the name of Western religion about God. Many inheritors of this tradition simply assume that science has all the answers, that there is no need for religion anymore.

In this class we will endeavor to make the case for God and to show that far from being refuted by science, the religious claim to the existence of a Creator is actually supported by science. By examining three classical arguments for God's existence, we will find that belief in God can be seen as rational, intuitive, and even scientific. The class is structured by first presenting the argument for each approach, then presenting objections to each argument, followed by scientific support for the argument as well as rebuttals against the objections.

PART B. THE DISCLAIMER

But before we start – a disclaimer. What we present here is not absolute proof. Judaism maintains as a fundamental belief that human beings have free will. The choice whether or not to believe in God will always be there. God will not force our hand; He wants us to choose to believe in Him.

1. Rabbi Shlomo Wolbe, *Bein Sheshet L'Asor*, p. 291 – Proofs do not make us believe in God.

It is possible to prove that $2 + 2 = 4$ in an absolute way, but there is no such proof as to the existence of God. All the thousands of proofs still leave within man's hands the free will to believe or not to believe. Belief is built internally [i.e. by the individual's deliberate choice].

אפשר להוכיח כי $4 = 2 + 2$ בצורה מוכרחת...ראיה
כזאת על מציאות הבורא – אין לנו. כל אלפי הראיות
משאירות בידי האדם את הבחירה להאמין או לא
להאמין. אמונה נבנית בלב.

Since “belief is built internally,” the specifically Jewish approach to belief therefore focuses neither on logical arguments nor scientific proofs. Rather, Jewish belief in God is based on the awareness of His control over nature and history as manifest by the Exodus from Egypt. Please refer to the Ner Le'Elef classes on Passover, Torah M'Sinai, and Hashgachah Pratit.

Nevertheless, we will attempt to show that there are indeed compelling logical and scientific reasons to choose to believe in God.

KEY THEMES OF SECTION I.

- ☞ Belief in the existence of God, or in the ability of science to disprove it, is usually taken for granted; our upbringing prejudices our beliefs. Nevertheless, we have the freedom to choose what to believe in – even God will not force our hand. Therefore, we will examine the evidence in favor of belief in God while at the same time realizing that ultimately the decision is ours alone to make.

SECTION II. THE FIRST CAUSE OR COSMOLOGICAL ARGUMENT

*The physical universe is finite, having a beginning and an end.
Nothing finite creates itself, therefore it has a creator.
We call the creator of the world “God.”*

PART A. THE ARGUMENT

1. William Lane Craig, *Does God Exist?*, www.reasonablefaith.org – The illogic of an eternal universe gives rise to the Cosmological Argument.

Have you ever asked yourself where the universe came from? Why everything exists instead of just nothing? Typically atheists have said the universe is just eternal, and that's all. But surely this is unreasonable. Just think about it a minute. If the universe never had a beginning, that means that the number of past events in the history of the universe is infinite. But mathematicians recognize that the existence of an actually infinite number of things leads to self-contradictions. For example, what is

infinity minus infinity? Well, mathematically, you get self-contradictory answers. This shows that infinity [as applied to the age of the universe] is just an idea in your mind, not something that exists in reality. David Hilbert, perhaps the greatest mathematician of the twentieth century, states, “The infinite is nowhere to be found in reality. It neither exists in nature nor provides a legitimate basis for rational thought. The role that remains for the infinite to play is solely that of an idea.” But that entails that since past events are not just ideas, but are real, the number of past events must be finite. Therefore, the series of past events can’t go back forever; rather the universe must have begun to exist.

We can summarize our (Cosmological) argument thus far as follows:

1. Whatever begins to exist has a cause.
2. The universe began to exist.
3. Therefore, the universe has a cause.

Given the truth of the two premises, the conclusion necessarily follows.

2. **Meir Schiller, *The Road Back*, pp. 127-127 – Jewish sources for the Cosmological Argument.**

Rabbi Saadiah Gaon of 10th century Babylonia was probably the first Jewish thinker to present the Cosmological Argument in coherent form. In his famous work of Jewish philosophy, *Sefer Emunos Ve’Deos* (The Book of Beliefs and Opinions), he spelled out the basics of this argument when he wrote that all the physical world which we perceive was at one time non-existent; it came into being from nothing; therefore there must be a Prime Cause which brought about the existence of material things. Maimonides (Rambam) in his famous Guide for the Perplexed also uses this reasoning and broadens it to include the phenomenon of motion, which is always produced by an earlier motion, leading us eventually back to a Prime Mover.

3. **Rambam, *Hilchot Yesodei HaTorah (Laws of the Fundamentals of Torah) 1:1-3 – The finite, physical world depends for its existence on the reality of a Being that stands outside this world as the source of its existence.***

The foundation of foundations and the pillar of wisdom is the knowledge that there is something [namely God] that existed before anything else did and that He created everything that there is. Everything in the heavens, on the ground, and in between exists only because of the fact that He created them.

Would it be entertained that the Creator did not exist, then nothing else would either, for nothing can exist independently of the Creator. Furthermore, if everything ceased to exist, the Creator alone would still exist and would not have ceased to exist along with everything else. All things in Creation are dependent upon the Creator for their continued existence, but He does not need any of them [for His continued existence]. Therefore, the reality of His existence is not like the reality of the existence of any creation.

יסוד היסודות ועמוד החכמות לידע שיש שם מצוי ראשון, והוא ממציא כל נמצא, וכל הנמצאים משמים וארץ ומה שביניהם לא נמצאו אלא מאמתת המצאו.

ואם יעלה על הדעת שהוא אינו מצוי אין דבר אחר יכול להמצאות. ואם יעלה על הדעת שאין כל הנמצאים מלבדו מצויים הוא לבדו יהיה מצוי, ולא יבטל הוא לבטולם, שכל הנמצאים צריכין לו והוא ברוך הוא אינו צריך להם ולא לאחד מהם, לפיכך אין אמתתו כאמתת אחד מהם.

PART B. OBJECTIONS

1. **Edward Robert Harrison, *Cosmology: The Science of the Universe*, Cambridge University Press, Cambridge, 2000, pp. 30, 323 – From Aristotle to Einstein, the prevalent Theory of Cosmology assumed a static, unchanging, and therefore eternal universe.**

Aristotle's system was a spatially finite universe in a steady state; it had existed unchanged through eternity, and its perfect motions had no beginning or end.

Until the 20th century everybody believed that the universe is naturally static: not expanding and not contracting. Even Albert Einstein, after the discovery of general relativity, continued to hold this belief for several years.

2. **Ibid. p. 273 – Einstein even tweaked his equations to make them conform to the assumption that the world was uniform, static (not expanding), and eternal.**

Einstein's universe was uniform: it contained uniformly distributed matter and had uniformly curved spherical space. The main feature of Einstein's model of the universe was its static nature; it was unchanging, neither expanding nor collapsing ... To conform with this belief, Einstein introduces a cosmological constant into the Theory of General Relativity. The cosmological constant is equivalent to a repulsive force that opposes the force of gravity.

PART C. SCIENTIFIC SUPPORT OF THE FIRST CAUSE ARGUMENT

The scientific field of cosmology, the study of the origin of the universe, has put forward three possible descriptions of the world:

1. **The Static State Model:** the universe and all the matter in it has always existed.
2. **The Expanding Universe Model (Big Bang Theory):** the universe began with an explosion and continues to expand.
3. **The Oscillating Universe Model (Big Crunch Theory):** the universe expands with an explosion, then contracts, and then explodes and contracts in infinite cycles.

Of these three models, the Static Universe Model supports the idea that the world is eternal and challenges the notion that it was created by God. On the other hand, the Expanding Universe Model supports the idea of a created world and a Creator. The Oscillating Model neither supports nor contradicts either approach: the oscillating pattern may have had a beginning or it may be eternal. As we will see below, since 1925 most research in cosmology supports the Big Bang Expanding Universe Model, which supports the notion of a created universe.

1. **Dr. Jonathan Halliwell, Professor at MIT's Center of Theoretical Physics – Triumph of the Expanding Universe Model.**

The idea of an explosive birth has steadily and successfully battled other theories concerning the origin of the universe.

The story of how science has arrived at the conclusion that the Big Bang is the most plausible model for the origin of the universe, with all that implies about the existence of a Creator, is told by a series of discoveries in the 20th century.

Einstein's Theory of Relativity predicted in a mathematical sense that the universe should be expanding. The strongest empirical support for this thesis was discovered in 1925 by an American astronomer named Edwin Hubble.

i) Red Shift

1. Scientific background.

To understand Red Shift, think of a passing ambulance. The sound of the siren changes as the ambulance goes by, the pitch getting increasingly higher as the ambulance approaches, then getting lower once it passes you by. This is because sound waves are compressed as the ambulance moves toward you, and they are stretched as it moves away.

Light waves work the same way, but instead of sounding different, the light looks different. In the visible light range, red light at one end of the spectrum is made by longer waves than the blue light at the opposite end. As an object moves away from the Earth, the light waves are stretched, since they have farther to travel as the object moves. This stretching of light waves produces a “red shift” as the object’s movement away from us causes lines in the spectrum to appear closer to the longer, red end of the visible range than would be expected if the object were not moving at all. In turning their telescopes to distant galaxies, scientists noticed that they produced a red shift.

2. Lawrence Kelemen, *Permission to Believe*, p. 37 – The phenomenon of Red Shift demonstrates the expansion of the universe.

In 1925, the American astronomer Edwin Hubble dealt the static model of the universe a fatal blow. Using what was then the largest telescope in the world, Hubble revealed that every galaxy within 100 million light years (9.5×10^{17} km) of the Earth was receding. Einstein tenaciously refused to acknowledge Hubble’s work. The German genius continued teaching the static model for five more years, until, at Hubble’s request, he traveled from Berlin to Pasadena to personally examine the evidence. At the trip’s conclusion, Einstein reluctantly admitted, “New observations by Hubble ... make it appear likely that the general structure of the universe is not static.”

ii) Residual Radiation of the Big Bang or the Cosmic Microwave Background Radiation

1. Scientific background.

Scientists predicted that if there had been a Big Bang then it should have produced a Big Echo, as it were. The theory was that if all the matter in the entire universe had at the beginning been compressed into a much smaller space, such a universe could only have existed as an extremely hot plasma. As the universe expanded it also cooled, but some residual of that original heat should still exist uniformly throughout the universe in the form of a weak radiation.

2. Big Bang or Steady State? The American Institute of Physics, Center for History of Physics’ website: www.aip.org – The Big Bang Theory predicted the existence of a residual radiation from the initial explosion.

In a 1948 paper, [George] Gamow had argued that the Big Bang universe would at first be dominated by radiation – a raging sea of energy. As this expanded the energy would mostly be converted to matter. Alpher and Herman predicted that a remnant of the radiation would remain – a cosmic background radiation permeating all space. As the universe expanded this would cool. Radiation that had initially been far more than white-hot would by now have very low energy. They predicted the temperature of the universe now should be around 5 degrees Kelvin, barely above absolute zero.

3. **Tests of the Big Bang – The CMB (Cosmic Microwave Background Radiation), NASA’s website: <http://map.gsfc.nasa.gov/> – The inadvertent discovery of the echo of the Big Bang.**

The existence of the CMB radiation was first predicted by Ralph Alpher, Robert Herman, and George Gamow in 1948, as part of their work on Big Bang Nucleosynthesis. It was first observed inadvertently in 1965 by Arno Penzias and Robert Wilson at the Bell Telephone Laboratories in Murray Hill, New Jersey. The radiation was acting as a source of excess noise in a radio receiver they were building.

4. **Big Bang or Steady State? The American Institute of Physics, Center for History of Physics’ website: www.aip.org – Discovery of CMB spells the death knell for the Steady-State Theory of the universe.**

Penzias and Wilson had mixed feelings about the theoretical fallout from their discovery. Wilson, who had studied cosmology with Hoyle, later recalled that he “very much liked the Steady State universe. Philosophically, I still sort of like it. I think Arno and I both felt that it was nice to have one explanation, but that there may well have been others.” Few astrophysicists shared Wilson’s reservations. Eager to bury the Steady State Theory, already largely discredited by surveys of radio sources, they quickly described Penzias and Wilson’s observation as the deathblow to Steady State Theory.

iii) Collapse of the Big Crunch Theory

1. **What is the Ultimate Fate of the Universe? NASA’s website: <http://map.gsfc.nasa.gov/> – Whether or not the universe will collapse depends on its density.**

The evolution of the universe is determined by a struggle between the momentum of expansion and the pull (or push!) of gravity. The current rate of expansion is measured by the Hubble Constant, while the strength of gravity depends on the density and pressure of the matter in the universe. If the pressure of the matter is low, as is the case with most forms of matter we know of, then the fate of the universe is governed by the density.

If the density of the universe is less than the critical density, then the universe will expand forever ... Gravity might slow the expansion rate down over time, but for densities below the critical density, there isn’t enough gravitational pull from the material to ever stop or reverse the outward expansion. This is also known as the “Big Chill” or “Big Freeze” because the universe will slowly cool as it expands until eventually it is unable to sustain any life.

If the density of the universe is greater than the critical density, then gravity will eventually win and the universe will collapse back on itself, the so-called “Big Crunch.” In this universe, there is sufficient mass in the universe to slow the expansion to a stop, and then eventually reverse it.

Recent observations of distant supernova have suggested that the expansion of the universe is actually accelerating or speeding up ...

2. **James Peebles, Making Sense of Modern Cosmology, Scientific American, January 2001 – A summary of the case for the Expanding Universe Model.**

Over the past 70 years we have gathered abundant evidence that our universe is expanding and cooling.

1. First, the light from distant galaxies is shifted toward the red, as it should be if space is expanding and galaxies are pulled away from one another.

2. Second, a sea of thermal radiation fills space, as it should if space used to be denser and hotter.
3. Third, the universe contains large amounts of deuterium and helium, as it should if temperatures were once much higher.
4. Fourth, galaxies billions of years ago look distinctly younger, as they should if they are closer to the time when no galaxies existed.
5. Finally, the curvature of space-time seems to be related to the material content of the universe, as it should be if the universe is expanding according to the predictions of Einstein's gravity theory, the general Theory of Relativity.

That the universe is expanding and cooling is the essence of the Big Bang Theory. You will notice I have said nothing about an “explosion” – the Big Bang Theory describes how our universe is evolving, not how it began. Cosmologists are still scratching their heads as evidence continues to mount that our universe is unlike anything we imagined only a few years ago: the universal expansion is accelerating rather than slowing down. Some mysterious, repulsive “dark energy” seems to fuel the acceleration, overpowering the tendency of the expansion to decelerate. But scientists are not sure what this dark energy is.

iv) Implications of Modern Cosmology

1. **The Expanding Universe, The American Institute of Physics, Center for History of Physics’ website: www.aip.org – Discovery of the Big Bang forced the scientific community to rethink its position.**

Cosmologists recognized at once that an expanding universe means that in the far future the galaxies will be spread much farther apart. Looking back, long ago the universe must have been far denser. Did time itself have a beginning?

Hubble’s few measurements were enough to persuade the world’s best scientists to take up a radically new view of the nature, the origin, and the fate of the universe. Perhaps scientists could take up this view so quickly because quantum and relativity theory had prepared them for remarkable revelations. The recognition that the universe is expanding was no less revolutionary – the culmination of a truly exceptional period in the history of science.

2. **Stephen Hawking, A Brief History of Time, Bantam Books, 1998 – The theological implication of a world with a beginning.**

Many people do not like the idea that time has a beginning, probably because it smacks of Divine Intervention; nonetheless the present evidence suggests that the universe will probably expand forever.

3. **Boston Sunday Globe, January 14, 1990 – Reporting the 1990 meeting of the American Astronomical Society: scientists affirm Genesis.**

Professor John Mathers of Columbia University presented the most dramatic support ever for the “open” universe. The meeting’s chairman Dr. Geoffrey Burbidge made the following remark, “It seems clear that the audience is in favor of the book of Genesis – at least the first verse or so, which seems to be confirmed.”

4. **Dr. Robert Jastrow, Director of the NASA's Goddard Center for Space Studies 1961-1981, Have Astronomers Found God? New York Times Magazine, June 25, 1978 – Science confirms what theologians have always believed.**

This is an exceedingly strange development, unexpected by all but the theologians. They have always accepted the word of the Bible: In the beginning God created heaven and earth ... For the scientist who has lived by his faith in the power of his reason, the story ends like a bad dream. He has scaled the mountain of ignorance; he is about to conquer the highest peak, as he pulls himself over the final rock, he is greeted by a band of theologians who have been sitting there for centuries.

KEY THEMES OF SECTION II.

- ☞ The Cosmological Argument for the existence of God reasons from a basic fact about our world: it is finite, having a beginning and an end. Since nothing creates itself, there must be an infinite Creator who brought the world into being.
- ☞ Despite this logic, many have claimed that the world has simply always been here, and indeed science presumed as much until late in the 20th century. However, with the recent discoveries made in cosmology, it appears that the scientific basis for the theory that the world is eternal has been seriously called into question.
- ☞ Science does not prove that God exists and it never will, but scientific thinking on the origin of the universe has never been so close to the claims that theologians have been making all along: that God created the world.

SECTION III. THE ARGUMENT FROM DESIGN OR TELEOLOGICAL ARGUMENT

The universe exhibits evidence of orderliness or design that is antithetical to randomness or chance occurrence. This evidence is taken as a proof of the existence of an Intelligent Designer of the world.

The Teleological Argument (from the Greek word *telos*, meaning goal) is perhaps the oldest argument ever put forth in favor of the existence of God. According to Jewish sources it was first developed by none other than Avraham (Abraham). The Talmud also presents this argument in the name of some of the most famous Sages of Jewish history. Yet, starting with Rabbeinu Bachya ibn Pakuda in the 11th century, Jewish philosophers sought to give formal philosophical language to the ideas expressed allegorically by the Midrash and Talmud. Prominent medieval Christian and Islamic thinkers such as Thomas Aquinas and Averroes also advanced this argument, and it continues to be popular today.

PART A. THE ARGUMENT

Although there are variations of the Argument from Design for the existence of God, two of the most basic are:

1. **The Divine Watchmaker Argument:** The analogy of the watchmaker posits that any object that demonstrates complexity and purpose, such as a watch, implies a designer. Thus, the world, which manifests a complex and purposeful order, must have a Designer.
2. **The Reliability of Order Argument:** The very assumption that an objective “rational scientific order”

exists in the world, in contrast to chaos, assumes the existence of a Divine Being responsible for establishing that order.

i) The Divine Watchmaker Argument

1. Bereishit (Genesis) Rabbah 39:1 – Avraham looks at the world and realizes that the order he sees is a sign of intelligent planning.

It is like a man who was traveling from place to place when he saw a mansion all lit up. He wondered, “Is it conceivable that the mansion is without a caretaker?” Thereupon, the owner of the mansion appeared to him and said, “I am the owner of this mansion and its caretaker.”

Similarly, because Avraham our father wondered, “Is it conceivable that the world be without a caretaker?” therefore, the Holy One, Blessed be He, appeared to him and said, “I am the Master of the universe and its Caretaker.”

אמר רבי יצחק משל לאחד שהיה עובר ממקום למקום, וראה בירה אחת דולקת אמר תאמר שהבירה זו בלא מנהיג, הציץ עליו בעל הבירה, אמר לו אני הוא בעל הבירה,

כך לפי שהיה אבינו אברהם אומר תאמר שהעולם הזה בלא מנהיג, הציץ עליו הקב"ה ואמר לו אני הוא בעל העולם.

2. Otzar Midrashim, Temurah 7 – Everything has a creator; the world is no different.

A heretic once asked Rabbi Akiva, “Who created the world?” Rabbi Akiva answered, “The Holy One, Blessed be He.” The heretic said, “Show me clear proof” ... Rabbi Akiva asked, “Who wove your shirt?” The heretic replied, “A weaver, of course!” Rabbi Akiva said, “I don’t believe you. Prove it to me.” The heretic answered, “What’s there to prove? Don’t you know that it was a weaver?” “And don’t you know that God made His world?”

The heretic left and Rabbi Akiva then said to his students, “Just as a building testifies to the existence of the builder, and a garment testifies to the existence of the weaver ... so too the world testifies to the existence of the Creator.”

ומעשה שבה מין ואמר לר' עקיבא העוה"ז מי בראו א"ל הקב"ה, א"ל הראיני דבר ברור, א"ל למחר תבא אלי, למחר בא אצלו א"ל מה אתה לובש, א"ל בגד, א"ל מי עשאו, א"ל האורג, א"ל איני מאמינך הראיני דבר ברור, א"ל ומה אראה לך ואין אתה יודע שהאורג עשאו, א"ל ואתה אינך יודע שהקב"ה ברא את עולמו,

נפטר אותו המין, אמרו לו תלמידיו מה הדבר ברור, א"ל בניי כשם שהבית מודיע על הבנאי והבגד מודיע על האורג והדלת על הנגר, כך העולם מודיע על הקב"ה שהוא בראו

3. Rabbeinu Bachya, Chovot HaLevavot (Duties of the Heart) 1:6 – Straightforward logic dictates that a design implies a designer, whether man-made or not.

There are those who say that the world came into existence by chance, without a Creator Who caused and formed it. I wonder how any rational person in a normal state of mind can entertain such a notion. If one holding such an opinion would hear a person expressing a similar view in

ויש בני אדם, שאמרו, שהעולם נהיה במקרה מבלי בורא שהתחילו ויוצר שיצרו. ומן התימה בעיני, איך תעלה בדעת מדבר, בעודנו בבריאותו, כמחשבה הזאת. ואלו היה בעל המאמר הזה שומע אדם, שיאמר כמאמרו בגלגל אחד של מים, שהוא מתגלגל להשקות חלקה אחת של שדה או גנה, וחושב, כי זה נתקן מבלי

regard to a water-wheel that revolves in order to irrigate a portion of a field or garden, and were to say that he thinks it had been set up without any intention on the part of an engineer who labored to assemble and install it, using all his tools so as to obtain this useful result, the one listening would be astonished, and consider the man who made such a statement extremely foolish! He would promptly charge him with lying and would reject his assertion. Now, if such a statement is rejected in regard to a small and insignificant wheel ... how can anyone permit himself to harbor such a thought concerning the immense sphere that encompasses the whole Earth?

כוונת אומן, שטרח בחבורו והרכבתו ושם כל כלי מכליו לעומת התועלת, היה לו להפליא ולהגדיל הרבה עליו, ולחשוב אותו בתכלית הסכלות וימהר להכזיבו ולדחות מאמרו. וכיון שידחה המאמר הזה בגלגל קטן ופחות ונבזה, שנעשה בתחבולה קטנה לתקנת חלקה קטנה מהארץ, איך יתיר לעצמו לחשב כמחשבה הזאת בגלגל הגדול הסובב את כל הארץ וכל אשר עליה מן הברואים, והוא בחכמה, תקצרנה דעות כל בשר ושכלי המדברים להשיג הויתנה, והוא מוכן לתועלת כל הארץ וכל אשר עליה. ואיך יוכל לומר עליו שנהיה מבלי כוונת מכוון ומחשבת חכם בעל יכולת.

A similar thesis was expressed by William Paley (British philosopher, 1743-1805) using the analogy of finding a watch in a field. This came to be known as the “Divine Watchmaker” analogy.

ii) The Reliability of Order Argument

All of science is built upon the assumption that there are unchanging laws that govern how the physical world operates, and that these laws can be discovered by man. From the perspective of the atheist there is no reason to expect this. Chaos is just as likely as order. Therefore, aside from the actual order in the world, some view the very assumption that there should be order in the world as a proof of God.

1. Meyer Schiller, *The Road Back*, p. 133 – Relying on natural order is a tacit belief in God.

Is there any reason to assume the rationality of the universe, that reality should follow fixed laws based on unchanging mathematics? Clearly, if the world were not governed by an ultimately rational Being, then we would have no reason to trust things physical. However, we all do just that ... everyone trusts the world, and therefore, however unknowingly, trusts its God.

In his later years, Albert Einstein recognized the underlying assumption of all science:

2. Albert Einstein, *Out of My Later Years, Science and Religion*, Secaucus, Citadel Press, 1956, p. 26 – The intuitive feeling that the world is ordered, and that therefore its order is discoverable, itself stems from a religious sensibility.

... Those who are thoroughly imbued with the aspiration toward truth and understanding can only create Science. This source of feeling, however, springs from the sphere of religion. To this there also belongs faith in the possibility that the regulations valid for the world of existence are rational, that is, comprehensible to reason. Without the belief in the uniformity of nature, no theoretical formula of universal character could be established. You find it surprising that I think of the comprehensibility of the world ... as a miracle or eternal mystery. But surely, a priori, one should expect the world to be chaotic, not to be grasped by thought in any way.

PART B. OBJECTIONS

i) Neo-Darwinian Theory

As can be seen in the quotes above, the Teleological Argument was advanced to counter the claims of those who believed that the universe was eternal and not created. We dealt more directly with that claim when we discussed the Cosmological Argument. More recently, though, the Teleological Argument has been challenged by those who believe in the Theory of Evolution, one of the most prominent advocates today being Professor Richard Dawkins.

1. **Richard Dawkins, *The Improbability of God*, *Free Inquiry Magazine*, Vol. 18, #3**

[The Teleological Argument] is an argument that nearly all thoughtful and sensitive people discover for themselves at some stage in their childhood. Throughout most of history it must have seemed utterly convincing, self-evidently true. And yet, as the result of one of the most astonishing intellectual revolutions in history, we now know that it is wrong, or at least superfluous. We now know that the order and apparent purposefulness of the living world has come about through an entirely different process, a process that works without the need for any designer and one that is a consequence of basically very simple laws of physics. This is the process of Evolution by Natural Selection, discovered by Charles Darwin and, independently, by Alfred Russel Wallace.

ii) The Skepticism of David Hume

The Scottish philosopher, David Hume (1711-1776), presented formal logical objections to both the Cosmological and Teleological Arguments. We present here one of the most common-sense objections that he raised:

1. **David Hume, *Dialogues on Natural Religion*, Part II, Dialogue 44 – The Teleological Argument is based on a weak analogy between man-made order and the order found in the natural world.**

Look around the world: Contemplate the whole and every part of it. You will find it to be nothing but one great machine, subdivided into an infinite number of lesser machines ... All these various machines, and even their most minute parts, are adjusted to each other with an accuracy which ravishes into admiration all men who have ever contemplated them. The curious adapting of means to ends, exceeds the productions of human contrivance; of human design, thought, wisdom, and intelligence. Since, therefore the effects resemble each other, we are led to infer, by all the rules of analogy, that the causes also resemble; and that the Author of nature is somewhat similar to the mind of man; though possessed of much larger faculties, proportioned to the grandeur of the work, which [H]e has executed.

PART C. SCIENTIFIC SUPPORT

i) Irreducible Complexity

The world comprises separate, interacting parts, which work together to fulfill a function whose reality is greater than simply the sum of the parts and hence shows design.

1. **Michael Behe, Darwin's Black Box, p. 42 – The mousetrap as a classic analogy of irreducible complexity.**

A mousetrap consists of:

1. a flat wooden platform to act as a base;
2. a metal hammer, which does the actual job of crushing the little mouse;
3. a spring with extended ends to press against the platform and the hammer when the trap is charged;
4. a sensitive catch that releases when slight pressure is applied;
5. a metal bar that connects to the catch and holds the hammer back when the trap is charged (there are also assorted staples to hold the system together).

Which part could be missing and still allow you to catch a mouse? If the wooden base were gone, there would be no platform for attaching the other components. If the hammer were gone, the mouse could dance all night on the platform without becoming pinned to the wooden base. If there were no spring, the hammer and platform would jangle loosely, and again the rodent would be unimpeded. If there were no catch or metal holding bar, then the spring would snap the hammer shut as soon as you let go of it ...

2. **Dr. George Marshall, Sir Jules Thorn Lecturer in Ophthalmic Science at Glasgow University – The complexity of the eye makes Evolutionary Theory highly questionable.**

The more I study the human eye, the harder it is to believe that it evolved. Most people see the miracle of sight. I see a miracle of complexity on viewing things at 100,000 times magnification. It is the perfection of this complexity that causes me to balk at Evolutionary Theory. The retina is probably the most complicated tissue in the whole body. Millions of nerve cells interconnect in a fantastic number of ways to form a miniature "brain." Much of what the photoreceptors "see" is interpreted and processed by the retina long before it enters the brain.

3. **Charles Darwin, The Origin of Species, J.M. Dent & Sons, London, 1971, p. 167 – Even Darwin himself had to admit that the complexity of the eye challenged his theories.**

To suppose that the eye with all its inimitable contrivances for adjusting the focus to different distances, for admitting different amounts of light, and for the correction of spherical and chromatic aberration, could have been formed by natural selection, seems, I freely confess, absurd in the highest degree.

4. **Michael Denton, Evolution – A Theory in Crisis, Burnett Books, London, 1985, pp. 339-342 – The complexity of nature not only trumps Evolutionary Theory, it even disproves Hume's objection.**

It has only been over the past twenty years with the molecular biological revolution and with the advances in cybernetic and computer technology that Hume's criticism has been finally invalidated and the analogy between organisms and machines has at last become convincing. In opening up this extraordinary new world of living technology, biochemists have become fellow travelers with science fiction writers, explorers in a world of ultimate technology, wondering incredulously as new miracles of atomic engineering are continually brought to light in the course of their strange adventure into the microcosm of life. In every direction the biochemist gazes, as he journeys through this weird molecular labyrinth, he sees devices and appliances reminiscent of our 20th century world of advanced technology. In the atomic fabric of life we have found a reflection of our own technology. We have seen a world as artificial as our own and as familiar as if we have held up a mirror to our own machines.

The almost irresistible force of the analogy has completely undermined the complacent assumption, prevalent in biological circles over most of the past century, that the design hypothesis can be excluded on the grounds that the notion is fundamentally a metaphysical a priori concept and therefore scientifically unsound. On the contrary, the inference to design is a purely a posteriori induction based on a ruthlessly consistent application of the logic of analogy. The conclusion may have religious implications, but it does not depend on religious presuppositions ...

ii) The Chances of Evolution

Although we will present sources here that question the likelihood of spontaneous evolution, Judaism can subscribe to a God-directed evolution, as summarized in sub-section v. below.

1. **Sir Fred Hoyle, *The Intelligent Universe*, Michael Joseph: London, 1983, pp. 18-19 – The chances of Evolution producing even the most basic building blocks of life are likened to a tornado in a junkyard producing a 747.**

If you stir up simple nonorganic molecules like water, ammonia, methane, carbon dioxide and hydrogen cyanide with almost any form of intense energy, some of the molecules reassemble themselves into amino acid ... The building blocks of proteins can therefore be produced by natural means. But this is far from proving that life could have evolved in this way. No one has shown that the correct arrangements of amino acids, like the orderings in enzymes, can be produced by this method ... A junkyard contains all the bits and pieces of a Boeing 747, dismembered and in disarray. A whirlwind happens to blow through the yard. What is the chance that after its passage a fully assembled 747, ready to fly, will be found standing there? So small as to be negligible, even if a tornado were to blow through enough junkyards to fill the whole Universe.

2. **Sir Francis Crick, co-discoverer of DNA, *Life Itself*, New York, Simon and Schuster, 1981, p. 88 – It would take a “miracle” for life to evolve on Earth.**

An honest man, armed with all the knowledge available to us now, could only state that in some sense, the origin of life appears at the moment to be almost a miracle, so many are the conditions which would have had to have been satisfied to get it going.

3. **N. Gregoir Prigogine, A. Babbyabtz, *Physics Today* 25, 1972, pp. 23-28 – Life by chance is statistically impossible.**

The statistical probability that organic structures and the most precisely harmonized reactions that typify living organisms would be generated by accident is zero.

iii) Missing Links

1. **Charles Darwin, *On the Origin of Species*, 1859, Mentor, N.Y., 1963, pp. 158, 304 – The lack of transitional species is the biggest hole in Evolutionary Theory.**

One of the chief objections which might be justly argued against the views maintained in this volume ... one, namely the distinctness of specific forms, and their not being blended together by innumerable transition links, is a very obvious difficulty.

Why is not every geological formation and every stratum full of such intermediate links? Geology assuredly does not reveal any such finely graduated organic chain; and this, perhaps, is the most obvious and serious objection which can be urged against the theory. The explanation lies, as I believe, in the extreme imperfection of the geological record.

2. **Niles Eldridge, Director of The American Museum of Natural History, New York, in the N.Y. Times, November 4, 1980, p. C3 – The geological evidence predicted by Darwin's theory never materialized.**

The pattern in the fossil record that we were to find for the last hundred and twenty years [since Darwin's theory] does not exist.

iv) The Anthropic Principle: The Universe is Tailor-Made to Produce Life

1. **Nathan Aviezer, Bar Ilan University, The Anthropic Principle, Jewish Action, Spring 1999 – The basic assertions of the Anthropic Principle.**

In recent years, it has become clear to many scientists that the universe appears as if it were specifically designed for the existence and well-being of man. This phenomenon, which has attracted considerable scientific attention, has become known as the Anthropic Principle, from the Greek word *anthropis*, meaning "man."

The Anthropic Principle expresses itself in two ways: (1) very slight changes in the laws of nature would have made it impossible for life to exist, and (2) human life would not have been possible were it not for the occurrence in the past of a large number of highly improbable events.

2. **The Fine-Tuning of the Universe, www.2001principle.net – The laws of nature are fine-tuned to produce life, and thus the universe on the whole.**

According to growing numbers of scientists, the laws and constants of nature are so "finely-tuned," and so many "coincidences" have occurred to allow for the possibility of life, the universe must have come into existence through intentional planning and intelligence ... In a BBC science documentary, "The Anthropic Principle," some of the greatest scientific minds of our day describe the recent findings which compel this conclusion.

Dr. Dennis Scania, the distinguished head of Cambridge University Observatories:

If you change a little bit the laws of nature, or you change a little bit the constants of nature – like the charge on the electron – then the way the universe develops is so changed, it is very likely that intelligent life would not have been able to develop.

Dr. David D. Deutsch, Institute of Mathematics, Oxford University:

If we nudge one of these constants just a few percent in one direction, stars burn out within a million years of their formation, and there is no time for evolution. If we nudge it a few percent in the other direction, then no elements heavier than helium form. No carbon, no life. Not even any chemistry. No complexity at all.

Dr. Paul Davies, noted author and Professor of Theoretical Physics at Adelaide University:

The really amazing thing is not that life on Earth is balanced on a knife-edge, but that the entire universe is balanced on a knife-edge, and would be total chaos if any of the natural 'constants' were off even slightly. You see, even if you dismiss man as a chance happening, the fact remains that the universe seems unreasonably suited to the existence of life – almost contrived – you might say a 'put-up job.'

Besides the BBC video, the scientific establishment's most prestigious journals, and its most famous physicists and cosmologists, have all gone on record as recognizing the objective truth of the fine-tuning. The August '97 issue of *Science* (the most prestigious peer-reviewed scientific journal in the United States) featured an article entitled "Science and God: A Warming Trend?" Here is an excerpt:

The fact that the universe exhibits many features that foster organic life – such as precisely those physical constants that result in planets and long-lived stars – also has led some scientists to speculate that some Divine influence may be present.

In his best-selling book, *A Brief History of Time*, Stephen Hawking (perhaps the world's most famous cosmologist) refers to the phenomenon as "remarkable."

"The remarkable fact is that the values of these numbers (i.e. the constants of physics) seem to have been very finely adjusted to make possible the development of life. For example," Hawking writes, "if the electric charge of the electron had been only slightly different, stars would have been unable to burn hydrogen and helium, or else they would not have exploded. It seems clear that there are relatively few ranges of values for the numbers (for the constants) that would allow for development of any form of intelligent life. Most sets of values would give rise to universes that, although they might be very beautiful, would contain no one able to wonder at that beauty."

Hawking then goes on to say that he can appreciate taking this as possible evidence of "a Divine purpose in Creation and the choice of the laws of science (by God)" (ibid. p. 125).

v) A Word on Judaism and Evolution

Although Evolution does have its critics, as cited above, Judaism does not necessarily object to Evolution as long as certain conditions are met, as described below. For a thorough discussion, please see **Evolution: A Critique and Evaluation**, Ner Le'Elef, available at www.nerleef.com/booklets.htm

1. **Evolution: A Critique and Evaluation, Ner Le'Elef, Jerusalem, p. 87 – Judaism does not necessarily object to evolution.**

Judaism does not object to a concept of evolution per se, but requires certain conditions: We can show that the mainstream commentators do hold by some evolutionary development in the creation process. It is important to note that these commentators preceded Darwin and were merely giving an authentic interpretation of the Torah. The main point is that in the Creation, everything was created in potential on the first day. From that day on, things emerged in what can be termed in the broadest sense an evolutionary way.

There were only two exceptions to this, where the word **בריאה** (*briah*, a creation) is used, i.e. the transition from plant to animal life and the creation of the soul of man. We can show that even in the development of man there were evolutionary developments.

2. **Ibid. p. 87 – What would a Torah-true "Theory of Evolution" look like?**

What would a Torah-true "Theory of Evolution" look like? It would seem that seven primary conditions are required:

1. That the theory accommodates the fact that some things required a creation ex-nihilo.
2. That the first day not be regarded as more primitive than subsequent days; on the contrary – it was higher spiritually than the other days.

3. That all evolutionary developments be recognized as only taking place because of God's Providential input.
4. That the time taken be reconciled with the literal Biblical text.
5. That the creation process be regarded as the most perfect for the purposes for which the world was made. Although evolutionary developments can take place after the six days of Creation, these represent retrogressive steps. This does not mean that the world was created objectively perfect; on the contrary, there was a certain imperfection built into the Creation to allow for free choice and to allow man to partner with God in completing the Creation. But, what it does mean is that the world was completed to perfection for its designated task.
6. That the world and its entire species be regarded as essentially co-operative and not in competition. Even where one species lives off another, the latter is to be regarded as essentially serving the former. This is in opposition to Darwin's principle of the survival of the fittest, even after the many recent modifications to this principle. It is true that, other than man, at one level, species were produced essentially to reproduce. But this does not require that we evoke a principle of survival of the fittest, which implies that species are in competition and opposition with each other. The Da'at Tevunot says that the Creation with all its species is essentially in co-operation, and all of Creation combines to fulfill their common purpose. A leading micro-biologist, Lynn Margulis has proposed a system of the advancement of organisms by cooperation and symbiosis.
7. That man be regarded as the pinnacle of Creation, the purpose for which the Creation was made. In purely evolutionary terms, man may not be the best adapted, i.e. the most successful, to his environment; bacteria do a lot better.

KEY THEMES OF SECTION III.

- ☞ The Teleological Argument draws a simple line from the design we see in nature to the existence of a Divine Designer. Just as the complexity of a watch is indicative of an intelligent watchmaker, so too the complexity found in the natural world is a sign of God. While some have argued that this analogy is too simple, modern science has revealed that the complexity of nature far outshines the complexity of man-made objects.
- ☞ The only competing alternative to Divine Design is that of Evolutionary Theory, but the odds of even the most basic elements of life forming by chance are astronomically small. Evolution has also proved too insufficient a mechanism to account for the irreducible complexity found in such objects as the human eye, where the absence of any one of the parts offers no evolutionary advantage whatsoever. Other predictions of Evolutionary Theory have also failed, for example the lack in the fossil record of transitional stages between species that are supposed to have evolved one from the other.
- ☞ Although Evolution does have its critics, Judaism does not necessarily object, as long as certain conditions are met.
- ☞ Finally, the fine-tuning found within nature, the delicate balance needed to produce life and sustain the universe, indicates to us that the world has a Designer. Again, science seems to be confirming what theologians have claimed all along.

CLASS SUMMARY:

☞ WHERE DID THE UNIVERSE COME FROM?

Our universe is finite, having a beginning and an end. Since nothing finite creates itself, there must be an infinite source – something beyond the finite – that is the source for the universe. When we say the word “God” we are referring to this infinite source.

☞ DOES IT MAKE SENSE THAT THE WORLD ALWAYS EXISTED?

Many have claimed that the world has simply always been here, and indeed science presumed as much until late in the 20th century. However, with the recent discoveries made in cosmology, it appears that the scientific basis for the theory that the world is eternal has been seriously called into question.

☞ WHAT DOES MODERN SCIENCE HAVE TO SAY ABOUT THE SUBJECT?

Science does not prove that God exists, but scientific thinking on the origin of the universe has never been so close to the claims that theologians have been making all along – that God created the world.

☞ DOES THE DESIGN FOUND IN NATURE IMPLY THAT THERE IS A DIVINE DESIGNER?

Yes. Simply stated: just as the complexity of a watch is indicative of an intelligent watchmaker, so too the complexity found in the natural world is indicative of a Divine Designer. The fine-tuning found within nature, the delicate balance needed to produce life and sustain the universe, indicates to us that the world has a Designer.

☞ DOES THE THEORY OF EVOLUTION EXPLAIN THIS PHENOMENON?

The only competing alternative to Divine Design is that of Evolutionary Theory, but the odds of even the most basic elements of life forming by chance are astronomically small. Evolution has also proved too insufficient a mechanism to account for the complexity found in such objects as the human eye. Other predictions of Evolutionary Theory have also failed, such as the lack of the fossil record of transitional stages between species that are supposed to have evolved one from the other.