

Evidence of God from Contemporary Science & Philosophy

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Introduction

Some of the contents of this chapter are quite technical, but this is an unavoidable consequence of discussing the scientific and philosophical evidence for God. A less technical presentation could fall prey to criticisms about the probative nature of the evidence for God given below. If readers find this daunting, you may want to return to the summaries of the evidence given in another volume (the second layer of this web page). Despite the challenge, I would encourage readers to take a serious look at this evidence, because it not only enjoys the respect of a great number of scholars and scientists, but also because it comes from some of the 20th and 21st centuries' greatest scientific and philosophical minds.

The contemporary evidence for God – from philosophy, science, and the medical study of near death experiences is enormous. This book presents a good cross section of that evidence, but does not exhaust it. In this chapter we will discuss three principle areas of evidence for God:

1. The contemporary scientific evidence (including the Borde-Vilenkin-Guth Proof, the entropy evidence, and fine-tuning evidence at the Big Bang) – the First Topic.
2. Two contemporary philosophical proofs of God's existence (a contemporary Thomistic metaphysical proof and a Lonerganian proof – the Second Topic.
3. The transcendental attributes of God (perfect being, truth, love, justice/goodness, and beauty) – the Third Topic.
4. The discussion of evidence for God from medical studies of near death experiences will be deferred to Chapter 2 –which will look at the evidence for our transcendent soul (capable of surviving bodily death).

The Fourth Topic of this chapter will be concerned with six issues arising out of the scientific and philosophical evidence for God:

1. Can the existence of God be disproved?
2. If the evidence for God is so probative, why do we need faith?
3. If the scientific and philosophical evidence is so probative, why are some scientists atheists?
4. The Bible and science.
5. Evolution and Catholic teaching.
6. The possible existence of aliens.

First Topic

The Scientific Evidence of an Intelligent Creator

Introduction

There is a common misperception that science and faith are opposed – nothing could be further from the truth. Contemporary scientific evidence, as we shall see, favors the existence of God – it does not contradict it. Before considering this evidence, it is important to recognize that 40% of bench scientists are *declared* theists (believers in God).¹ Many of the scientists who did not declare may well be theists, but because of their positions in universities and labs, do not feel free to disclose it. Others who did not declare theism are agnostics – uncertain as to God’s existence – not atheists. Finally, a minority – albeit a vocal one – rejects God, but as will be seen below, they do not do so out of rational or scientific conviction (because it is impossible to disprove God – see the Fourth Topic below). Instead they do so for the same reasons as the general population -- emotion or free choice.

It is worth mentioning that five of the greatest minds in mathematics and physics – responsible for the two most comprehensive theories of the universe (the General Theory of Relativity and Quantum Theory) – were all declared theists. All of them, with the exception of Einstein, also believed in a *personal* God. Here are some of the declarations they made about their belief.

Albert Einstein (the father of the General Theory of Relativity – the comprehensive theory of the macroscopic universe), was perhaps the most cautious of these great thinkers. He viewed God as a principle of intelligibility and rationality – a superior mind -- stating it this way:

¹ Francis Collins, former Director of the Genome Project, notes two comprehensive surveys of bench scientists attesting to their belief over the last several decades. See Francis Collins 2007 *The Language of God: A Scientist Presents Evidence for Belief* (New York: Free Press) p. 107.

Certain it is that a conviction, akin to religious feeling, of the rationality and intelligibility of the world lies behind all scientific work of a higher order... This firm belief, a belief bound up with a deep feeling, *in a superior mind* that reveals itself in the world of experience, represents my conception of God.²

Though Einstein had a conviction, feeling, and belief about “a superior mind that reveals itself in the world of experience,” he did not believe in a personal God, and he does not comment on the status of a human soul. However, two of his colleagues (who developed the Quantum Theory – completing the scientific picture of the modern universe) did.

Max Planck (d 1947), was the originator of the quantum theory, which completely revolutionized our view of the microscopic world – the domain of atomic and subatomic fields and particles. He was not only convinced about the existence of God and the human soul, but also the veracity and importance of religion:

Religion is the link that binds man to God - resulting from the respectful humility before a supernatural power, to which all human life is subject and which controls our weal and woe.³

Planck manifests a genuine sense of “humble reverence” before “the supernatural power” -- indicating not only his prayerfulness but also his sense of being subject to an authority and providential control greater than that of physics or the human will.

Werner Heisenberg (d 1976), the father of the matrix formulation of quantum mechanics and the uncertainty principle, was a practicing Lutheran who believed in a transphysical soul and a transcendent domain to which we are called. When asked about whether he believed in a personal God by his colleague Wolfgang Pauli, he responded:

Can you, or anyone else, reach the central order of things, or events, whose existence seems beyond doubt, as directly as you can reach the soul of another human being? I am using the term 'soul' quite deliberately so as not to be misunderstood. If you would put the question like that, the answer is yes.⁴

He later indicated that faith goes beyond having a conviction *about* the existence of God and a soul, noting that faith entails trust which moves us to action:

Faith requires trust; we must believe in - not just about. If I have found faith, it means I have decided to do something and am willing to stake my life on it.⁵

² Einstein, Albert. 1954. *Ideas & Opinions*. Trans. Sonja Bargmann. (New York: Crown Publishers) p 262. Italics mine.

³ Raymond J. Seeger, "Planck, Physicist" in *The Journal of the American Scientific Affiliation*, 37 (December 1985): 232-233

⁴ Raymond J. Seeger, "Heisenberg: Thoughtful Christian" in *The Journal of the American Scientific Affiliation*, 37 (December 1985): 231-232

⁵ Ibid.

Sir Arthur Eddington (d 1944) was the astrophysicist responsible for the early astronomical confirmation of Einstein's General Theory of Relativity as well as other theories integral to the conception of the modern universe. In a classical work devoted to the integration of the General Theory of Relativity with Quantum Theory, he wrote a curious chapter called "A Defense of Mysticism" in which he said the following:

We all know that there are regions of the human spirit untrammelled by the world of physics. In the mystic sense of the creation around us, in the expression of art, in a yearning towards God, the soul grows upward and finds the fulfillment of something implanted in its nature. The sanction for this development is within us, a striving born with our consciousness or an Inner Light proceeding from a greater power than ours. Science can scarcely question this sanction, for the pursuit of science springs from a striving which the mind is impelled to follow, a questioning that will not be suppressed. Whether in the intellectual pursuits of science or in the mystical pursuits of the spirit, the light beckons ahead and the purpose surging in our nature responds.⁶

Clearly, Eddington believed not only in a transphysical spirit, but the presence of God to that human spirit, drawing it to ever greater heights not only of beauty, art, and the spiritual life, but science itself. He understood that if there were no transcendent horizon in the human spirit, we would never be able to ask a question – and certainly not a scientific question, because all such questioning requires that we be beyond the knowledge that we currently understand, implying the presence of a light greater than ours to beckon us ahead. That light is God.

Eddington intuitively recognized that the human spirit could not be reduced to the structures and constituents of physics, implying that our minds could not be reduced to our brains – or some derivative of artificial intelligence. These observations made the work of Kurt Gödel (d 1978) – one of the twentieth century's most prominent mathematicians and logicians, and colleague of Einstein's – incredibly relevant. In his two *Incompleteness Theorems*, he showed that the human capacity to understand the rules upon which any set of algorithms is founded, cannot be explained by the algorithms themselves. This shows that human beings (who are capable of knowing the rules upon which any set of algorithms is grounded) transcend not only rule-based thinking, but also any mechanism which is bound by such rule-based thinking (such as computers and even merely physical brains). This points, at least implicitly, to the existence of a *transphysical dimension* of human beings.⁷ The implications of Gödel's Incompleteness Theorems are consistent with his strong theistic convictions and belief in a soul. Unlike his friend, Albert Einstein, Gödel did believe in a personal God. He expressed his thoughts as follows:

Of course this supposes that there are many relationships which today's science and received wisdom haven't any inkling of. But I am convinced of this [the afterlife],

⁶ Eddington 1928, pp. 327-28.

⁷ The Gödel incompleteness theorems are quite valid today, and have been reconfigured by John Lucas and Roger Penrose – among others – implying the same result. This proof comports well with the evidence of a transphysical dimension of human beings from near death experiences (see Volume II, Chapter Three of this Trilogy) and the five transcendental desires (see below in this Chapter, and also Volume II, Chapter Two of this Trilogy).

independently of any theology. It is possible today to perceive, by *pure reasoning* that it is entirely consistent with known facts. If the world is rationally constructed and has meaning, then there must be such a thing [as an afterlife].⁸

If we assess the collective thought of the three greatest theoretical physicists, one of the greatest astrophysicists, and one of the greatest mathematicians and logicians of our age, it reveals a conviction about the reality of the transcendent domain arising out of (1) the rational essence of our universe, (2) the transphysical dimension of mathematical and scientific thought, and (3) the intelligibility of mathematics and logic itself. These are not the opinions of a few deluded men who are wishfully yearning for a comforting parent, but rather the best intellectual and intuitive conclusions from lives devoted to the highest dimensions of science, mathematics, and logic. If they believe that the rationality of our universe and the transphysical dimension of our minds warrant belief in God and a soul, then we may want to at least remain open to this prospect, and delve into their reasons for believing this. It should be noted that all of these thinkers, with the exception of Einstein, believed in a *personal God* who is concerned with each of us in both this world and the next. Planck was moved to humble reverence before God, Heisenberg to virtue, trust, and faith, Eddington to an experience of the mystical, and Gödel to a belief in an afterlife with a personal God.

I. The Big Bang

Monsignor Georges Lemaître, a Catholic priest, noted cosmologist, and colleague of Einstein's, discovered the Big Bang theory in 1927.⁹ Lemaître ingeniously solved the problem of how the recessional velocities of distant galaxies could be greater than those of nearer ones. The idea was really quite radical – so much so that Einstein, though impressed with Lemaître's mathematics, rejected it at first. Lemaître theorized that galaxies were not moving in fixed Euclidean space, but rather that the space between the galaxies was stretching and growing, which might be analogized by a balloon being inflated. Think for a moment about a balloon with many dots on it, and liken the elastic of the balloon to the spatial manifold (spatial field) and the dots on the balloon to galaxies. Now circle one of the dots on the balloon, and call it the Milky Way (our galaxy), and begin blowing up the balloon. Notice that every time you exhale into the balloon and stretch the elastic more, the farther dots from us expand more than the nearer dots. Why did the farther dots move farther away from us than the nearer dots? Because there was more space – more balloon -- between them and us (than between the nearer galaxies and us). So, Lemaître reasoned that the more space there was to stretch and grow, the more stretching and growing would occur, and the more stretching and growing that occurred, the greater the recessional velocity would be (distance a galaxy moves away from us per unit time).

Lemaître knew that Einstein's General Theory of Relativity allowed not only for the spatial field to have a variable geometry (such as a curved geometrical configuration surrounding dense fields of mass-energy), but also for space to stretch and grow like the expansion of a balloon. He showed with great mathematical precision that the expansion of the universe as a whole was the best explanation of the recessional velocities of distant galaxies, but his conclusion was so

⁸ Hao Wang, "A Logical Journey: From Gödel to Philosophy", 1996, pp. 104–105.

⁹ Mario Livio 2011.

radical that Einstein and others found it difficult to accept. Furthermore, it had the consequence that the universe may have had a beginning (a creation), which was a true departure from previous scientific assumptions. Why does Lemaitre's theory have such a consequence? If the universe truly is expanding as a whole (irrespective of whether it expands uniformly like a balloon or not) it must have been less expanded in the past, and even less expanded as we go further back into the past. Today there is only a finite distance between galaxies, and so we know that the universe could not have been expanding forever in the past. All of the points must have been arbitrarily close to one another at some time *in the finite past*. If the Big Bang¹⁰ marks the initial expansion of the universe, then it could be the *beginning* of the universe. We have very good evidence today that this event occurred about 13.8 billion years ago (plus or minus 100,000,000 years).

Nothing like this had ever been considered in the natural sciences before Fr. Lemaitre's theory. Aristotle and St. Thomas Aquinas believed that the evidence of reason could not establish a beginning of time, and so natural philosophy would have to assume the eternity of the universe. St. Thomas thought that the finitude of time in the universe could only be known through the revelation of God (requiring faith). Sir Isaac Newton made the same assumption, and so did his followers, right up to the time of Fr. Lemaitre. Though Lemaitre did not prove that the Big Bang was the beginning of the universe, his theory implied that it could be, and this radically changed the intellectual landscape (and horizon) of the natural sciences. Lemaitre put it this way:

We can compare space-time to an open, conic cup.
The bottom of the cup is the origin of atomic disintegration:
it is the first instant at the bottom of space-time, the now
which has no yesterday because, yesterday, there was no space.¹¹

Lemaitre's theory was first confirmed two years later by Edwin Hubble's survey of the heavens (at Mt. Wilson Observatory), in which he showed through a well-known technique called red-shifting that more distant galaxies are indeed moving away from our galaxy faster than those nearer to us. Hubble invited Einstein to Mt. Wilson to check the results which apparently caused him to change his mind. When Einstein and Lemaitre co-presented at a conference at Mt. Wilson in 1933, Einstein reputedly said "This is the most beautiful and satisfactory explanation of creation to which I have ever listened."¹² Since that time, Lemaitre's theory has been confirmed in a variety of different ways, making it one of the most comprehensive and rigorously established theories in contemporary cosmology.

After Hubble's confirmation through the redshifts detected in his survey of the heavens, Arno Penzias and Robert Wilson made another remarkable confirmation in 1965 through a very different approach. They inadvertently discovered a 2.7 degree Kelvin uniformly distributed radiation throughout the universe which could have occurred only at a very early, cosmic-wide

¹⁰ Fr. Georges Lemaitre did not use the term "Big Bang," but rather, "the Theory of the Primeval Atom." Sir Fred Hoyle (when he was in his atheistic phase) sneeringly dubbed Lemaitre's theory "the Big Bang" to trivialize and insult it.

¹¹ Lemaitre 1943 p 133.

¹² Topper 2013 p. 175 and also *New York Times* 2005 "Even Einstein Had His Days Off" in Opinion *New York Times* (www.nytimes.com/2005/01/02/opinion/02singh.html).

event (the Big Bang and its immediate aftermath).¹³ They received the Nobel Prize for this discovery in 1978.

The Big Bang was subsequently confirmed by data from the cosmic background explorer satellites (COBE) #1 and #2,¹⁴ the Wilkinson Microwave and Anisotropy Probe (WMAP),¹⁵ and very recently by the Planck satellite.¹⁶ These confirmations verify Fr. Lemaitre's general concept of the Big Bang, and add considerably more data to it – such as quantum gravity, inflationary theory, dark matter, and dark energy (described briefly below).

So what do physicists think happened 13.8 billion years ago? It seems that our universe took a quantum cosmological form in which all four forces (the electromagnetic force, the strong nuclear force, the weak force, and the gravitational force -- in a quantized form) were completely unified, and then exploded. At that moment the space-time manifold came into existence and energy emerged in it (in a fashion explicable by Einstein's General Theory of Relativity). The strong nuclear force separated from the electroweak force, and then the weak force separated from the electromagnetic force, which then moved through a Higgs field slowing it down to produce the rest mass of particles (such as protons and neutrons), making up the visible constituents of the universe. A plasma era ensued, followed by stellar nucleosynthesis and galactic formation, eventually giving rise to planets – and even some very special planets similar to the Earth.¹⁷

The observable universe appears to have approximately 10^{55} kilograms of visible matter, about five times more dark matter (25% of the universe)¹⁸ and considerably more dark energy (about 70% of the universe).¹⁹ The visible and dark matter is distributed in 10^{22} stars (and accompanying planets) within 10^{11} galaxies. The galaxies maintain their volume because of visible matter, dark matter, and a giant black hole in their centers. However, the space between

¹³ Penzias and Wilson. 1965 pp 419-421.

¹⁴ NASA Report on the Findings of the COBE Satellites. (<http://lambda.gsfc.nasa.gov/product/cobe/>).

¹⁵ NASA press conference with NASA Director, Charles Bennett on data from the WMAP Satellite 2008. www.space.com/scienceastronomy/map_discovery_030211.

¹⁶ NASA Press conferences on Planck Satellite 2013 (www.nasa.gov/planck) and (www.nasa.gov/mission_pages/planck/news/planck20130321.html).

¹⁷ The current estimate of such special planets in the Milky Way is approximately 40 billion according to researchers Erik Petigura and Geoffrey Marcy of the University of California, Berkeley, along with Andrew Howard of the University of Hawaii, using data from the Kepler Satellite (designed to detect planets in our galaxy and beyond) see NPR news report, November 2013 “Just How Many Earth-like Planets are Out There?” (www.npr.org/2013/11/05/242991030/galaxy-quest-just-how-many-earth-like-planets-are-out-there). Does life exist on any of these planets? Nobody knows. There is a possibility that some of these planets may be able to sustain life, and therefore may have life, but current investigations have not found any data to support this (such as the Mars Curiosity Rover).

¹⁸ Dark matter does not emit or absorb light or heat, so it is not detectable by traditional methods. It is currently thought to take the form of very fine particles which interact with the space-time manifold in the same way as visible matter (causing an increased curvature of the manifold in proportion to its density). It is what keeps the galaxies of the observable universe from flying apart (in the accelerated fashion of the space between the galaxies).

¹⁹ Dark energy is quite different from dark matter. Instead of interacting with the space-time manifold in a way that causes contraction, it causes repulsion. It seems to have a field-like dimensionality that causes the space-time manifold to stretch and grow at an accelerated rate, causing the phenomenon known as inflation. There is some convincing evidence of inflation from the Planck Satellite and other observations, and the best current explanation for this inflation is dark energy.

the galaxies is stretching at an accelerated rate (inflating) because of dark energy. It is highly unlikely that the universe will collapse in the future (in a big crunch followed by a bounce), because it's probable flat geometry and dark energy will cause it to expand indefinitely. Therefore, the universe will reach a point of either a "big freeze" (in which the gases necessary for star formation will be exhausted, and all formed stars will use up their supply of gases) or "heat death" (in which the universe reaches maximum entropy) a finite time in the future (somewhere between 1 trillion and 100 trillion years from now).

This brings us to three central questions: Was the Big Bang the beginning of our universe? Does our universe exhaust the whole of physical reality (or is there some dimension of physical reality beyond our universe)? If physical reality does extend beyond our universe, must it have a beginning?

Quantum gravity²⁰ and inflation theory²¹ allow for the formation of four major speculative theories which might expand our view of physical reality far beyond our observable universe:

1. The *multiverse hypothesis* – inflationary theory allows for the possibility of a giant inflating universe that can produce a multiplicity of bubble universes indefinitely into the future. One such bubble universe would be our own.
2. The *bouncing universe hypothesis* – since the time of Albert Einstein, the conventional bouncing universe hypothesis took the general form of a cyclic universe which expanded, and then contracted in a "big crunch," and then bounced and re-expanded repeatedly. The expansion from the Big Bang until today is theorized to be one such cycle – the last one amidst many others.
3. The *pre-Big Bang eternally static hypothesis* – quantum gravity allows for the possibility of a pre-Big Bang era in which the universe was perfectly stable for a long period of time prior to the Big Bang.
4. The *higher dimensional space universe hypothesis* – string theory (particularly M Theory) allows for the possibility of universes to exist in higher dimensional space (consisting of say, eleven dimensions), permitting unusual complex expanding and bouncing universes.

All of these hypotheses extend our view of physical reality beyond our observable universe, which may allow physical reality to exist prior to our 13.8 billion year old history (since the Big Bang). As noted above, they are all completely hypothetical and lie beyond our

²⁰ Quantum gravity is a hypothetical field of physics that tries to describe the quantum behavior of the force of gravity. The classical description of gravity is explained in Einstein's General Theory of Relativity (through a malleable space-time manifold). Some theories of quantum gravity are used to explain a pre-Big Bang condition (prior to the advent of the space-time manifold described by the General Theory of Relativity). The two most popular theories are string theory and loop quantum gravity. This field of physics may remain quite hypothetical into the future, because its effects can only be observed near the Planck scale, which is far too small to be currently detected.

²¹Inflation theory (first described by Dr. Alan Guth to resolve various problems in the standard Big Bang model) describes the extremely rapid exponential expansion of the early universe by a factor of at least 10^{78} in volume. The inflation epoch seems to have taken place in the first part of the electroweak era (when the universe was only 10^{-36} seconds to 10^{-33} seconds old). Inflation arises out of vacuum energy (dark energy) which has the opposite effect of mass-energy on the space-time manifold. In the General Theory of Relativity, the density of mass-energy causes an increased curvature of the space-time manifold (giving rise to a force of attraction). However, the density of vacuum energy causes the space-time manifold to expand and stretch at an accelerated rate, (causing a repulsive effect).

current capacity to observe. They may in principle, be unobservable. Every one of these scenarios very probably requires a *beginning in the finite past*, and the proof of this will be explained in Sections II through IV below.

II. The Borde-Vilenkin-Guth Proof

Lemaitre's discovery of the expansion of space-time in the universe (as a whole) enabled physicists to formulate theorems (proofs) about the necessity of a beginning. All such proofs are based on various physical (observable) data which must all be true in order for the conclusion (about a beginning of the universe) to be true. They take the following general form: "If condition A, condition B, and condition C are true, then there must be a beginning of the universe (or the beginning of a multiverse or the beginning of physical reality itself)."

The first space-time geometry proof (called a singularity theorem) was proposed by Stephen Hawking and Roger Penrose between 1968 and 1970²² which was based on five conditions. In 1980 Hawking declared "a curvature singularity that will intersect every world line... [makes] general relativity predict a beginning of time."²³ Twenty years after they formulated the proof, Alan Guth proposed inflationary theory which appeared to violate the third condition of the Hawking-Penrose proof ("the mass density and pressure of matter never become negative"). Inflation (presumably caused by dark energy) produces negative pressure (accelerating expansion) which violates the third condition of the proof.

This was only a temporary setback for space-time geometry proofs of a beginning. In 1994, Arvind Borde and Alexander Vilenkin devised a proof for a singularity (and beginning of the universe) accounting for *inflationary* cosmology.²⁴ However, they found an exception to their proof in 1997 with regard to the weak energy condition. Even though this exception was highly unlikely in our universe, it re-opened the possibility of an eternal universe (in the past).²⁵ During the same period, Alan Guth tried to show that all known mathematical configurations of inflationary model cosmologies required a beginning.²⁶ Though Guth's study was comprehensive, it did not constitute a proof of a singularity in all inflationary cosmologies.

In 2003, all three joined together to formulate an elegant proof of a boundary to past time in all cosmologies where the average Hubble expansion is greater than zero.

²² Hawking and Penrose 1970. pp 529-548.

²³ Hawking 1980, p.149.

²⁴ Borde and Vilenkin 1994 pp 3305-3308.

²⁵ Borde and Vilenkin 1997 p 720.

²⁶ "In my own opinion, it looks like eternally inflating models *necessarily* have a beginning. I believe this for two reasons. The first is the fact that, as hard as physicists have worked to try to construct an alternative, so far all the models that we construct have a beginning; they are eternal into the future, but not into the past. The second reason is that the technical assumption questioned in the 1997 Borde-Vilenkin paper does not seem important enough to me to change the *conclusion*." (Guth 1999) p 13.

This proof is not dependent on the weak energy condition (which allowed for possible exceptions to the 1994 Borde-Vilenkin proof). They formulated their findings as follows:

Our argument shows that null and time like geodesics are, in general, past-incomplete [requiring a boundary to past time] in inflationary models, whether or not energy conditions hold, provided only that the averaged expansion condition $H_{av} > 0$ hold along these past-directed geodesics. This is a stronger conclusion than the one arrived at in previous work in that we have shown under reasonable assumptions that almost all causal geodesics, when extended to the past of an arbitrary point, reach the boundary of the inflating region of space-time in a *finite* proper time.²⁷

Remarkably, this proof (which is explained in detail below in this Section) has extensive general applicability—that is, to *any universe* with an average Hubble expansion greater than zero. In particular, it applies to the eternal inflation scenario. Vilenkin states it as follows:

We made no assumptions about the material content of the universe. We did not even assume that gravity is described by Einstein’s equations. So, if Einstein’s gravity requires some modification, our conclusion will still hold. The only assumption that we made was that the expansion rate of the universe never gets below some nonzero value, no matter how small. This assumption should certainly be satisfied in the inflating false vacuum. The conclusion is that past-eternal inflation without a beginning is impossible.²⁸

The implications of Vilenkin’s statement should not be underestimated, for he is claiming that the proof is valid almost *independently of the physics* of any universe (except for the one condition that the average expansion rate of the universe or multiverse be greater than zero). He is further claiming that such a universe without a beginning is *impossible*.

This proof is virtually universally applicable and very difficult to disprove (because it has only one condition). Its importance merits further explanation (which can be done through

²⁷ Borde, Guth, and Vilenkin 2003 p 3

²⁸ Vilenkin 2006 p 175

logical steps with very little mathematical analysis). The following five steps indicate the logical and empirical validity of the proof.

1. The First Step comes from Fr. Georges Lemaitre in 1923 -- the farther a galaxy is from our galaxy, the greater will be its recessional velocity (its speed going away from the observer). Recall what was said about the universe expanding like a balloon -- if space is stretching (growing like the elastic of our balloon), then the further a galaxy is from us (the observer), the greater its recessional velocity will be. Why? Because galaxies are not simply moving away from each other in fixed space; the space between the galaxies is actually stretching and growing (like the balloon). Thus, the more space there is between my galaxy and another galaxy, the more space there is to stretch and grow, and so we would expect that there would be more growing of space between our galaxy and a far distant galaxy than between our galaxy and a nearer one. This should increase the recessional velocity in proportion to a galaxy's distance from our galaxy. Hubble had a precise equation to calculate this -- $v = H_0D$ (where v is the recessional velocity of a distant galaxy, D is the proper distance of that galaxy from our galaxy, and H is the Hubble constant which transforms proper distance into recessional velocity). Today the Hubble constant is thought to be 69.32 ± 0.80 (km/s)/Mpc -- (kilometer per second) per megaparsec.

We can illustrate this very simply with a rubber band. Take out a rubber band and put it on top of a ruler. Now draw a dot on the rubber band at point zero; another dot at one inch; and yet another dot at two inches. Now, take the rubber band and hold it with your left hand at point zero. With your right hand stretch the rubber band so that the dot that was at two inches is now at four inches. Evidently the dot which was at two inches from origin has expanded another two inches (to the four inch mark). But notice that the dot which was at the one inch mark has only moved to the *two inch mark* (an expansion of *only one inch*). Thus, if space as a whole is growing like a balloon (or like our rubber band), the farther away a galaxy is from our galaxy (at point zero on the ruler), the more it expands per unit time. Since recessional velocity is "expansion per unit time" Lemaitre proved his point -- the farther away the galaxy is, the greater its recessional velocity will be -- if space between the galaxies is expanding (instead of galaxies moving away from each other in fixed space).

2. The Second Step: We must now learn yet another concept -- namely, relative velocity. This term refers to the velocity of a projectile (say, a rocket) approaching a galaxy which is moving away from it. Alexander Vilenkin gives the following example:

Suppose, for example, that [a] space traveler has just zoomed by the earth at the speed of 100,000 kilometers per second and is now headed toward a distant galaxy, about a billion light years away. That galaxy is moving away from us at a speed of 20,000 kilometers per second, so when the space traveler catches up with it, the observers there will see him moving at 80,000 kilometers per second

[100,000 kps minus 20,000 kps].

Now let's extend Vilenkin's example. Suppose that there are observers on a more distant galaxy – twice as far away as the first galaxy (two billion light years from here). Its recessional velocity should be approximately twice as much as the first galaxy's recessional velocity (approximately 40,000 kilometers per second away from us). The observers on that galaxy would see the rocket coming at 60,000 kps (100,000 kps minus 40,000 kps).

As can be seen, relative velocity is inversely proportional to recessional velocities. So, the greater distance a galaxy is from us, the *greater* will be its recessional velocity; however, the *relative* velocity of a projectile approaching that more distant galaxy will be *smaller* than its relative velocity approaching a *nearer* galaxy. We can generalize by saying that the greater the distance of an object (such as a galaxy) is from a projectile (like a spaceship) moving toward it, the greater will be the recessional velocity of that object; however, the relative velocity of a projectile approaching it will be smaller (in inverse proportion to the recessional velocity).

3. The Third Step: There are two ways of having greater distance between our galaxy and other distant galaxies. The first way is the one described above (where galaxy #2 happens to be farther away than galaxy #1). The second way is by going into the *future*. Let us return to our example of the rubber band. If the universe is expanding like our rubber band, then every single moment our universe moves into the future, the recessional velocity of distant objects will get greater and greater. Remember our three dots: one at point zero, one at one inch, and one at two inches. When I pulled the third dot from two inches to four inches, the second dot only went from one inch to two inches. But now that the second dot is at two inches, it will do the same thing that the third dot did previously. It will now move from two inches to four inches in the same unit time. Thus, as our universe proceeds into the future, the recessional velocities of its galaxies will increase, because there is more space to expand (more rubber band to expand) between them.
4. The Fourth Step: now let's apply the above insight (about *recessional* velocities) to *relative* velocities. Recall that recessional velocity and relative velocity are inversely proportional; so if recessional velocities are *increasing* into the future, relative velocities of approaching projectiles must be *decreasing* into the future. Since all galaxies are moving away from each other (because the universe's spatial manifold is expanding as a whole), all relative velocities of objects will have to get slower and slower into the future.
5. The Fifth Step: what is the consequence of Step Four? If the relative velocities of all objects must be getting slower and slower into the future, they must have been faster and faster in the past. Vilenkin puts it this way:

If the velocity of the space traveler relative to the spectators gets smaller and smaller into the future,

then it follows that his velocity should get larger and larger as we follow his history into the past. In the limit, his velocity should get arbitrarily close to the speed of light.

So what is the point? It is not possible to have a relative velocity greater than the speed of light in our universe. Thus, when all relative velocities were arbitrarily close to the speed of light, then the past time of our universe could not have gone back any further. It represents a *beginning* of the universe.

Could this consequence of a beginning of the universe (in the Borde-Vilenkin-Guth Proof) be avoided if scientists discover a velocity higher than the speed of light in the future? No, because it does not matter what the upper limit to velocity is, it will always be reached in a finite proper time. The only thing that matters is that there *is* an upper limit to velocity in the universe (no matter what it is). This upper limit would have to be reached in a finite proper time, and so the universe would have to have a beginning in *any* expansionary scenario – irrespective of the true upper limit to velocity in it.

Let's suppose scientists discover a tachyon (a particle which can travel faster than the speed of light) next year. Suppose further that this tachyon can travel at twice the speed of light (600,000 kps). Would this affect the BVG Proof? No, because the relative velocities of all projectiles would have been increasing in the same fashion mentioned above throughout the universe's history, so at an earlier point in the universe's past, all relative velocities would have been 600,000 kps – which would again constitute a beginning (because the past time of the universe could not have existed before that point). We can postulate any finite velocity we want as the upper limit to velocity in our universe (or any other universe or a multiverse) and we can know with certainty that every projectile in that universe or multiverse would have been travelling at that relative velocity sometime in that universe's or multiverse's *finite* past. Every scenario *requires* a beginning.

Does *every* universe or multiverse have to have a *finite* maximum velocity? Yes, because if that finite upper limit did not exist, then physical energy could travel at an *infinite* velocity, in which case physical energy could be everywhere in the universe or multiverse simultaneously. This gives rise to two irresolvable problems – first, there would be a multiplication of the same physical energy at every space-time point in the universe which apparently contradicts the first law of thermodynamics (matter-energy can neither be created nor destroyed). This multiplication of physical energy leads to a second problem – namely, that every space time point would be simultaneously occupied by contradictory forms of energy (such as protons and electrons or matter and antimatter). The whole universe or multiverse would be filled with contradictions (an obviously impossible state of affairs). The avoidance of these problems requires a finite maximum velocity in every universe *and* multiverse (because every multiverse must be inflationary, and must therefore have an average expansion rate greater than zero). If all universes and multiverses must have a finite maximum velocity, and they also have an expansion rate

greater than zero (the single condition of the BVG Proof), then they would also have to have a *beginning*.

There is one important nuance that should be clarified. The BVG Proof establishes a boundary. To the extent that classical gravity is operative near that boundary, the boundary is a singularity and therefore a beginning of time. However, if quantum gravity effects are important near that boundary (which would be the case in some scenarios) the boundary could merely be a gateway to another earlier region of space-time.²⁹ If the boundary represents only a transition to a new kind of physics, then the question arises as to whether that new physics is subject to a BVG boundary that is fundamental (such as a singularity or an absolute boundary to past time).

This is where the extensive general applicability of the BVG Proof comes into play, for inasmuch as the Proof applies to *any* universe with an average Hubble expansion greater than zero (independent of the physics of that universe), then the BVG Proof requires that a past-time boundary be present in any prior state of the universe which is expansive. Ultimately, an absolute boundary to all past expansive states will be reached (which would be a beginning of past time in the universe). There is only one way to avoid this beginning – a prior state which is eternally static (addressed below).

Borde, Vilenkin, and Guth consider some scenarios of prior universal states arising out of quantum gravity and inflation. One such scenario is inspired by string theory:

Our argument can be straightforwardly extended to cosmology in higher dimensions. For example, in one model, brane worlds are created in collisions of bubbles nucleating in an inflating higher-dimensional bulk space-time. Our analysis implies that the inflating bulk cannot be past-complete [i.e. must have a boundary to past time]. ¶ We finally comment on the cyclic Universe model in which a bulk of four spatial dimensions is sandwiched between two three-dimensional branes... In some versions of the cyclic model the brane space-times' are everywhere expanding, so our theorem immediately implies the existence of a past boundary at which boundary conditions must be imposed. In other versions, there are brief periods of contraction, but the net result of each cycle is an expansion... Thus, as long as $H_{av} > 0$ for a null geodesic when averaged over one cycle, then $H_{av} > 0$ for any number of cycles, and our theorem would imply that the geodesic is incomplete

²⁹ See Borde, Guth, and Vilenkin. 2003 p 4. See also Craig and Sinclair 2009 p 142 (n 41).

[i.e. must have a boundary to past time].³⁰

Notice that the extensive general applicability of the BVG theorem allows it to establish a past-time boundary for quite diverse models where quantum gravity effects play important roles. Notice also that the BVG theorem applies to this hypothesis even though it has a contracting phase, because all that is required for the applicability of the BVG Proof is that the *average* Hubble expansion be greater than zero (no matter how small the positive non-zero average might be). Since this hypothetical condition must have an *average* Hubble expansion greater than zero (amidst its many expansions and contractions), it must have a boundary to its past time.

Does the BVG theorem apply also to Linde's eternal inflation scenario? According to Borde, Guth, and Vilenkin, it does. Linde originally suggested that each bubble universe begins with a singularity and further suggested that these regional singularities might mitigate the need for a singularity in the whole array of bubble universes.³¹ Craig and Sinclair explain why this does not escape the Borde, Vilenkin, and Guth Proof:

Andre Linde has offered a critique, suggesting that BVG implies that all the individual parts of the universe have a beginning, but perhaps the WHOLE does not. This seems misconstrued, however, since BVG are not claiming that each past inextendible geodesic is related to a regional singularity. Rather, they claim that Linde's universe description contains an internal contradiction. As we look backward along the geodesic, it must extend to the infinite past if the universe is to be past-eternal. But it does not (for the observer commoving with the expansion).³²

The extensive general applicability of the BVG Proof (whose only condition is an average Hubble expansion greater than zero) makes possible exceptions fall within a very narrow range. A possible exception will either (1) have to postulate a universal model with an average Hubble expansion *less* than zero (i.e. where average contraction is greater than expansion) or (2) postulate a universal model where the average Hubble expansion is *equal* to zero (what is termed an "eternally static universe").

Since models postulating an average contraction greater than expansion have proven to be physically unrealistic, physicists have turned to the "eternally static hypothesis" to find a way out of the BVG Proof. Vilenkin and his graduate student, Audrey Mithani, have demonstrated significant physical problems with this hypothesis (particularly quantum instabilities which force the static state to break down in a finite

³⁰ Borde, Guth, and Vilenkin 2003 p. 4.

³¹ See Linde 1998 p. 105.

³² Craig and Sinclair 2009 p. 169.

time) in several important articles.³³ Additionally, the eternally static hypothesis falls prey to an irresolvable logical contradiction. Craig and Sinclair sum up the fundamental (and seemingly insurmountable) problem as follows:

The asymptotically static hypothesis has the dilemma that it must begin static and then transition to an expansion. Hence, the static phase is metastable, which implies that it is finite in lifetime. The universe begins to exist.³⁴

Craig and Sinclair point to a fundamental contradiction in the eternally static hypothesis. In order for a universe to exist in a static state for an infinite time, it would have to be *perfectly* stable. However, for a universe to move from one state to another, say, from a quantum cosmological or string theory state (before the Big Bang) to a state described by the General Theory of Relativity (after the Big Bang), the quantum cosmological state would have to have been *metastable* (not perfectly stable) to accommodate the decay of the first state into the second one. This implies that the hypothesis is contradictory – because the quantum cosmological state would have to have been *both* “perfectly stable (to last for an eternity)” and “not perfectly stable (metastable in order to decay into an expansive state)” prior to the Big Bang.

In sum, there are three consequences of the Borde-Vilenkin and Guth proof:

- (i) It applies to all universes and multiverses (including bouncing universes in higher dimensions) that have an average rate of expansion greater than zero (no matter how small).
- (ii) It does not matter what the physics of a given universe or multiverse might be; so long as the average Hubble expansion is greater than zero (because every universe or multiverse must have an upper limit to velocity).
- (iii) Since there is only one condition for the proof to work and it functions independently of the physics of any given universe or multiverse, it will be very difficult to disprove.

At this point, it seems as if physics is coming very close to proving an absolute beginning of physical reality itself – whether physical reality is simply our universe, or perhaps a multiverse, or a universe in the higher dimensional space of string theory, or a static quantum cosmological state. If no physically realistic exception can be found to this proof (and to the problems of an eternally static universe), it would make an absolute beginning of physical reality quite probable. Vilenkin agrees with this assessment, and said in 2006:

It is said that an argument is what convinces reasonable men and a proof [like the B-V-G Proof] is what it takes to convince even an unreasonable man. With the proof

³³ An excellent summary of this work can be found in Vilenkin’s lecture to the physics community at Cambridge University on the occasion of Stephen Hawking’s 70th birthday. See (<http://www.newscientist.com/article/mg21328474.400-why-physicists-cant-avoid-a-creation-event.html>).

³⁴ Craig and Sinclair 2009. P. 158.

now in place, cosmologists can no longer hide behind the possibility of a past-eternal universe....There is no escape, they have to face the problem of a cosmic beginning.³⁵

This takes us to the threshold of metaphysics. Before moving in that direction, we will want to first consider another vastly applicable datum that also indicates the likelihood of a beginning of physical reality – entropy.

III. Evidence from Entropy

Entropy is a technical concept that.... measures the degree of “disorder” or disorganization of a system. For purely probabilistic reasons, systems left to their own devices (“isolated systems”) tend to evolve in a way that keeps the level of disorganization (entropy) constant or increases it. Almost never does the entropy of an isolated system decrease. Systems do not spontaneously get more organized. To make a system more organized takes something coming in from outside and expending energy (I can make the coffee in a cup hotter than its surroundings, for instance, by using a “heat pump” --- the opposite of a refrigerator --- to pump thermal energy from the cooler air into the hotter coffee. But that would require the expenditure of energy to run the heat pump).

The famous Second Law of Thermodynamics says that in isolated systems, entropy always increases or stays the same, and never goes down. That is why some processes are irreversible. If a process changes the entropy, then it can only go one way --- the way that entropy (disorganization) increases. That is why dead bodies decompose, but do not recombine! Of course, these are, ultimately, probabilistic statements. Entropy can have random fluctuations downward, but these are usually very tiny decreases, and the larger the decrease in entropy, the more unlikely it is to happen.

This is a universal phenomenon. It is why physicists regard “perpetual motion machines” as impossible. And here is the relevance to the question of whether the universe had a beginning. If the universe did not have a beginning, then it has been around for an infinite time. In a sense, the universe is then itself a “perpetual motion machine,” a system that never “runs down” or “wears out,” which is a violation of the Second Law of Thermodynamics. This argument against an infinite universe can be broken down into five steps:

1. For a physical system to do work, it needs to have order (disequilibrium)³⁶ within it. Variations of temperature (or other factors such as pressure or molecular distribution) within a system enable it to do physically useful work.

³⁵ Vilenkin. 2006. p 176.

³⁶ “Order” generally refers to disequilibrium (such as variation in temperature, or differentiation of molecular distribution, or differentiation of pressure within a physical system). Since all thermodynamic systems tend toward equilibrium (the same temperature or distribution of molecules or pressure within a system), it follows that equilibrium is the most probable state of a system – and is considered the most disordered. In contrast to this, the more disequilibrium there is in a system, the more it is said to be ordered or organized (which is a more improbable state).

2. Every time a physical system does work it loses a small amount of its order (disequilibrium), which means that it is not capable of doing as much work as it could in its previous state. This movement from order to disorder is called “entropy.”
3. For statistical reasons alone, entropy (the movement from order to disorder) is irreversible in the long term (though there may be random fluctuations toward lower entropy which do not and cannot last long).
4. If the universe is an isolated³⁷ physical system (the assumption of the standard Big Bang model), then the universe could not have existed for an infinite amount of time, because if it did, it would be at a state of maximum entropy (maximum equilibrium) today (for the reasons stated in 1-3 above). It would be a dead universe incapable of any work.
5. But the universe is not at maximum entropy (maximum equilibrium); there are hot stars and cold space, galactic clusters and empty space, and physical systems are continuously working – stars burning, planets forming, and physicists thinking about it.

Therefore, the universe has not existed for an infinite amount of time (and therefore has a beginning).

The evidence of entropy has one important quality in common with that of the Borde-Vilenkin Guth Proof, namely its vast applicability (seemingly to every physical system). It was stated earlier that the Second Law of Thermodynamics (entropy) is valid for statistical (mathematical) reasons alone. Therefore, it is applicable to a multiplicity of physical scenarios – and is theoretically applicable to virtually every physical system. Why? Because disequilibrium (order) is so much more improbable than equilibrium (disorder) and every physical system will always follow a line toward greatest probability – that is, toward disorder. Einstein was so certain of this that he declared:

A law is more impressive the greater the simplicity of its premises, the more different are the kinds of things it relates, and the more extended its range of applicability.) [Entropy] is the only physical theory of universal content, *which I am convinced, that within the framework of applicability of its basic concepts will never be overthrown.*”³⁸

There has been no shortage of attempts to elude this consequence of the Second Law of Thermodynamics (entropy). Several physicists have suggested that entropy might be lowered in a universal collapse (“a big crunch”) or in a bouncing universe scenario. Both of these

³⁷ “Isolated” here refers to a system acting on its own. There is no engine or refrigerator or heating element outside of the physical system that can introduce additional order (disequilibrium) within the system.

³⁸ Holton and Elkana 1997. p. 227.

suggestions have been virtually ruled out by the research of Roger Penrose,³⁹ Sean Carroll,⁴⁰ and Thomas Banks and Willy Fischler.⁴¹ They also show that entropy makes virtually every form of the bouncing universe hypothesis untenable.⁴² Though physicists are still hypothesizing new scenarios to elude a beginning of the universe from entropy, they are becoming more and more fantastic and further and further removed from the domain of observable evidence and the discipline of physics.

IV. Something, Nothing, and Creation

The discussion in the two foregoing sections shows that the preponderance of cosmological evidence favors a beginning of the universe (prior to which there was no physical reality). This beginning of physical reality marks the point at which our universe (and even a

³⁹ As will be discussed below, Roger Penrose shows the virtual impossibility of low entropy at a bounce, because the odds against it are $10^{10^{123}}$ to 1 against its occurrence (the odds of a monkey typing Macbeth by random tapping of the keys in one try – this is a virtual impossibility). See Penrose. 1989. pp 343-344.

⁴⁰ According to Sean Carroll, a well-known cosmologist, the low entropy of our universe at the Big Bang invalidates an eternal bouncing universe hypothesis; it even makes a single bounce to be exceedingly improbable: “Bojowald uses some ideas from Loop Quantum Gravity to try to resolve the initial singularity and follow the quantum state of the universe past the [Big] Bang back into a pre-existing universe. If you try to invent a cosmology in which you straightforwardly replace the singular Big Bang by a smooth Big Bounce continuation into a previous space-time, you have one of two choices: either the entropy continues to decrease as we travel backwards in time through the Bang, or it changes direction and begins to increase. Sadly, neither makes any sense. If you are imagining that the arrow of time is continuous as you travel back through the Bounce, then you are positing a very strange universe indeed on the other side. It’s one in which the infinite past has an extremely tiny entropy, which increases only very slightly as the universe collapses, so that it can come out the other side in our observed low-entropy state. That requires the state at $t = \text{minus infinity}$ state of the universe to be infinitely finely tuned, for no apparent reason (the same holds true for the Steinhardt-Turok cyclic universe). On the other hand, if you imagine that the arrow of time reverses direction at the Bounce, you’ve moved your extremely-finely-tuned-for-no-good-reason condition to the Bounce itself. In models where the Big Bang is really the beginning of the universe, one could in principle imagine that some unknown law of physics makes the boundary conditions there very special, and explains the low entropy (a possibility that Roger Penrose, for example, has taken seriously). But if it’s not a boundary, why are the conditions there [at the Bounce] so special? (Carroll 2007 p. 1).

⁴¹ Banks and Fischler believe that a universal collapse will lead to a “black crunch” (maximum entropy) from which a low entropy bounce would be virtually impossible ($10^{10^{123}}$ to 1 against, according to Roger Penrose. See below Section V). In fact, things are probably even worse for models in which the Big Bang was a bounce preceded by a phase in which the universe was collapsing. It has been argued by the particle physicists, Banks and Fischler, that during such a collapse the rapidly changing space-time would have excited and amplified random “quantum fluctuations” in such a way that entropy would have been driven to very *large* values, rather than small ones. This makes it even more difficult to account for the fantastically low entropy just after the Big Bang. In Banks’ words, ... “I have a problem with ALL cyclic cosmologies.... The collapsing phase of these models always have a time-dependent Hamiltonian for the quantum field fluctuations around the classical background. Furthermore the classical backgrounds are becoming singular. This means that the field theories will be excited to higher and higher energy states.... High energy states in field theory have the ergodic property--they thermalize rapidly, in the sense that the system explores all of its states. Willy Fischler and I proposed that in this situation you would again tend to maximize the entropy. We called this a black crunch and suggested the equation of state of matter would again tend toward $p=\rho$. It seems silly to imagine that, even if this is followed by a re-expansion, that one would start that expansion with a low entropy initial state, or that one had any control over the initial state at all.” (Banks 2007 from a private communication to James Sinclair, October 12, 2007 in Craig and Sinclair 2009 p 156).

⁴² See the previous three footnotes.

hypothetical multiverse or a universe in the higher dimensional space of string theory) came into existence. Recall (from Section II above), that quantum gravity and inflation theory allowed for four major hypothetical extensions of physical reality beyond our observable universe and prior to our Big Bang – the multiverse hypothesis, the bouncing universe hypothesis, the eternally static universe hypothesis, and the higher dimensional space hypothesis. The foregoing analysis shows the high probability that all four of these hypothetical models have a beginning:

(1) Every multiverse hypothesis must be inflationary, subjecting it to the Borde-Vilenkin-Guth Proof, which entails a beginning in the finite past.

(2) Bouncing universe hypotheses fall prey to four major problems: (a) They are subject to the Borde-Vilenkin-Guth Proof (because their average Hubble expansion is greater than zero), (b) Carroll’s requirement of “infinite fine-tuning for no apparent reason” in eternally bouncing universes (making them virtually impossible), (c) Banks’ and Fischler’s prediction that a single collapse will lead to a dark dead universe (maximum entropy), and (d) The probable flat geometry and preponderance of dark energy in our universe disallows the cessation of expansion into the future.

(3) The eternally static hypothesis falls prey to quantum instabilities according to Vilenkin and Mithani. It also appears to be intrinsically contradictory (perfectly stable and not perfectly stable prior to the Big Bang).

(4) The expanding and bouncing forms of the higher dimensional space hypothesis are subject to the Borde-Vilenkin-Guth Proof, which entails a beginning in a finite past time.

There are currently no truly satisfactory alternatives to this evidence for a beginning.⁴³ Is this evidence sufficient to show a beginning of *physical reality itself*?

If a beginning of physical reality is a point at which everything physical (including mass-energy, space and time, and physical laws and constants) came into existence, then *prior* to this beginning, all aspects of physical reality would have been *nothing*. It seems likely that this is the case, because quantum gravity, the General Theory of Relativity, and field theory all suggest that everything physical is interrelated.⁴⁴ This means that prior to the beginning, physical reality was most likely nothing – physical space and time, physical mass and energy, and the laws and constants – every aspect of physical reality.

This encounter with “nothing” brings us into the domain of metaphysics, which many physicists have unwittingly entered because of the strong evidence for a beginning of physical reality. Stephen Hawking has recently claimed that spontaneous creation can occur from nothing, because of the law of gravitation and M Theory.⁴⁵ Alexander Vilenkin has a more developed

⁴³ Since the Borde-Vilenkin-Guth theorem rules out all expanding universes (or multiverses), and the entropy evidence rules out an eternal universe and all bouncing universes, and the static universe hypothesis is intrinsically contradictory and highly improbable in light of quantum instabilities, the only recourse left seems to be that of postulating “backward time” prior to the Big Bang (see Aguirre and Gratton 2002). Most physicists have unhesitatingly declared this hypothesis to be physically unrealistic because it enables physically unrealistic phenomena to occur – such as the sound of the clap coming before the clap.

⁴⁴ Some may think that space and time are not relevant in quantum gravity (e.g. String Theory or Loop Quantum Gravity), but in fact, they are. String Theory and Loop Quantum Gravity presume continuity, dimensionality, and temporal differentiation (space and time), but they are differently configured than in the General Theory of Relativity.

⁴⁵ “Because there is a law such as gravity, the Universe can and will create itself from nothing... Spontaneous creation is the reason there is something rather than nothing, why the Universe exists, why we exist” (Hawking and Mlodinow 2010 p 180).

view of Hawking's central point – that the universe tunneled from nothing (which turns out to be irresolvably problematic). He seems to recognize problems in this hypothesis, and backs into a position of “closet theism.” William Lane Craig provides a summary and incisive critique of Vilenkin's argument in his review of Vilenkin's 2006 book *Many Worlds in One: The Search for Other Universes*:

[Vilenkin] invites us to envision a small, closed, spherical universe filled with a false vacuum and containing some ordinary matter. If the radius of such a universe is small, classical physics predicts that it will collapse to a point; but quantum physics permits it to “tunnel” into a state of inflation... If we allow the radius to shrink all the way to zero, there still remains some positive probability of the universe's tunneling to inflation. Now Vilenkin equates the initial state of the universe explanatorily prior to tunneling with nothingness: “what I had was a mathematical description of a universe tunneling from zero size—from nothing!—to a finite radius and beginning to inflate” (p. 180). This equivalence is patently mistaken. As Vilenkin's diagram on the same page illustrates, the quantum tunneling is at every point a function from something to something. For quantum tunneling to be truly from nothing, the function would have to have a single term, the posterior term. Another way of seeing the point is to reflect on the fact that “to have no radius” (as is the case with nothingness) is not “to have a radius whose measure is zero.” ¶ Vilenkin himself seems to realize that he has not really described the tunneling of the universe from literally nothing, for he says, “And yet, the state of 'nothing' cannot be identified with *absolute nothingness*. The tunneling is described by the laws of quantum mechanics, and thus 'nothing' should be subjected to these laws” (p. 181). It follows that the universe described by those laws is not nothing. Unfortunately, Vilenkin draws the mistaken inference that “The laws of physics must have existed, even though there was no universe” (p. 181). Even if one takes a Platonistic view of the laws of nature, they are at most either mathematical objects or propositions, abstract entities that have no effect on anything. (Intriguingly, Vilenkin entertains a conceptualist view according to which **the laws exist in a mind** which predates the universe [p. 205], the closest Vilenkin comes to theism).⁴⁶

As Craig shows, Vilenkin implicitly recognizes his equivocation concerning the term “nothing” (Vilenkin 2006 p 181) and that this ultimately requires him to postulate the existence of physical laws independent of the universe. He also seems to recognize that these laws imply a transphysical mind or mentative state (Vilenkin 2006 p 205), which, as Craig notes, puts him in the camp of implicit theism. In my view, Vilenkin's metaphysical foray is much more sophisticated than that of Hawking and Mlodinow, because they do not admit their equivocation about “nothing” and do not acknowledge that their transphysical laws (the law of gravitation and M Theory) entail a transphysical mind or mentative state.⁴⁷ It seems that any attempt to

⁴⁶ Craig 2009 pp 237-238.

⁴⁷ At one time, Hawking did admit to the need for a transcendent cause beyond the laws of physics – “If we discover a complete theory, it would be the ultimate triumph of human reason – for then we should know the mind of God... Even if there is only one possible unified theory, it is just a set of rules and equations. What is it that breathes fire into the equations and makes a universe for them to describe?” Hawking 1988 p 174.

hypothesize something coming from nothing will result in a host of problems – such as, “sneaking” something into nothing, equivocating on the term “nothing,” and/or postulating an unacknowledged transphysical mentative state which allows laws (without physical reality) to generate the whole of physical reality. If we are to avoid these confusions, we should follow the example of Parmenides, and allow “nothing” to be nothing (the complete absence of reality). This means not putting any content into “nothing” such as continuity, dimensionality, or orientability (as might be found in a spatial manifold) or confusing “nothing” with physical laws without a physical universe (entailing an unacknowledged transphysical mind or mentative state). Anything else argues the most fundamental of contradictions.

We can know something else about nothing – namely, that it can only do nothing. As metaphysicians since the time of Parmenides have recognized, “From nothing, only nothing can come.”

We may now proceed to our conclusion – combining a first premise from physics and a second premise from metaphysics:

- (1) There is a high likelihood of a beginning of physical reality (prior to which physical reality was literally nothing).
- (2) From nothing, only nothing comes (*apriori* true).

Therefore it is highly likely that the universe came from *something* which is *not* physical reality (i.e. beyond physical reality). This is commonly referred to as a “transcendent cause of the universe” (or “a transcendent cause of physical reality”) – in short, “a Creator.”

V. Fine-tuning

There are several conditions of our universe necessary for the emergence of any complex life form. Many of these conditions are so exceedingly improbable that it is not reasonable to expect that they could have occurred by pure chance. For this reason many physicists attribute their occurrence to supernatural design. Some other physicists prefer to believe instead in trillions upon trillions of “other universes” (in a multiverse which is unobserved and likely unobservable). Before discussing which explanation is more probative, we need to explore some specific instances of this highly improbable fine-tuning. We may break the discussion into two parts:

- A. The exceedingly high improbability of our low entropy universe, and
- B. The exceedingly high improbability of the anthropic values of our universe’s constants.

V.A *The high improbability of a pure chance occurrence of our low-entropy universe*

A low-entropy universe is necessary for the emergence, evolution, and complexification of life forms (because a high entropy universe would be too run down to allow for such development). Roger Penrose has calculated the exceedingly small probability of a pure chance

by any physical theories, but it is certainly a critical *requirement* for a universe suitable for life.⁵⁰

This “anthropic coincidence” also seems to lie beyond the boundaries of pure chance.

3. If the gravitational constant, electromagnetism, or the “proton mass relative to the electron mass” varied from their values by only a tiny fraction (higher *or* lower), then all stars would be either blue giants or red dwarfs. These kinds of stars would not emit the proper kind of heat and light for a long enough period to allow for the emergence, development, and complexification of life forms. Paul Davies outlines this coincidence as follows:

What is remarkable is that this typical mass M_* just happens to lie in the narrow range between the blue giants and red dwarfs. This circumstance is in turn a consequence of an apparently accidental relation between the relative strengths of gravity and electromagnetism, as will be shown....This remarkable relation compares the strength of gravity (on the left) with the strength of electromagnetism, and the ratio of electron to proton mass.... Putting in the numbers, one obtains 5.9×10^{-39} for the left hand, and 2.0×10^{-39} for the right hand side. Nature has evidently picked the values of the fundamental constants in such a way that typical stars lie very close indeed to the boundary of convective instability. The fact that the two sides of the inequality are such enormous numbers, and yet lie so close to one another [10^{-39}], *is truly astonishing*. If gravity were *very* slightly weaker, or electromagnetism *very* slightly stronger, (or the electron slightly less massive relative to the proton), all stars would be *red dwarfs*. A correspondingly tiny change the other way, and they would all be *blue giants*.⁵¹

Again, this “anthropic coincidence” is inexplicable by a single random occurrence.

4. Fred Hoyle and William Fowler discovered the exceedingly high improbability of oxygen, carbon, helium and beryllium having the precise values to allow for both carbon abundance and carbon bonding (necessary for life). This “anthropic coincidence” was so striking that it caused Hoyle to abandon his former atheism and declare:

A common sense interpretation of the facts suggests that a superintellect has monkeyed with physics, as well as with chemistry and biology, and that there are no blind forces worth speaking about in nature. The numbers one calculates from the

⁵⁰ Bradley. 1998. p. 39. Italics mine. See also Breuer 1991. p 183.

⁵¹ Davies. 1982. p 71-73. Italics mine.

facts seem to me so overwhelming as to put this conclusion almost beyond question.”⁵²

The vast majority of physicists do not attribute these four and other anthropic coincidences (or the low entropy of the universe) at the Big Bang to random occurrence. Neither do they appeal to a prior natural cause (since the low entropy and constant values occur at the Big Bang). This virtually forces physicists to select one of two transuniversal explanations:

- (a) A multiverse in which every bubble universe has its own set of constant values, ultimately allowing trillions upon trillions upon trillions of bubble universes with different values of constants to naturalistically produce one highly improbable anthropic universe like our own.
- (b) Supernatural design in which a highly intelligent transphysical Creator selects the values of the constants and produces the low entropy of the universe at the Big Bang (similar to Sir Fred Hoyle’s “superintellect”).

Is the multiverse hypothesis more reasonable and responsible than supernatural intelligence? A combination of four factors implies that it is not. First, the other universes (and the multiverse itself) are in principle, unobservable (beyond our event horizon). Secondly, the multiverse hypothesis violates the principle of parsimony (Ockham’s Razor) – the explanation with the least number of assumptions, conditions, and requirements is to be preferred (because nature favors elegance over needless complexity). As Paul Davies notes:

Another weakness of the anthropic argument is that it seems the very antithesis of Ockham’s Razor, according to which the most plausible of a possible set of explanations is that which contains the simplest ideas and least number of assumptions. To invoke an infinity of other universes just to explain one is surely carrying excess baggage to cosmic extremes ... It is hard to see how such a purely theoretical construct can ever be used as an *explanation*, in the scientific sense, of a feature of nature. Of course, one might find it easier to believe in an infinite array of universes than in an infinite Deity, but such a belief must rest on faith rather than observation.⁵³

Though the first two reasons do not invalidate the multiverse hypothesis, they indicate problems for using it as a scientific or naturalistic explanation.

The third factor concerns the requirement that every multiverse have a beginning because every multiverse must be inflationary (have an expansion rate greater than zero), making it subject to the Borde-Vilenkin-Guth Proof. This means that no plausible multiverse could produce an unlimited number of bubble universes. Again, this factor alone does not invalidate the multiverse as a possible explanation for our highly improbable anthropic universe, because a multiverse could theoretically produce $10^{10^{123}}$ (or more!) bubble universes. However, when the

⁵² Hoyle. 1981. pp. 8-12.

⁵³ Davies. 1983. pp. 173-174.

above three factors are combined with the fourth, it raises serious doubts about the adequacy of the multiverse as an explanation of anthropic coincidences.

The fourth factor concerns fine-tuning in the multiverse itself. Currently, all known multiverse theories have significant fine-tuning requirements. Linde's Chaotic Inflationary Multiverse cannot randomly cough out bubble universes because they would collide and make the bubble universes inhospitable to life; the bubble universes must be spaced out in a slow roll which requires considerable fine-tuning in the multiverses initial parameters.⁵⁴ Similarly, Susskind's String Theory Landscape requires considerable meta-level fine-tuning to explain its "anthropic tendencies."⁵⁵ In view of the above four factors, many physicists consider the supernatural design hypothesis to be just as reasonable and responsible (if not more reasonable and responsible) than the multiverse hypothesis for explaining the occurrence of our highly improbable anthropic universe.

Some physicists and philosophers have tried to cast doubt on the supernatural design hypothesis by appealing to a seemingly logical problem – namely that a designer would seem to be more improbable than anything it could design. Richard Dawkins is the best known advocate of this position, and I respond to him below in Section I.D.⁵⁶

VI. Conclusion

Up to now we have discussed three kinds of evidence for the existence of an intelligent Creator:

1. Space-time geometry proofs for a beginning of physical reality (implying a causative power transcending physical reality).
2. The evidence from entropy for a beginning of our universe (and physical reality) implying a causative power transcending physical reality.
3. The fine-tuning of the initial conditions and constants of the universe at the Big Bang (implying supernatural intelligence).

Each of these three kinds of evidence has probative force in its own right (independently of the others). But when they are combined, they become complementary because they corroborate each other while emphasizing different dimensions of the one transcendent intelligent Creator.

John Henry Newman termed such a network of complementary evidence an "informal inference,"⁵⁷ that is, reaching a conclusion by considering the accumulation of converging antecedently probable data sets. For Newman, truth claims did not have to be grounded in an infallible source of evidence or in a strictly formal deduction. They could be grounded in the convergence (complementarity and corroboration) of a multiplicity of *probabilistic* evidential bases. Certitude is not grounded in one base alone, but in a multiplicity of likely or probable

⁵⁴ See Alabidi and Lyth. 2006.

⁵⁵ See Gordon. 2010 pp 100-102.

⁵⁶ See Spitzer 2015 Appendix II.

⁵⁷ Newman, 1992 pp 259-342 (Chapter VIII).

evidential *bases*. Thus, even if one (or more) of these bases undergoes modification, the certitude intrinsic to the convergence remains intact (though it may be lessened).

Space-time geometry proofs and entropy give *physical and scientific* evidence for a transcendent power creating our universe (and even a hypothetical multiverse or universe in the higher dimensional space of string theory). The evidence of the fine-tuning of initial conditions and constants of our universe complements the evidence of a creation by providing *physical and scientific* evidence of intelligence. In combination, they support the existence of a highly intelligent creative force of physical reality.

In my view, this “informal inference” represents the true vision not only of John Henry Newman, but also of St. Thomas Aquinas and Monsignor Georges Lemaître, showing the comprehensiveness and depth of the Catholic intellectual tradition.

Second Topic. Philosophical Evidence of God

Introduction – Two Proofs of God

There are many contemporary proofs of God’s existence. Two very well-known ones are the Thomistic metaphysical proof of God and Lonergan’s proof of God. I have given an interpretation of these proofs which I hope will be accessible to readers who have a limited philosophical education – in the hopes that they will study these proofs and benefit from them. Discussion of the five transcendental attributes of God (perfect being, perfect truth, perfect love, perfect justice/goodness, and perfect beauty) is given in the Third Topic below, and discussion of the impossibility of disproving God and the need for faith (as well as reason) is discussed in the Fourth Topic in this chapter. I deferred discussion of the Holy Trinity (three persons in the one God) until Chapter 5 of this book.

I. A Contemporary Thomistic Metaphysical Proof of God

Though there are many contemporary proofs of God (such as that of Bernard Lonergan – see below II), this contemporary version of St. Thomas Aquinas’ metaphysical proof of God, though difficult for newcomers, is brief and compelling. It proves the existence of a unique unrestricted uncaused reality (existing through itself), which is the Creator of all else that exists. This conclusion is more extensive than the one reached above from contemporary science, and in order to deny it, one will either have to deny one’s own existence or argue an intrinsic contradiction – so its conclusion is quite solid.

Readers seeking more extensive explanations of the terms and the proof can make recourse to my book *New Proofs for the Existence of God: Contributions of Contemporary Physics and Philosophy* (Chapters 3&4).

A metaphysical proof always begins by showing the *necessity* of at least one uncaused reality in the whole of reality. Aristotle articulated this well about 2,400 years ago – and its unflinching logic has remained quite similar ever since – with some refinements in logic and terminology. The second premise of the proof shows that an uncaused reality (existing through itself) must be absolutely unrestricted. This proof goes back to the discovery of St. Thomas Aquinas who discovered two major principles of metaphysics:

1. The real distinction between existence and essence.
2. The requirement that existences precede essence.

The third premise is a development from one of the oldest strains of metaphysical thought – from Parmenides – who greatly influenced Plato. Parmenides recognized that being itself (existence itself) must be one and only one. In this proof, we show that the absolutely unrestricted uncaused reality must be one. St Thomas Aquinas recognized this, and was able to deduce the fourth conclusion of the proof – namely that the one unrestricted uncaused reality must be the Creator of all else that exists.

Thus, the proof shows that there must exist one and only one unrestricted uncaused reality which creates everything else – and this reality is referred to as “God.” Though this God (known through reason) is consistent with the God of Jesus Christ, it is not the same as that God. For Christian revelation speaks of the *heart* of God, but the God of metaphysics cannot access that domain – it can only uncover certain *intelligible* characteristics through the process of logical proof – uniqueness, unrestrictedness, existence through itself (uncausedness), absolute simplicity, transtemporality, perfect intellection, and the power to create everything other than itself.

Extensive as this conclusion is, it leaves many questions unanswered. Does this God love us – or is he indifferent to us (as Aristotle and Einstein thought)? Is there a heaven or a hell? Does God inspire us, guide us, and protect us? Does he redeem suffering? Does he have a heart or feel anything? Are we a special creation of God? Reason and science cannot give us the answers to these questions. To know these things, God will have to reveal himself to us – and so we will have to seek not only the evidence of reason, but also that of revelation – specifically, the revelation of Jesus Christ (see Chapters 3&4).

I.A

The Basic Proof

Step 1: *There must be at least one uncaused reality that exists through itself.*⁵⁸

⁵⁸Aristotle first formulated this proof as an “Unmoved Mover” Proof in Book 8 of the *Physics* and Book 12 of the *Metaphysics*. The Proof was later expanded to the “Uncaused Cause” Proof by Thomas Aquinas and there are many versions of it today (see for example Lonergan 1992, Chapter 19). St. Thomas Aquinas discusses this in a variety of different places, but for the most-well known see *Summa Theologica* 1947, Pt. I, Q2, art. 3.

- If there were not at least one *uncaused* reality in “the whole of reality,” then “the whole of reality” would be constituted by *only* caused realities – that is, realities that require a cause to exist.
- This means that the whole of reality would have to have a real cause *beyond* itself in order to exist (without such a cause, the whole of reality would not exist – there would be nothing in existence).⁵⁹
- This state of affairs is intrinsically contradictory. How can there be a *real* cause *beyond* the whole of reality, if “the whole of reality” exhausts everything that is real? Obviously there can’t be such a cause.
- Since “a real cause beyond the whole of reality” is intrinsically contradictory and since the whole of reality is not nothing (i.e. something does *in fact* exist), we must conclude that the whole of reality *cannot* be constituted *only* by caused realities (which would collectively require a cause for their existence).
- *Therefore*, there must be at least one *uncaused* reality in the whole of reality. This uncaused reality must exist through itself.

If one denies this conclusion, then one will have to say either that there is nothing in existence (contrary to fact) or that there exists a *real* cause “beyond the whole of reality” (which is an intrinsic contradiction).

Step 2: *An uncaused reality must be unrestricted.*

Recall that an uncaused reality exists through itself. Such a reality has one fundamental activity or power – “existence through itself.” The proof that an uncaused reality must be absolutely unrestricted is centered on two fundamental Thomistic discoveries:

1. The real distinction between existence and essence.
2. The requirement that existence precede essence.

The terms “existence” and “essence” have complex meanings in Thomistic metaphysics. For the purposes of this proof, “existence” shall mean “existence through itself” (the fundamental act or power of an uncaused reality”). Furthermore, “essence” shall mean “any *restricted* way of existing,” such as the way of existing like an electron, or the way of existing like a proton, or a positron, or a single-celled organism, or a complex organism, etc. Restricted ways of existing include all spatially conditioned ways of existing, because they are not only restricted in kind (i.e. to the way of it existing like an electron), but also in instance (i.e. to a specific instance of the way of *existing* like an electron).

We may now begin the proof:

⁵⁹ It does not matter whether one postulates an infinite number of caused realities in the whole of reality. If the whole of reality (with an *infinite* number of realities) is constituted by *only* caused realities, then the whole of reality will require a *real* cause beyond itself to exist – which is an intrinsic contradiction.

- “Existence through itself” must exist *prior to* any and all “restricted ways of existing” (e.g. the way of existing like a proton or the way of existing like an electron, etc.). Why? We can adduce this through two substeps:
 - *Substep #1.* The Real Distinction between Existence and Essence (the real distinction between “existence through itself” and “restricted ways of existing”).⁶⁰

“Existence through itself” is really *distinct* from all restricted ways of existing (e.g. the way of existing like an electron). If “existence through itself” were not really distinct from, say, the way of existing like an electron, then it would be self-identical with it – meaning that existence through itself would be restricted to that particular way of existing, and would not be able to exist in any different or incompatible way. Therefore, the only realities that could exist would be electrons – and this is clearly contrary to fact. The same holds true for *any* restricted way of existing. If “existence through itself” were self-identical with (i.e. not really distinct from) *any* restricted way of existing, then it would be restricted to that particular way, and would not be able to exist in any different or incompatible way. Hence, the whole of reality would be reduced to that restricted way of existing. Thus, there would be no multiplicity of realities.⁶¹ This is contrary to fact. Therefore “existence through itself” is not self-identical with *any* restricted way of existing – and must be really distinct from all restricted ways of existing.
 - *Substep #2* – “Existence precedes essence” – “existence through itself” must exist prior to any restricted way of existing.⁶²

Inasmuch as “existence through itself” is really *distinct* from all restricted ways of existing, it must also *exist prior* to those restricted ways of existing. Why? Consider the following:

 - Without “existence through itself,” all restricted ways of existing (which cannot exist through themselves because they are really distinct from “existence through itself”) would not exist.
 - Therefore, the existence of all restricted ways of existing depend on the *prior* existence of “existence through itself.”

⁶⁰ One of the great (and lasting) insights of St. Thomas Aquinas is the real distinction between existence and essence, but since these terms have a technical and complex use in Thomistic metaphysics, I translated them into terms that I hope are more intuitively intelligible. Though there is not strict equivalence between St. Thomas’ terms and my own, I used terms that I believe will be more intuitively intelligible to readers and express the intention of St. Thomas in this important distinction. I interpreted “existence” (“*esse*”) in St. Thomas’ system as what he called “*ipsum esse*” (“existence itself” – or “existence through itself”), and I interpreted “essence” as “any restricted way of existing” – such as a proton or an electron. These translations validly reflect St. Thomas’ intention, and are sufficient to ground the unrestricted nature of “existence through itself.” See St. Thomas Aquinas 1968. *On Being and Essence*. Trans. by Armand Maurer. Second revised edition. (Toronto, Canada: The Pontifical Institute of Mediaeval Studies). Chap. 3-4

⁶¹ Note that this applies to any spatially conditioned way of existing (e.g. a particular proton which exists at particular places). The above argument is now doubly applicable -- for if a *specific* electron is self-identical with “existence through itself,” then the whole of reality would have to be *that specific electron* — which is obviously contrary to fact.

⁶² This is a second great and lasting insight of St. Thomas’ metaphysics. Once again, I translated “existence” as “existence through itself” and translated “essence” as “any restricted way of existing.” I translated “precedes” as “must exist prior to...” See St. Thomas Aquinas *On Being and Essence*, Chap 4.

Therefore “existence through itself” must exist prior to all restricted ways of existing⁶³ -- and must be beyond them. Therefore, it must be *absolutely unrestricted*.

**Step 3: Unrestricted “existence through itself” must be completely unique
(one and only one)⁶⁴**

The Basic Proof may be set out in three premises:

- (i) If there is to be multiplicity among realities, there must be a difference between those realities.
- (ii) If there is to be differences among realities, at least one of those realities must be restricted.
- (iii) But there can be no restriction in unrestricted “existence through itself.”

Therefore, there must be only one unrestricted “existence through itself.”

Explanation of the Proof:

The first premise is true *a priori*, because if there is no difference of any kind between two realities, they must be the self-same reality. Let us postulate two realities – X₁ and X₂. Now, let us suppose there is no difference between them – no difference as to space-time point, no difference in power or activity, no difference of qualities or characteristics, no dimensional differentiations – no differences whatsoever. What are they? Obviously, the same reality, and as such “they” are only one.

The second premise is also true *a priori*. Think about it. If there is a difference between say X₁ and X₂ (in order to have a multiplicity of them), then one of them will have to be something or have something or be somewhere or be in some other dimension that the other one is **not**. Let’s suppose that X₁ has something that X₂ does not have. This means that X₂ is restricted or limited because it lacks this quality or characteristic. Similarly, if one postulates that X₁ is something that X₂ is not, then X₂ would again have to be restricted (as manifest by its lack of that “something”). The same would hold true if X₁ were somewhere that X₂ is not, and if X₁ were in another dimension that X₂ is not. In short, every differentiating factor will entail a *restriction* of at least one of the differentiated realities.

The third premise has already been proved in Step (2) above. There can be no restriction in “existence through itself,” because it is absolutely unrestricted.

⁶³ This applies to all spatially conditioned ways of existing, because as noted above, spatially conditioned ways of existing are doubly restricted – restricted in both their way of existing (e.g. like an electron) and also in their instance of existing (i.e. a specific electron). Inasmuch as they are doubly restricted, they are also doubly distinct from “existence through itself.”

⁶⁴ For Aquinas’ proof of this see *Summa Contra Gentiles* 1991, Bk 1. Ch. 42. Par. 3.

- Therefore, there cannot be any difference between two hypothetical instances of “existence through itself” (because one of them would have to be restricted, which contradicts the absolute unrestrictedness of existence through itself) -- *modus tollens*.
- Since there can be no difference between two instances of “existence through itself” (without contradiction), there can be no multiplicity of “existence through itself” (because multiplicity requires difference) -- *modus tollens*.
- Therefore, unrestricted “existence through itself” must be absolutely one and only one (unique).

This proof can be illustrated through a simple example. Suppose there are two unrestricted realities. Then one of them would have to have something, or be something, or be somewhere, or be in some other dimension that the other one is *not*. If there were no difference of any kind between the two unrestricted realities – no difference as to power, act, qualities, space-time point, dimension, etc., -- then they would be the *self-same* reality – in other words, “they” would be only *one*.

Now consider the following – if there has to be some difference between the two unrestricted realities (in order for them to be “two”), and that difference requires that one of the “unrestricted” realities *not* have “something,” or *not* be “something,” or *not* be at a particular space-time point, or *not* be in a particular dimension – that the other one is, it would mean that the deficient one is *restricted*. Therefore, every hypothetical *second* unrestricted reality is a contradiction – a “restricted-unrestricted reality” – which is, impossible. Hence, there can only be one *unrestricted reality*.

Step 4: The One Unrestricted Uncaused Reality (“existence through itself”) must be the Ultimate Cause (Creator) of all else that exists.⁶⁵

This is derived from a two-step argument:

Step One

- As shown in step (3) above, there can be only one uncaused reality in the whole of reality.
- Since there can only be one uncaused reality in the whole of reality, then the rest of reality must be caused realities (true by disjunctive syllogism).

Explanation of disjunctive syllogism:

A disjunctive syllogism occurs when the two terms in the syllogism are “contradictories” – complete opposites. For example, reality **X** must be either caused or uncaused – not neither, not both. Again, reality **X** must be either material or immaterial – not neither, not both. It must also be either conditioned or unconditioned – not neither, not both.

Whenever the terms in a syllogism are completely contradictory, then we know all the possibilities are covered and both possibilities cannot co-exist in the same reality in the same respect. For example, with respect to the contradictory syllogism “reality ‘X’ is either caused or

⁶⁵ For Aquinas’ discussion of this, see *Summa Theologica* 1947, Pt. I, Q. 44, Art. 1.

uncaused,” there are no other possibilities besides these two options. Therefore, we can say with certainty that one of them must be true (we cannot say “neither is true”). Furthermore, in the same proposition, we know that one of the possibilities must be false, because both contradictories cannot co-exist in the same entity in the same respect.

Now let us return to the second premise. For any given reality “X” in the whole of reality, it must be either caused or uncaused (because all the possibilities are covered). Now if we know that there is only one uncaused reality in the whole of reality (which we have proven in Step 3), then we know -- by disjunctive syllogism -- that every other reality in the whole of reality cannot be uncaused, and if we know that they cannot be uncaused, we know – by disjunctive syllogism – that they must all be *caused* realities.

We may now proceed to our final proof:

- (i) The whole of reality – besides the one uncaused reality – is constituted by caused realities – those requiring a cause in order to exist (proven immediately above).
- (ii) All caused realities must ultimately depend on an uncaused reality for their existence – without this cause, they would be literally nothing (proven in Step One above).

Therefore, the one unrestricted uncaused reality must be the ultimate cause of all other realities in the whole of reality. Such an “ultimate cause” is called a “Creator.”

Therefore, the one unrestricted uncaused reality is the Creator of everything else that exists.

Conclusion to the First Four Steps

There must exist a unique unrestricted uncaused reality which is the Creator of all else that exists. This reality may be called “God,” because it is consistent with the one God of Judeo-Christian revelation.

I.B

Clarifications and Response to Objections

The Thomistic proof of God has been criticized for two major reasons – both of which are articulated by Bertrand Russell in his book *Why I am Not a Christian*. Richard Dawkins has more recently added another objection which will be treated in Section IV below. Let us consider Russell’s criticism in his own words:

It is maintained that everything we see in this world has a cause, and as you go back in the chain of causes further and further you must come to a First Cause, and to that First Cause you give the name of God. That argument, I suppose, does not carry very much weight nowadays.... You can see that the argument that there must be a First Cause is one that cannot have any validity. I may say that when I was a young man and was debating these questions very seriously in my mind, I for a long time accepted the argument of the First Cause, until one day, at the age of eighteen, I read John Stuart Mill’s *Autobiography*, and I there found this sentence: “My father taught me that the question ‘Who made me?’ cannot be answered, since it immediately suggests the further question ‘Who made God?’” That very simple sentence showed me, as I still think, the fallacy in the argument

of the First Cause. If everything must have a cause, then God must have a cause. If there can be anything without a cause, it may just as well be the world as God, so that there cannot be any validity in that argument.⁶⁶

There are two objections to the first cause argument mentioned by Russell which reflect two misunderstandings about the Thomistic proof of God that continue to persist today (see for example, the discussion of Dawkins below). First, Russell asserts that all first cause arguments assume the principle of universal causation – “everything must have a cause,” and so such arguments easily fall prey to the objection – “So what caused God?” As we shall see, this is a very poor representation of Aquinas and other metaphysicians – and constitutes nothing more than a strawman argument. The second objection comes in the last sentence of the above citation – “If there can be anything without a cause, it may just as well be the world as God, so that there cannot be any validity in that argument.”

With respect to the first objection, I am not aware of any Thomistic, Aristotelian, or Lonerganian philosopher who formulated or made recourse to such a facile argument. A child could deduce that “if everything requires a cause, then God would require one as well.” So what do traditional and contemporary metaphysicians *really* say?

Thomists use two basic approaches:

1. They prove the impossibility of an infinite subordinated series of causes which *requires* a finite number of causes – and therefore a first cause, or
2. As in the above metaphysical proof, they first establish the necessity of at least one *uncaused reality*.

In the second approach, Thomists do *not* assume that the whole of reality is caused – but *prove* that there must be at least one uncaused reality existing through itself. If such a reality does not exist, then nothing exists – which is contrary to fact.

Let us now consider Russell’s second objection – “If there can be anything without a cause, it may just as well be the world as God....” Can it be that traditional and contemporary metaphysicians were not astute enough to avoid this objection? Consider the proof given above. The *first* step proves the necessity for at least one *uncaused reality*. It does not *assume* that there cannot be other uncaused realities in the world – or *assume* that the only uncaused reality is God. Rather, the *second* and *third* steps *prove* that an *uncaused reality* must be absolutely unrestricted, and that an absolutely unrestricted reality must be completely unique. Therefore, they prove (in the fourth step) that there cannot be any other uncaused realities besides the one unrestricted reality (termed “God” after the fourth step).

Thus, the metaphysical proof does not *assume* that God is the only uncaused reality – it *proves* that an uncaused reality must be unique because it must be unrestricted.

⁶⁶ Bertrand Russell. 1957. *Why I am Not a Christian, and Other Essays on Religion and Related Subjects*. (New York: Simon and Schuster). pp. 6-7.

Why is this proof compelling for so many academic metaphysicians? Its conclusions are grounded in reasonable and responsible *a posteriori* and *a priori* evidence. This means that a denial of any of its conclusions will result in a contradiction of fact (*a posteriori* evidence) or an intrinsic contradiction – an impossible state of affairs (*a priori* evidence). I will review each of the conclusions here with a view to showing the *a posteriori* and *a priori* evidence supporting them. If some readers find this repetitious, please skip to Section I.C below where we will examine three additional implications of this metaphysical proof.

The first step shows that if the whole of reality is composed of only caused realities (even an infinite number of caused realities) then the whole of reality collectively would be a caused reality requiring a cause for its existence. However, no such cause can be real, because it would have to be beyond the whole of reality. Thus without at least one uncaused reality, the whole of reality would be absolutely nothing – which is obviously contrary to fact. Therefore, there must be at least one uncaused reality (existing through itself) in the whole of reality.

The *second* step – the proof that an uncaused reality (existing through itself) must be unrestricted is grounded in two important Thomistic metaphysical discoveries:

1. The real distinction between existence and essence, and
2. The requirement that existence precede essence.

If we interpret “existence” as “existence through itself” (the fundamental act or power of an uncaused reality) and interpret “essence” as “any restricted way of existing” (such as the way of existing like a proton, an electron, a cell, a complex organism, etc.), we can see the *necessity* for these two metaphysical principles.

With respect to the first principle, if “existence through itself” were not really distinct from “any restricted way of existing,” then it would be self-identical with it – thereby restricting its activity to, say, the way of existing like an electron. Since this restriction would prevent it from acting in any different or incompatible way than that of an electron, the whole of reality would be electrons. The same would apply to any other possible restricted way of existing. Therefore, if “existence through itself” were not really distinct from “any and all restricted ways of existing,” there would be no multiplicity of realities – which is contrary to fact.

The second principle is also necessary – “existence through itself” must exist prior to “any restricted way of existing.” Since “any restricted way of existing” (say, that of an electron) is really distinct from “existence through itself,” that way of existing does not exist through itself – because it is not – that is, it is really distinct from – “existence through itself.” Therefore, every restricted way of existing depends on “existence through itself” for its existence. As such, “existence through itself” must exist prior to *any and all* restricted ways of existing. Inasmuch as it exists prior to all restricted ways of existing, it is absolutely unrestricted. To assert the contrary is intrinsically contradictory.

If the reader is persuaded by the necessity for at least one uncaused reality, the real distinction between existence and essence, and the ontological priority of existence over essence,

then it will be very difficult to deny the existence of at least one unrestricted uncaused reality, because the denial of such a reality would entail contradictions of fact or an intrinsic contradiction (*a posterior* or *a priori* evidence, respectively).

If the reader affirms the existence of at least one unrestricted uncaused reality, then the rest of the proof follows easily from two additional metaphysical principles going back to the time of Parmenides (born 515 B.C. -- the father of ontology and logic). The first principle is difficult to deny because it is a virtual tautology – “if there are no differences of any kind between one reality and another, they must be the self-same reality – ‘they’ are not two, but only one.”

The second principle requires slightly more explanation. If there is to be a difference between two realities, then one of the realities will have to have something, be something, be somewhere, or be in another dimension that the other one is *not*. The reality that does *not* have that “something” must be restricted (*a priori*). When this is applied to the possibility of two unrestricted realities, we immediately detect a contradiction. If one of the differentiated realities must be restricted (in order to have a difference), then any second unrestricted reality would have to be intrinsically contradictory – a “restricted-unrestricted reality.” This means that there cannot be any second or third, etc. unrestricted realities – but only one.

When we combine this conclusion with the one reached in the first two steps – “there must be at least one unrestricted reality in the whole of reality,” we must conclude that there must be one *and only one* unrestricted reality in the whole of reality.

If the reader affirms the above reasoning in order to avoid contradictions of fact as well as intrinsic contradictions (impossible states of affairs), then the rest of the proof follows by disjunctive syllogism – a syllogism which has contradictories in its first premise. As noted above, this would take the form of “either A or not A – not neither, not both.” This has several meaningful applications in metaphysics – “either finite or infinite – not neither, not both,” “either caused or uncaused – not neither, not both,” “either conditioned or unconditioned – not neither, not both,” “either material or immaterial – not neither, not both, etc.” Notice that since one of the options must be true and the other false, we can deduce the truth of one from the falsity of the other, or the falsity of one from the truth of the other. Thus, if something is a caused reality, it is not an uncaused reality; if it is an uncaused reality, then it is not a caused reality; if it is *not* an uncaused reality, then it is a caused reality; and if it is not a caused reality, then it is an uncaused reality.

This has an important application in the above proof of God. If there must be one *and only one* unrestricted reality in the whole of reality, then everything else in the whole of reality cannot be uncaused realities – and therefore must be caused realities – by disjunctive syllogism.

We may now combine this conclusion with the one reached in Step One. Recall from that step that an infinite number of caused realities without an uncaused reality is collectively still a caused reality without a real cause – that is, absolutely nothing. Therefore, *all* caused realities are ultimately dependent on an uncaused reality for their existence. Without an uncaused reality all caused realities would be absolutely nothing. It follows from this, that the one unrestricted uncaused reality must be the ultimate cause of all other realities in the whole of reality – that it

must be the Creator of everything else that exists. This is what is meant by the term “God” – therefore God, as defined, exists.

As can be seen, the denial of this conclusion leads to violations of either *a posteriori* or *a priori* evidence. If such violations of evidence are untenable, then God’s existence can be affirmed through rational and empirical evidence.

Let us return for a moment to Russell’s contention that such proofs assume the universality of causation (“everything must have a cause”). As can be seen, this proof makes no such assumption. Indeed it proves from the outset that there must be at least one *uncaused* reality – and it does something more – it *proves* the universality of causality for all realities other than the one unrestricted uncaused reality. Instead of assuming universal causality, it proves the validity and applicability of causality within the whole created world. It is truly regrettable that thinkers like Russell and Dawkins are so focused on demeaning religion and transcendence that they fail to appreciate the truly insightful contributions of St. Thomas Aquinas, and later generations of Thomists.

I.C

The Simplicity, Transtemporality, and Intelligence of God

The Thomistic metaphysical proof lends itself to a deep understanding of three of the most complex issues in the area of natural theology, metaphysics, and ontology:

1. The nature of metaphysical simplicity,
2. The possibility of transtemporality,
3. The nature of non-physical intelligence.

When these three topics are given a consideration in light of the above Thomistic proof of God, many of the objections of Richard Dawkins and other contemporary atheists disappear, because those objections are grounded in misunderstandings of these three subject areas.

The following three subsections give the proof for why these three characteristics must belong to God (as proven above in Section I.A) – the unique, unrestricted, uncaused reality which is the Creator of all else that exists.

I.C.1

The Simplicity of God

The Unique Unrestricted Uncaused Reality (Existing through Itself) must be Absolutely Simple (the absence of complexity)⁶⁷

Basic Argument:

1. Complexity entails parts;
2. Parts entail restriction.
3. But there can be no restriction in the pure act of existing through itself.

⁶⁷ Aquinas articulated this in many different ways and works. A particularly clear one may be found in *Summa Theologica* 1947, Pt. I Q.3, art. 7.

Therefore, there can be no parts and no complexity in the pure act of existing through itself (*modus tollens*).

Explanation:

The first and second premises are true *a priori*. Anything which is complex must have parts constituting a greater whole. For example, atoms are constituted by protons and electrons; molecules are composed of atoms; cells are composed of molecules; complex organisms are composed of multiple cells and cellular structure, etc. Notice that each of these parts is restricted as to its place, duration, and way of existing. Now if there are parts constituting a greater whole, the parts must be more restricted than the whole (by definition), and therefore the parts must have restrictions as to their time, space, or way of existing. For example, protons must be more restricted in space and way of existing than atoms, and atoms must be more restricted in space and way of existing than molecules, and molecules must be more restricted in space and way of existing than cells, etc.

The proof of the third premise (“there can be no restriction in the pure act of existing through itself”) was given in step (3) above.

Therefore, by *modus tollens*, if there can be no restrictions in the pure act of existing through itself, then there can be no parts in the pure act of existing through itself, and if no parts, then no complexity. It must be absolutely simple.

This stands in direct contrast to Dawkins’ assertion that a Creator must be more complex than what it designs (creates). Dawkins’ confusion arises out of a misunderstanding of “simplicity” in the Aristotelian and Thomistic metaphysical models. As a biologist, he associates simplicity with the most basic *part* of physical reality. This is natural enough, because some atomistic physical models incline toward this point of view. However, a cursory reading of St. Thomas Aquinas indicates that he could not have meant “simplicity” in this way – for he was not an atomist and was not familiar with the contemporary scientific perspective.

So what did Aquinas mean by simplicity? He meant the “*absence* of intrinsic and extrinsic restrictions or boundaries that would give rise to parts and composites.” He did not apply this understanding of simplicity to the most elemental part of *physical* reality – which would be the *lowest* and least functional ontological level (e.g. an atom in Galileo’s system or a mass point in Newton’s system or a subatomic particle in contemporary models). Rather he *proved* that simplicity must be present in the reality with the *highest* ontological status – the one that enjoys ontological priority over all restricted ways of existing – that is, the unique uncaused reality (existing through itself). When Aquinas proved that an uncaused reality had to be unrestricted, he simultaneously proved that it had to be absolutely simple – as shown in the proof above (there can be no parts in something which has no intrinsic or extrinsic restrictions).

Thus, for Aquinas, simplicity is a mark of a *high* level of being and functionality – and absolute simplicity is the mark of the *highest* level of being and functionality. This stands in direct contrast to physicalist and scientific models of simplicity which see it in precisely the opposite way. In those models, the simplest *elements* have low ontological status while the most

complex elements (built up from simple elements) have the highest degree of being and functionality.

Both the Thomistic and scientific views of simplicity are *correct* – in the respective areas to which they apply the concept. Therefore, in the Thomistic model, “simplicity” legitimately indicates the higher levels of ontological status – while in scientific models, complexity indicates the higher levels of ontological status. It all depends on one’s perspective and use of the concept.

As we will see below (Section I.D), Dawkins application of “complexity” to God (a supreme designer) is incoherent, because it does not take into account the attributes of God. The first and most fundamental attribute of God is “existence through itself,” which has to be absolutely unrestricted (absolutely simple), unique, and the Creator of everything else. When Dawkins failed to define the attributes of God – beginning with the most fundamental one (“existence through itself”), he failed to see that God could not possibly be the most complex of all realities (as he alleges), but instead the most metaphysically *simple* of all realities. As we shall see, this turns his proof against the probability of God on its head. With a proper understanding of “God” and “simplicity,” one recognizes that God could not be the most complex of all realities – but instead, the least complex of all realities – which by Dawkins’ own criterion makes God the *most* probable reality of all.

I.C.2

The Transtemporality of God

The One Unrestricted Uncaused Reality (Existing through Itself) is Transtemporal⁶⁸

The proof for this may be found in Step (2) of the basic proof of God given above. Recall that the second step (proving that an uncaused reality must be unrestricted) has two substeps based on two Thomistic metaphysical discoveries:

1. The real distinction between existence and essence,
2. The requirement that existence precede essence.

⁶⁸ St. Augustine wrestled with this in Book Eleven of *The Confessions*, coming to the conclusion that God is “an eternal now,” and that he was not before time, because he was not in time (and that there was no time before time) – see particularly Book Eleven, Chapter XIII, paragraph 16. Of course, he meant this *analogously*, because the best any of us can do is a negative judgment – an act of existing which is not subject to a temporal manifold. Aquinas follows Augustine in the timelessness of God (as “eternal now”), and goes further, attempting to explain how such a timeless reality could understand “all time” of created realities that are conditioned by and progressing in time. He uses *analogies* to discuss this (such as seeing the progression of time from on high in a single vision **or** being at the center of a circle and observing all equidistant points at once), but we cannot think that he believed these analogies to represent *God’s* reality, for they would imply that God’s reality is conditioned by space and geometry, and also imply “eternalism” in which the past, present, and future coexist (a theory to which Aquinas did not subscribe). See *Compendium Theologiae* 133; *De Veritate* 11, 12 resp.; and *Summa Theologica* I, Q.10. So we are back to the negative judgment that God is *not* conditioned by time, and that the whole of temporal reality (such as our universe and any other temporal reality beyond it) exists as a single *transtemporal* “thought” in God’s unrestricted act of thinking (see Step 7 below). For a contemporary understanding of time and transtemporality (in light of Bergson and others), see Spitzer 2000, pp. 260-276; see also Spitzer 2010(a) pp. 183-196; see also Bergson 1965.

With respect to the first principle, “existence through itself” must be really distinct from temporal conditioning, because it cannot be restricted to any specific time. If it were, then all other times would not exist – which is clearly contrary to fact.

With respect to the second principle, inasmuch as “existence through itself” is really distinct from any specific time – and temporal conditioning -- it must exist *prior* to temporal conditioning – and therefore prior to time itself.⁶⁹ Why? Since temporal conditioning (arising out of time itself) is really distinct from “existence through itself,” it does not exist through itself, and must therefore depend on the prior existence of “existence through itself.” Thus, “existence through itself” must be prior to time itself.

The idea of a reality being non-temporal or transtemporal is difficult to imagine. But Henri Bergson provides an analogy to help us understand it. If time is a continuum of earlier and later, then it must be held together by something like “elementary memory” or “elementary consciousness,” otherwise all time would be reduced to a dimensionless instant. Why? Because without it, the earlier part of the continuum would pass away as a later part becomes present. In order for time to be more than a dimensionless instant, the earlier part of the continuum must be retained when the later part becomes present. For Bergson, elementary memory or consciousness (in the universe) retains these earlier moments, and as such, is the unifying substrate of the temporal continuum.

This gives rise to an interesting question: can this elementary act of memory or consciousness be a unifying substrate without itself being subject to time (an earlier-later continuum)? There is no reason why this unifying substrate would have to be “inside” the temporal continuum it unifies any more than *my* act of consciousness must be subject to its contents. My consciousness does not have to become square in order to unify four inscribed right angles with equal sides, and it need not be subject to an earlier-later condition when it unifies an ever growing number line. Consciousness is capable of unifying spatial and temporal manifolds without itself being subject to them. To deny this is to reduce a more fundamental reality to a less fundamental one.

⁶⁹ I consider “time” to be a *real* non-contemporaneous continuum separating two distinct states in the same entity (e.g. the cat alive and *then* the cat dead) as well as in the universe (the same object here and then there). In contrast to time, space is a *contemporaneous* continuum – separating two objects in a unified field at the same time. Without time -- non-contemporaneous separation -- the universe of changing states would be a complete contradiction, because those incompatible states (in a particular reality or in the universe) would have to be simultaneous. Furthermore, a *real* non-contemporaneous continuum necessary to separate the above opposed states cannot be an instant. It must have non-contemporaneous magnitude or distension. In my view, Henri Bergson is correct in contending that a real non-contemporaneous magnitude must have some dimension of elementary memory or elementary consciousness to hold the earlier part of the distended continuum in existence along with the later parts. Without such an elementary memory or consciousness, time would be reduced to an instant – and history would be nothing more than one massive contradiction. This is explained fully in Robert Spitzer 1989, *A Study of the Nature of Objectively Real Time* (Ann Arbor, MI: U.M.I.); and also Spitzer 2000 “Definitions of Real Time and Ultimate Reality” in *Ultimate Reality and Meaning: Interdisciplinary Studies in the Philosophy of Understanding* 23:3, pp. 260-267; and also Spitzer 2010 *New Proofs for the Existence of God: Contributions of Contemporary Physics and Philosophy* (Grand Rapids, MI) pp. 183-196.

In Step (8), it will be shown that the pure unrestricted act of existing through itself is an unrestricted act of mentation (thinking). As such, it need not be subject to the “earlier-later continuum” it unifies. The whole of time can be unified in a timeless reflective act.

We must acknowledge at the outset, that a timeless act of mentation is impossible to visualize because as many philosophers have noted, our experience and imagination are conditioned by space and time. So how can we conceive of something we cannot imagine (picture think)? We can only do this by a kind of *via negativa* – that is by a conceptual process which avoids the temporalizing dimension of the imagination (picture thinking). We will have to avoid trying to “get a picture of it,” and rest content with a negative judgment, namely, that there exists an uncaused reality existing through itself which does *not* exist through a temporal manifold or a spatial manifold, or anything else which is not itself. This pure act of existing must therefore be beyond any universe and any spatio-temporal reality, making it unimaginable. Nothing more can be said without distorting this reality through the conditions of our spatial and temporal imagination.

I.C.3

The Unrestricted Intelligence of God

The Unique Unrestricted Uncaused Reality (Existing through Itself) is an Unrestricted Act of Thinking⁷⁰

The following shows and explains this contention.

What is thinking?

- (i) Thinking (in contrast to imagining or picture thinking) is the grasp of relationships among realities – qualitative relationships, causal relationships, quantitative relationships, logical relationships, temporal relationships, spatial relationships, and any other intelligible relationship responding to the questions “What?” “Where?” “Why?” “When?” “How?” “How many?” and “How frequently?”
- (ii) The ability to grasp relationships presumes an underlying unity through which the differences among realities can be related. For example, a map can unify diverse geographical locations so that they can be seen *in relation* to one another. A clock provides a unity for different times so that they may be seen in relationship to one another. There must be some underlying unity to bring together causes and effects in causal relationships. The same holds true for “What?” or “How?” or “How many?” etc. We might summarize by saying that thinking is a unifying act that sets differing realities or ideas into relationship with one another. Therefore, thinking goes beyond imagination (picture thinking which is limited to mere identification of individual things). When realities or ideas are set into relationship with one another, we can detect similarities and differences, quantities and

⁷⁰ Aquinas’ views here are expressed by Bernard Lonergan in *Verbum: Word and Idea in Aquinas* (Lonergan 1994 pp 191-228). Aquinas first shows the spiritual nature of self-consciousness and thought in human beings (captured by Chapters One through Four of Lonergan 1994) and then proceeds to use this as an analogy of God’s completely simple, unrestricted act of self-consciousness (in Chapter Five of Lonergan – “*Imago Dei*”). The spiritual nature of human intellection is also captured by Lonergan’s “notion of being” in Lonergan 1992, pp. 380-381 (see the reference below).

causes, relative location and time, and we can even detect relationships among relationships.

- (iii) As noted above, the unique unrestricted uncaused reality (existing through itself) has no spatial, temporal, or other intrinsic restrictions. Therefore, there is nothing to prevent it from being in a perfectly transparent and reflective relationship to itself.

This can be analogically understood by our own act of self-consciousness in which the same act of consciousness is both “experienced” and “experiencer” simultaneously. This does not imply that our thinking has distinct parts, but rather that the one indivisible act of consciousness has *relational* differences “within”⁷¹ itself.

Let us return now to the pure unrestricted act of existing through itself. Inasmuch as it is perfectly self-transparent (because it has no intrinsic spatial, temporal, or other restrictions), it can be perfectly present to itself as “experiencer” and “experienced.” This means it is perfectly self-conscious (in a fundamental unity without parts). The absence of spatial, temporal, and all other restrictions makes the one uncaused reality (existing through itself) perfectly self-transparent, perfectly self-relational, and therefore, perfectly present to itself and perfectly self-conscious.

This completely simple, self-transparent reality can generate the whole domain of restricted intelligibility. Consider the following:

- (i) Embedded in its self-consciousness is an awareness of the *difference* between itself as experiencer and experienced, and so there is not only an awareness of self, but an awareness of relational *differences* within itself. Inasmuch as “self” and “difference” are grasped, so also are all other ideas. The self can grasp not only itself, but what is different from itself – e.g. restriction and change. By grasping “self,” “difference,” “restriction,” and “change,” it grasps the whole range of finite intelligibility. Plato shows how this is done in his remarkable late dialogue *The Sophist*.⁷²
- (ii) Notice that this unrestricted act of mentation is not like a brain or anything material or restricted. It is identical with the pure unrestricted act of existing through itself, because the complete absence of restriction in this acting power enables it to be present to itself, and differentiate itself from what it is not – the whole range of restricted intelligibility.

We cannot visualize it or imagine it; we can only *understand* that there must exist the one unrestricted uncaused reality (existing through itself), and that it must be a perfect unity in relation to itself, and therefore perfectly self-conscious and perfectly conscious of everything that could be different from it (the whole domain of restricted intelligibility).

⁷¹ The term “within” here has no spatial connotation for obvious reasons; it refers only to the relational difference between “experiencing” and “being experienced” in a single act of consciousness.

⁷² In *The Sophist*, Plato recognized how the entire domain of restricted intelligibility could be generated and explained through the interrelationship of six fundamental ideas (three diads): Being and nonbeing, sameness and difference, and motion and rest. See Plato 1961(c), pp. 978-1028 (236d-264b).

Bernard Lonergan comes to a similar conclusion in his work *Insight: A Study of Human Understanding*, and calls the unrestricted uncaused reality “an unrestricted act of understanding—understanding itself.”⁷³ For Lonergan’s proof of this see below (Section II.E) where Lonergan shows that the uncaused reality must be perfectly intelligible, and as such, cannot be material (like a brain) or abstract (like the expression of an idea) or a restricted act of thinking – meaning that it must be an unrestricted act of thinking.

Inasmuch as the pure unrestricted act of existing through itself is an unrestricted act of thinking, its awareness of all finite intelligibility allows for the creation of finite being.

I.D **A Response to Richard Dawkins**

Dawkins’ core argument in *The God Delusion* may be summarized as follows:

1. A designer must always be more complex than what it designs.
 2. Whatever is more complex is more improbable.
- Therefore, a designer must be more improbable than what it designs.⁷⁴

There can be little doubt that Dawkins’ second premise (“whatever is more complex is more improbable”) is true, because the more complex a reality is, the more parts there are to order or organize. Since order or organization is more improbable than disorder, it follows that the more parts there are to order, the more improbable the ordering will be.

However, Dawkins’ *first* premise is highly contestable and ignores four Thomistic insights: (1) the necessity for at least one uncaused reality, (2) the real distinction between existence and essence, (3) the requirement that existence precede essence, and (4) the notion of metaphysical simplicity.⁷⁵ He also ignores the explanation of these insights in contemporary Thomists such as Etienne Gilson, Josef Pieper, Bernard Lonergan, Karl Rahner, and their followers. These philosophers contend (in conformity with the above metaphysical proof) that an uncaused reality (a Creator and designer) must be *absolutely simple* (a complete absence of complexity) instead of more complex (as Dawkins contends).

In the previous section (Section I.C.1 -- concerned with the simplicity of God), I explained why Dawkins arrived at precisely the opposite conclusion of Aquinas and others – the complexity of God instead of the absolute simplicity of God. Since he did not inquire into the most fundamental reality or the most fundamental state of reality, he did not discover or

⁷³ Lonergan 1992, pp. 657-708.

⁷⁴ Dawkins 2008, pp. 157-158.

⁷⁵ Dawkins makes a perfunctory criticism of Aquinas’ proofs for the existence of God (Dawkins 2008, pp. 100-103) but regrettably does not understand these proofs in any meaningful way. If he had, he would not have constructed a virtual “straw man” version of them, while missing the solution to one of the greatest metaphysical problems – the connection between an uncaused cause, absolute simplicity, and the nature of mentation (thinking).

recognize “existence through itself.” Thus, he had no chance of discovering (either for himself or through reading) the real distinction between existence and essence and the ontological priority of existence over essence. This led to a grand scotosis -- a self-blinding to the absolute unrestrictedness and absolute simplicity of “existence through itself.”

Ironically, if he had made these discoveries, he would not only have recognized the reality of God in the above metaphysical proof, but also in his *own* argument – which is supposed to show the improbability of God. Let us now reconsider Dawkins’ proof – correcting his first premise to reflect Thomistic insights:

1. A designer (God) must be *more simple* than anything it designs.
2. Whatever is more complex is more improbable.

Restated second premise: whatever is more simple is more probable.

Therefore, a designer (God) must be *more probable* than anything it designs.

Indeed, since God (the unique unrestricted uncaused reality) must be *absolutely* simple, he must be the *most* probable reality of all. Thus, Dawkins’ argument serves only to *affirm*—not to deny— the existence of a designer (Creator) if an uncaused reality must be unrestricted, and therefore absolutely simple (as proven above).

Dawkins’ argument reveals another weakness in his philosophical viewpoint – he interprets *thinking* in a *materialistic* way. This may conform to his biological background, but it ignores the nature of thinking (the apprehension of relationships among diverse objects) and self-consciousness (the relationship of the thinker to himself). In a materialistic worldview, one moves from the physical processes of the brain to the definition of thinking – which has the weakness of reducing the nature of thinking to the intrinsic limitations of physical processes. However in a philosophical worldview, one derives the definition of thinking from the conditions necessary to produce abstract thought, self-reflectivity, and syntactical language – and even the conditions necessary to grasp unrestricted intelligibility. Instead of restricting the nature of thinking to the limits of physical processes (in the brain), this approach considers the nature of thinking *in itself*. So long as a dynamic system meets the conditions necessary for thinking, it can be a possible source or cause of it. In this view, thinking does not have to come from physical processes, but could come from transphysical processes (e.g. a soul⁷⁶) or even from completely immaterial unrestricted processes (i.e. an unrestricted act of thinking – such as God).

The advantage of approaching “thinking” from the above philosophical point of view is that it explains five contemporary challenges to the materialistic view:

⁷⁶ By “soul,” I mean “a transphysical dynamic system capable of surviving bodily death, transcendental awareness (i.e. the tacit awareness of perfect truth, love, goodness, beauty, and home) and self-consciousness.” I have written about this extensively in Spitzer 2015 *The Soul’s Upward Yearning: Clues to our Transcendent Nature from Experience and Reason* (San Francisco: Ignatius Press) Chapters 3 – 6.

1. Trans-algorithmic thinking manifest in the creative leaps in mathematical development (Gödel's Theorem),⁷⁷
2. The presence of innate heuristic notions needed for conceptual ideas and the recognition of syntax (of which humans alone are capable – but not higher primates).⁷⁸
3. The capacity for self-reflectivity and “experiencing our experiencing” that appears to be inexplicable by physical processes alone (see David Chalmers’ “Hard Problem of Consciousness”),⁷⁹
4. The pure unrestricted desire to know which manifests our tacit recognition of complete intelligibility (Lonergan’s “Notion of Being”),⁸⁰
5. The requirement that an uncaused reality be perfectly intelligible – and therefore an unrestricted act of thinking (proven by Bernard Lonergan – see the following Section II for the proof).⁸¹

Any theory or model of thinking that does not respond to the above five challenges to physicalist models is inadequate – and should be reconsidered. Dawkins’ materialist model of thinking (which attributes mentation to the complexes of physical processes in the brain) addresses none of the above challenges. However, the philosophical views elucidated by Thomas Aquinas, Étienne Gilson, and Bernard Lonergan do account for them—and so should be preferred. These models of intelligence are similar to the one articulated above (in Section I.C.3).

Recall that these models are based on the unrestricted nature and power of the one uncaused reality existing through itself. Since this power has no intrinsic restrictions, it is capable of perfectly transparent relationship to itself (like an act of self-consciousness in which

⁷⁷ Kurt Gödel, 1931. “Über formal unentscheidbare Sätze der Principia Mathematica und verwandter Systeme I.” In *Monatshefte für Mathematik und Physik* 38, pp. 173-98. I have explained this proof – with updates from Stephen Barr, John Lucas, and Roger Penrose in Spitzer 2015 *The Soul’s Upward Yearning*, pp. 129-133.

⁷⁸ The deduction of the presence of innate heuristic notions was elucidated by Aristotle, Augustine, Aquinas, and Kant. I have explained these deductions in Spitzer 2016 *The Soul’s Upward Yearning*, pp. 115-116, 129-131, and 241-245. With respect to Noam Chomsky’s syntax test – and its application to higher primates by Herbert Terrace, see Spitzer 2015 *The Soul’s Upward Yearning*, pp. 104-105 and 131-139. See also Noam Chomsky, 2007, interview by Matt Aames Cucchiaro: “On the Myth of Ape Language.” <http://www.chomsky.info/interviews/2007.htm>. See also Herbert Terrace; L.A. Petitto, R.J. Sanders, T.G. Bever. 1979. "Can an Ape Create a Sentence." In *Science* Vol. 206 (4421): 891–902. <http://petitto.gallaudet.edu/~petitto/archive/Science1979.pdf>.

⁷⁹ See David Chalmers, 1995, “Facing Up to the Problem of Consciousness” *Journal of Consciousness Studies* 2 (3): pp 200-219.

See also Chalmers, 1997. *The Conscious Mind: In Search of a Fundamental Theory* (London: Oxford University Press). I have described this problem with references to other thinkers in Spitzer 2015 *The Soul’s Upward Yearning*, pp. 232-238.

⁸⁰ See Bernard Lonergan, 1992. *Insight: A Study of Human Understanding*. In *Collected Works of Bernard Lonergan* 3, edited by Frederick E. Crowe and Robert M. Doran, (Toronto: University of Toronto Press), pp. 380-387. I have described this in Spitzer 2015 *The Soul’s Upward Yearning* pp. 118-132.

⁸¹ See Lonergan 1992, *Insight*, pp 692-699.

the experiencer and the experienced are one and the same). Notice that there is no difference in *substance* between the experiencer and the experienced – the knower and the known – but only a difference in *relation*. This position was initially set out by Boethius, Augustine, and Aquinas in their treatises on the Trinity. Bernard Lonergan⁸² and Karl Rahner⁸³ articulate it in more contemporary terms and concepts.

As noted above (in Section I.C.3), this unrestricted power which is in a perfectly transparent relationship to itself is not only capable of a perfect act of self-reflectivity, but also a perfect act of differentiating itself from every possible way of existing which is not itself (i.e. restricted ways of existing). Thus it can generate from within itself the whole range of finite intelligibility.

In this model of thinking, the one unrestricted power of existing through itself is not limited by physical processes, spatiality, temporality, and other restricted ways of existing. It is capable of unrestricted, perfectly immaterial, perfectly self-conscious thought which addresses the above five challenges to physicalist models of thinking.

A brain or a computer cannot generate a completely self-transparent act of thinking because they are restricted in their activities and operations and in their physical structures and laws including quantum activities, structures, and laws. No amount of complexity of restricted parts will ever be able to generate an unrestricted act of mentation, because in their totality they will always be restricted.⁸⁴

In *The God Delusion*, Dawkins shows little understanding of how an unrestricted power of existing through itself can be self-transparent, self-relational, self-conscious, and therefore, capable of thinking and creating. He assumes that the more comprehensive the act of thinking, the more complex a reality must be. However, this is true only for materialistic conceptions of thinking--which are based on assembling restricted “building blocks” or material parts - like those found in brains and computers.

Though non-materialistic views of thinking were developed by ancient and medieval philosophers, the materialistic reductionism (which arose out of some interpretations of natural science) closed the human imagination to this possibility until Gödel’s Theorem and the quantum revolution perforce reopened it.⁸⁵ Bernard Lonergan and other contemporary philosophers

⁸² Lonergan 1992, Ch. 19

⁸³ Rahner 1994.

⁸⁴ I develop this position in much more detail in Spitzer 2010 (b) pp. 5-27.

⁸⁵ Gödel’s theorem gave the first modern clue to the non-mechanistic and non-algorithmic dimension of human consciousness (Gödel 1931, pp. 173-198). Later John Lucas (1961 p. 120) and Roger Penrose (1989 and 1994 pp. 7-59) combined this insight with developments in quantum theory. Stephen Barr has an excellent summary of Gödel, quantum theory, and the transphysical dimension of human intelligence (Barr 2003, p. 214ff). A detailed explanation of the contributions of Gödel and quantum theory may be found in Spitzer 2015 *The Soul’s Upward Yearning*, Chapter 3 Section V. C and Chapter 6 Section I. B. and III. C. See also the explanation of the transphysical notion of

combine the ancient and medieval insight into absolute simplicity with the Gödelian and quantum revolutions, and so their assessment of mind is important for resolving contemporary paradoxes in artificial intelligence and the unexplained creativity of human intelligence.⁸⁶ This is partially explained below (in the next Section II).

II. Lonergan's Proof of God

Lonergan's proof may be stated as follows:

If all reality is completely intelligible, then God exists.
But all reality *is* completely intelligible.
Therefore, God exists.⁸⁷

We will first prove the minor premise—"all reality is completely intelligible" (Section I)—and then prove to the major premise—"if all reality is completely intelligible, then God exists" (Sections II-V).

II.A Proof of the Minor Premise ("All reality is completely intelligible")

Step #1—"All Reality must have at least one uncaused reality that exists through itself."

If there were not at least one *uncaused* reality in "all reality," then "all reality" would be constituted by only caused realities – that is, realities that require a cause to exist. This means that all reality would *collectively* require a cause in order to exist – meaning all reality would not exist – because the cause necessary for it to exist would not be real (i.e. would not be part of "all reality"). Therefore, if there is not at least one uncaused reality that exists through itself in "all reality," there would be absolutely nothing in existence. But this is clearly contrary to fact, and so there must exist at least one uncaused reality that exists through itself in "all reality."

It should be noted that it does not matter if one postulates an *infinite* number of caused realities in "all reality." If there is not at least one uncaused reality (existing through itself) in "all

thinking in light of Lonergan's notion of being, quantum theory, and Gödel's theorem in Spitzer 2010 *New Proofs* (b) pp 5-27.

⁸⁶ See Lonergan's assessment of "The Notion of Being" in *Insight: A Study of Human Understanding*: "[T]he notion of being penetrates *all* cognitional contents. It is the supreme heuristic notion. *Prior* to every content, it is the notion of the *to-be-known* through that content. As each content emerges, the 'to-be-known through that content' passes without residue into the 'known through that content.' Some blank in *universal anticipation* is filled in, not merely to end that element of anticipation, but also to make the filler a part of the anticipated. Hence, *prior* to all answers, the notion of being is the notion of the *totality* to be known through all answers" (Lonergan 1992, *Insight*, pp. 380-381-italics mine). A detailed explanation of Lonergan's notion of being is given in Spitzer 2015 *The Soul's Upward Yearning* (Chapter 3 Sections V.A and V.B).

⁸⁷ See Bernard Lonergan 1992, *Insight: A Study of Human Understanding* in *Collected Works of Bernard Lonergan* 3, ed. by Frederick E. Crowe and Robert M. Doran (Toronto: University of Toronto Press) p. 695.

reality,” this infinite number of realities (collectively) would still not be able to exist, because the cause necessary for them to exist would still not be real – it would not be part of “all reality.”

Step #2—“An Uncaused Reality Must Be a Final and Sufficient Correct Answer to *All* Coherent Questions”—Making ‘All Reality’ Completely Intelligible.

There is another consequence of the existence of at least one uncaused reality. An uncaused reality not only enables “all reality” to exist, but also enables “all reality” to be *completely intelligible*. This can be proven in three steps:

Step# 2.A

Using the above logic, we can also deduce that every *real* cause-effect series must also have an uncaused reality. If the series did not have an uncaused reality, it would not exist, because it would be constituted only by realities that must be caused in order to exist, and as we saw above, this means that the entire series (even an infinite series) would *collectively* need a cause to exist. But if an uncaused cause is not in the collective causes and effects in the series, then the collective cause-effect series would be nonexistent—merely hypothetical. Furthermore, this uncaused reality must ultimately *terminate* every real cause-effect series, because when the cause-effect series reaches a reality that does not need a cause to exist (because it exists through itself), there is by definition no cause prior⁸⁸ to it. Therefore, an uncaused reality must terminate every *real* cause-effect series, and as such, no real cause-effect series continues infinitely. Thus, all real cause-effect series are finite insofar as they are terminated by an uncaused reality.

Step #2.B

At this point, Lonergan recognizes something special about a terminating uncaused reality. It is not only an ultimate cause and *terminus a quo* (the terminus from which any cause-effect series *begins*), it is also the ultimate answer to all questions of causal explanation – “Why is it so?” What Lonergan sees clearly is that *intelligibility* follows *ontology*. By “intelligibility” Lonergan means what makes something capable of being understood – that is what makes something “questionable” and “answerable.” If any intelligent inquirer can ask a coherent question about something, and that question has a correct answer that comes from “that something,” then “that something” is intelligible – it is capable of providing a correct answer to coherent questions asked about it.

What Lonergan sees in Chapter 19 of *Insight*⁸⁹ is that the *terminus a quo* (beginning) of any cause-effect series must also be the final *and sufficient* answer to the question for causal explanation – “Why is it so?” So why is an uncaused reality a final *and sufficient* answer to this question? Inasmuch as an uncaused reality terminates any cause-effect series, it also terminates the possible answers to the question “Why is it so?” asked about that series; and since an uncaused reality exists through itself, it must also explain itself through itself. It is its own answer to the question of its existence. Thus, the terminating answer to the question “Why is it

⁸⁸ This pertains to both ontological and temporal priority. Thus, there is no ontologically prior or temporally prior cause to an uncaused reality – by definition.

⁸⁹ See Lonergan 1992 pp 674-680.

so?” about any cause-effect series is also a completely self-explanatory answer. In this sense, it is both the terminating *and sufficient* answer to the question, “Why is it so?” for any cause-effect series.

Thus, we will always reach a *sufficient* end to our questioning for causal explanation (“Why is it so?”), because we will ultimately arrive at an uncaused reality existing through itself – without which all reality would be nothing. Therefore, an uncaused reality must be the final *and sufficient* answer to every question of causation (“Why is it so?”).

This has a further consequence for Lonergan, because the final answer to the question “Why is it so?” must also be the final answer to all other questions – as we shall see in Step 2.C.

Step #2.C.

If there must be a final *and sufficient* answer to the question “Why is it so?”, there must also be a final *and sufficient* answer to every *other* question (e.g. “What?”, “Where?”, “When?”, “How does it operate?” etc.), because the latter is grounded in (dependent on) the former. Without an ultimate cause of existence, there would be literally *nothing* to be intelligible. There cannot be questions for *intelligibility* (e.g. “What is it?”) that go beyond the final (ultimate) cause of *existence*. If there were such questions, their answers would have to be “nothing.” Therefore, a final (ultimate) answer to the question “Why is it so?” must ground the final (ultimate) answer to every other question. The answers to all possible questions must terminate in the final answer to the question “Why is it so?” Since there must exist a final *and sufficient* answer to the question “Why is it so?” (an uncaused reality existing through itself), there must also be a final *and sufficient* answer to every other question about reality. The complete set of correct answers to the complete set of questions really must exist – and reality, as Lonergan asserts, must therefore be completely intelligible.⁹⁰

II.B

Proof of the Major Premise

(“If all reality is completely intelligible, God exists⁹¹”)

Why does Lonergan believe that if all reality is completely intelligible, then God (i.e. a unique unrestricted reality which is an unrestricted act of thinking) exists? As we saw in the proof of the Minor Premise, all reality *must include* an “uncaused reality that exists through itself.” Without at least one uncaused reality, there would be *nothing* in all reality. This uncaused reality brings finality to the answers to every question that can be asked about all reality – and so makes all reality *completely* intelligible. Lonergan recognizes that such an uncaused reality must also be *unrestricted* in its intelligibility, and this requires that it be unique (one and only one) as well as an unrestricted act of thinking, and the Creator of the rest of reality. The proof of these contentions is summarized below in this section and in Sections III, IV, and V.

⁹⁰ See the extended treatment in Lonergan 1992, pp. 674-680.

⁹¹ This proof may be found in Lonergan 1992, pp. 692-698.

We now turn to the proof of the first of these contentions – namely, that an “uncaused reality existing through itself” must be unrestricted in its intelligibility. This may be shown in two steps:

Step #1

An uncaused reality must be unrestricted in its explicability (its capacity to explain *itself* from within itself). If it were restricted in its capacity to explain itself, then its existence would be at least partially unexplained, which contradicts the nature of a reality that exists through itself (an uncaused reality). Put the other way around, a reality that exists through itself (an uncaused reality) cannot be *restricted* in its capacity to explain its existence (because that would be a contradiction); therefore, it must be *unrestricted* in its capacity to explain its existence and so also *unrestricted* in its explicability.

Step #2

If an uncaused reality is unrestricted in its explicability, then it will be unrestricted in its intelligibility⁹² -- let’s begin with a logical examination of this contention. This can be analyzed by looking at the necessary logical implication of this proposition – namely, that if an uncaused reality is *not* unrestricted (i.e. is restricted) in its intelligibility, then it *cannot* be unrestricted (i.e. it must be restricted) in its explicability (*modus tollens*). In brief, if a reality is restricted in its intelligibility, then it will also be restricted in its explicability. As we saw in Step #1 above, an uncaused reality *must* be unrestricted in its explicability, otherwise it would be a contradictory state of affairs – “A reality existing through itself that cannot fully explain its existence.” It now remains to show why a restriction in intelligibility implies a restriction of explicability.

What does it mean for a reality to be restricted in intelligibility? It means that the information within a particular reality is not sufficient to completely and correctly answer coherent questions about it – e.g. “What is it?”⁹³ “How does it operate?” “Where can it or will it occur?” “When can it or will it occur?” “How frequently can it or will it occur?” etc. How do we know if a reality is restricted in this way? If any coherent question about a reality cannot be completely and correctly answered without making reference to realities beyond itself, then that reality does not contain within itself the information necessary to answer that question – it is *restricted* in its intelligibility. For example, I cannot completely answer *what* an electron is without reference to the electromagnetic field through which it operates (which is beyond any given electron). Similarly, I cannot answer questions about *where* and *when* an electron will occur without making reference to the space-time field, the specific electromagnetic field, and other electromagnetic constituents in the region (which are all *beyond* a particular electron). I cannot even understand *how* an electron operates without making reference to electromagnetic fields and other electromagnetic constituents (which are *beyond* a particular electron). In view of the fact that many coherent questions about electrons cannot be completely and correctly

⁹² See Lonergan 1992, pp. 674-679.

⁹³ The question “What is it?” is not asking for a simple identification – such as, “What is it?” – “It is an electron.” Rather, it is asking for the nature of an electron – that is, the specific powers and activities which distinguish this reality from the range of other realities.

answered without making reference to realities beyond it, it must be restricted in its intelligibility.

Notice that if the information in a particular reality cannot completely and correctly answer coherent questions (such as what it is, how it operates, where it will occur, when it will occur, and how frequently it will occur, etc) without making reference to realities beyond it, then the information in that reality will also be *unable* to answer the question “Why does it exist?” without making reference to those same realities beyond it. Let’s go back to our electron. If the question “What is an electron?” cannot be completely and correctly answered without making reference to electromagnetic fields (beyond it), then the answer to the question “Why does that electron exist?” will also not be able to be completely answered without making reference to those electromagnetic fields (beyond it). Similarly, if the questions “Where will it occur?” and “When will it occur?” cannot be completely and correctly answered without making reference to electromagnetic fields and other electromagnetic constituents in the region, then the question “Why does it exist?” will not be able to be completely and correctly answered without making reference to those same electromagnetic fields and constituents (beyond it). This correlation exists between *all* questions of intelligibility (“What?”, “How?”, “Where?” “When?”, “How frequently?”) and the basic question of explicability (“Why does it exist?”). If the complete and correct answers to questions of intelligibility must make reference to realities beyond it, then the complete and correct answer to the question of explicability must also make reference to those same realities.

What are the ontological implications of the conclusion given immediately above? If the intelligibility of any reality depends on realities beyond it, then the explicability of that reality also depends on these same realities beyond it. In view of the fact that a reality is restricted in intelligibility if its intelligibility depends on realities beyond it, and a reality is restricted in explicability if its explicability is dependent on realities beyond it, then it follows that if a reality is restricted in intelligibility, then it will also be restricted in its explicability.

Now let us return to the proposition under consideration in this section. It follows from the above conclusion by *modus tollens* – if a reality is unrestricted in its explicability (i.e. it does not depend on any realities beyond itself for its explicability), then it must be unrestricted in its intelligibility (does not depend on *anything* beyond itself for its intelligibility). Therefore it must *completely* and correctly answer every coherent question of intelligibility and explicability that can be asked of it. Now what are the possible coherent questions for intelligibility and explicability that can be asked of an uncaused reality that exists through itself?

At this juncture, the proof of the minor premise (Section I above) becomes important. Recall that it was proved there that an uncaused reality existing through itself is the final and sufficient answer to every question about “all reality” as well as every cause-effect series in “all reality.” Now let us return to the conclusion we just drew about the unrestricted intelligibility of an uncaused reality existing through itself. We said it would have to completely and correctly answer from within itself (without making recourse to anything beyond it) all coherent questions of what, how, where, when, and why, etc, that could be asked of it. In light of the minor premise, we now see that this would entail *every possible* correct answer to every possible question about “all reality” – since it is the final and sufficient answer to all such questions. This means that an

uncaused reality existing through itself must be able to completely and correctly answer every possible question that can be asked of all reality – which is *unrestricted* in its scope. There is *no* answer to any possible coherent question about “all reality” that is not included in it.

II.C

A Reality which is Unrestricted in Intelligibility must be Absolutely Unique

The general argument is as follows: If there were more than one unrestrictedly intelligible reality, there would have to be a difference between the one and the other, and if there were such a difference, then one of the supposedly “unrestricted intelligibles” would have to be restricted in its intelligibility—and obvious contradiction. This proof can be set out in two steps:

Step #1

Suppose there are two unrestrictedly intelligible realities – UI_1 and UI_2 . There would have to be some difference between UI_1 and UI_2 . If there were not some difference in intelligibility (difference as to activities, space-time point, qualities, etc.) between the one and the other, then the two would be the self-same, which means there would only be one of them (*a priori*). Therefore if there are two or more unrestrictedly intelligible realities, there would have to be a difference between them.

Step #2

If there is a difference between UI_1 and UI_2 , then one of them would have to be somewhere, be something, or have something that the other one did *not*. This “*not* having or being something or somewhere” implies that one of them would not be unrestricted in intelligibility – because one of them would *not* be intelligible in some way that the other one is. The one that is *not* intelligible in a way the other one is would have to be *restricted* in its intelligibility. This means that every *second or third* (etc.) hypothetical unrestrictedly intelligible reality would have to be restricted in its intelligibility – an obvious contradiction. Since every second or third (etc.) hypothetical unrestrictedly intelligible reality is intrinsically contradictory, it must be impossible. Therefore, there can be *only one* reality that is unrestricted in its intelligibility.

Prior to this point, we only showed that there must be *at least* one uncaused reality existing through itself. But in view of the fact that an uncaused reality (existing through itself) must be unrestricted in both its explicability and intelligibility, and the fact that there can be only one reality that is unrestricted in its intelligibility, we must now acknowledge that an uncaused reality must be “the one and only uncaused reality” – it must be absolutely unique.

Let’s review where we have come so far in the proof. We began by showing that there must be at least one uncaused reality existing through itself in “all reality” – otherwise nothing would exist (proved in the Minor Premise). We then proved that an uncaused reality would have to be unrestricted in its explicability – otherwise we would argue an intrinsic contradiction – “a reality that exists through itself that cannot fully explain its existence” (proved in Section II.B, Step 1). We then showed that a reality unrestricted in its explicability would also have to be

unrestricted in its intelligibility – because the answer to the question “Why is it so?” must ground the answers to all other questions – “What is it?” “Where is it?” or “How does it operate?” etc. (proved in Section II.B, Step 2). We then showed that there can be only one reality unrestricted in its intelligibility because every second, third (etc.) hypothetical unrestricted reality would have to be an intrinsic contradiction – “an unrestrictedly intelligible reality that has restrictions to its intelligibility” (proven in Section II.B). We are now in a position to assess two other attributes of the absolutely unique uncaused reality which is unrestricted in its intelligibility – it is a Creator and an unrestricted act of thinking.

II.D

The One Uncaused Reality is the Ultimate Cause of Everything Else in Reality

This proof comes from a simple combination of two conclusions given above:

1. Every caused reality and every cause-effect series must ultimately be caused by an uncaused reality – otherwise they would not exist (proved in the Minor Premise – Section II.A).
2. There can only be one uncaused reality (proved in Section II.B). Therefore, the one uncaused reality must be the ultimate cause of the existence of *all* caused realities (and cause-effect series).

We can now add one other deduction from the Minor Premise (Section II.A) to complete our conclusion. It comes from a simple disjunctive syllogism – in “all reality there must be either caused realities **or** uncaused realities.” This means that if there can only be *one* uncaused reality, the rest of reality must be caused realities. We may now complete our conclusion. If the one uncaused reality must be the ultimate cause of the existence of *all* caused realities, and all reality – except for the one uncaused reality – is constituted by *caused* realities, then the one uncaused reality must be the ultimate cause of the existence of *everything else* in reality – it is the ultimate cause of everything else that exists.

Since intelligibility follows existence (see Section II.B, Step 2), the one uncaused reality must be the ultimate cause not only of the *existence* of everything else, but also the *intelligibility* of everything else. It must be the ultimate, sufficient, correct answer to all questions about everything that exists.

In conclusion, the existence and intelligibility of every reality must be ultimately caused by the one – and only one – “uncaused reality existing through itself” which is unrestricted in its explicability and intelligibility. Inasmuch as “Creator” refers to the ultimate cause of reality and intelligibility, the one unrestrictedly intelligible uncaused reality is the Creator of everything else that exists.

II.E

The One Unrestrictedly Intelligible Uncaused Reality is an “Unrestricted Act of Thinking”

We will now explain Lonergan’s contention that unrestricted intelligibility can only occur through an unrestricted *idea*, which in turn can only occur through an unrestricted act of thinking.

As noted above, the one uncaused reality that exists through itself is unrestricted in its intelligibility. This means that it can answer from within itself not only the question “Why is it so?” but also all other questions grounded in this question for explanation. For Lonergan, this kind of intelligibility cannot be material (conditioned by space and time) or individuated (restricted to an instance and therefore unable to unify or relate distinct or opposed objects). It must therefore be trans-material and trans-individual – having the qualities of an *idea*. In order to explain what Lonergan means by “idea,” it will be helpful to distinguish between two kinds of thinking – “picture thinking” and “conceptual thinking.” Picture thinking results in what is called “*perceptual ideas*” – ideas which correspond to an *individual* image (such as my dog Fido), and “*conceptual thinking*” corresponds to *conceptual ideas*, which require more explanation.

Look at the words in the previous two paragraphs. How many of them correspond to an individual image (like my dog Fido)? As you can see, the vast majority of them do not correspond to any individual image. Instead they correspond to *concepts* which designate *groups* of objects and even groups of groups. Thus they can be conjunctions, prepositions, logical terms, mathematical terms, verbs, adjectives, abstract nouns, etc. How are these abstract “group” concepts formed? By placing perceptual and conceptual ideas into *relationships* with each other. Though some animals are capable of forming perceptual ideas, humans alone are capable of forming conceptual (“relationship based”) ideas.⁹⁴ So how do we form conceptual ideas that can stand for groups of objects and groups of groups? How do we form relationship-based ideas that do not directly refer to perceptual objects? How do we form ideas that can be used as predicates, objects, and grammatical, logical, and mathematical constructs? In a word, “*heuristic notions*.”

Notions are general inclusive concepts, and *heuristic notions* are among the highest of these inclusive concepts. They are capable of unifying (bringing together) all other less general concepts under their broad and inclusive intelligibility. These high-level unifying concepts enable humans to create superstructures through which to *interrelate* perceptual ideas among one another, perceptual ideas with conceptual ideas, and conceptual ideas among one another. These superstructures are like context for organization of particular ideas – like a map is a context for organizing specific places or a clock or calendar for organizing specific times, or a table of genus and species for organizing similarities and differences among realities, etc. Each superstructure has particular heuristic notions (high-level ideas) intrinsic to it that determine the way in which ideas are to be organized and interrelated.

For example, the notions of “similarity and difference” are essential for interrelating answers to the question, “What is it?” The notions of “here and there” are essential for interrelating answers to the question “Where?” The notions of “earlier-now-later” are essential for interrelating answers to the question “When?” And the notions of “causation-possibility-necessity-contingency-actuality” are essential to organizing answers to the question “Why?” Without heuristic notions to give intelligibility to organizational superstructures, we would have no way of relating ideas among one another, and if we could not do this, we would have no conceptual ideas. We would be reduced to about 4% of the words we use – limited only to those having direct pictorial referents.

⁹⁴ This is explained in Spitzer 2015 *The Soul's Upward Yearning: Clues to Our Transcendent Nature from Experience and Reason* (Chapter 3, Section VI).

Heuristic notions cannot be learned from the empirical world because we would have to *use them* in order to learn them. Recall that notions are necessary for transforming our perceptual ideas from the empirical world into conceptual ideas, and that notions are the highest-level *conceptual* ideas. Thus we are confronted with a paradox. We would have to use the very notions that we have not yet learned from the empirical world to translate our perceptions from the empirical world into notions – we would have to use them before we learn them so that we could learn them – an obvious impossibility. They must therefore be innate. Lonergan believes that all such heuristic notions are derived from the *supreme* heuristic notion – the notion of completely intelligible reality (what he terms “the notion of being”).⁹⁵

Bearing this in mind, we may now examine the function of heuristic notions. We use them to create organizing superstructures to relate perceptual ideas among one another, relate perceptual ideas with conceptual ideas, and relate conceptual ideas among one another. Let’s return to the heuristic notions of “here,” “there,” and “where.” Notice that these notions provide a superstructure (like a map) for *relating* one location to another location. Without this superstructure, we would not be able to understand location—because location requires *interrelating* the data of experience. Thus, perceptual ideas alone cannot make location intelligible. Similarly, the notions of “similarity,” “difference,” and “What?” enable us to create an organizational superstructure to *relate* one *kind* of object with other kinds of objects. Again, without these notions (and the superstructure they organize), we would not be able to understand various *kinds* of objects because perceptual ideas alone (unrelated to each other) do not reveal similarities and differences among objects.

The human mind with its innate heuristic notions is not limited to relationships among *perceptual* ideas; it can also organize relationships among *conceptual* ideas. This gives rise to second level abstractions (such as particular conjunctions – “and,” “or,” etc.) and particular prepositions (such as “here,” “around,” “below,” etc.), and third level abstractions (such as the concept of “conjunction” and “preposition”). The mind can generate higher and higher levels of abstract ideas in language, logic, mathematics, and metaphysics. Some of the higher levels of logic are manifest in the complex operators of contemporary modal logic; higher level mathematical concepts may be found in tensor geometry and the mathematics of higher dimensional space; and higher level metaphysical concepts are manifest in the ideas of space, time, reality, intelligibility, causation, and unrestricted intelligibility.

Notice that no conceptual ideas can exist in the physical world, because physical realities are limited by individuation and space-time particularity. Conceptual ideas transcend individuality and space-time particularity, and require the power of mentation (mind)—with its capacity to relate perceptual and conceptual ideas—to achieve this status.

Let us review – humans move from the domain of individual things and individual images (perceptual ideas) to the domain of conceptual (relational) ideas through the use of heuristic notions (high-level ideas that act as superstructures to organize relationships among perceptual and conceptual ideas). These conceptual ideas go far beyond the domain of individual material objects and perceptual ideas, because they contain *relational* contents that underlie the whole of language, logic, mathematics, metaphysics, and every science and discipline that uses

⁹⁵ For a thorough explanation of this, see Spitzer 2015, *The Soul’s Upward Yearning*, Chapter 3 (Section V).

them. Conceptual ideas, then, are vehicles to convey not only meaning, but the intelligibility of reality. Such ideas cannot come from the world of material things; they must come from the domain of mind (thinking) in which heuristic notions organize relationships among individual perceptual ideas and the conceptual ideas derived from them.

We may now proceed to the main point of this section – that the unique unrestrictedly intelligible uncaused reality is an unrestricted act of thinking. Recall from Sections II.A through II.D that an uncaused cause existing through itself (necessary for everything else to exist) must be unique and *unrestrictedly intelligible*. What kind of being has unrestricted intelligibility? As can be seen from the above analysis, it cannot be something physical or material which is limited by individuality and space-time particularity. Furthermore, it cannot be something which is merely abstract (such as a conceptual idea) because an abstraction is restricted by the ideas from which it is derived. Moreover, it cannot be a restricted act of thinking (which can still inquire) because a restricted act of thinking by definition is not unrestrictedly intelligible. Well then, what is a reality with unrestricted intelligibility? It must be an *unrestricted* act of thinking (mentation) which grasps everything about everything – every relationship among things and relations – the complete set of correct answers to the complete set of questions. Lonergan puts it this way (using “act of understanding” in the same way I have been using “act of thinking”):

...[I]ntelligibility either is material or spiritual [immaterial] or abstract: it is material in the objects of physics, chemistry, biology, and sensitive psychology; it is spiritual [immaterial] when it is identical with understanding; and it is abstract in concepts of unities, laws.... But abstract intelligibility necessarily is incomplete, for it arises only in the self-expression of spiritual intelligibility. Again, spiritual intelligibility is incomplete as long as it can inquire. Finally, material intelligibility necessarily is incomplete, for it is contingent in its existence and in its occurrences, in its genera and species... moreover, it includes a merely empirical residue of individuality, noncountable infinities, particular places and times.... It follows that the only possibility of complete intelligibility lies in a spiritual intelligibility that cannot inquire because it understands everything about everything.⁹⁶

So what is an unrestricted act of thinking like? Let’s begin with what it is *not*. An unrestricted act of thinking cannot occur through a *material brain* because a material brain cannot accommodate unrestricted intelligibility since it is restricted in both its intelligibility and its material functioning. The same can be said for artificial intelligence, which also is restricted in its intelligibility and material (electromagnetic, electrochemical, or even biochemical) functioning. Indeed, we will have to eliminate any apparatus, power, or activity which is in any way material or restricted in its power to ground intelligibility.

This means that an unrestricted act of thinking must be a *power* which is capable of bringing together, in a single act, the interrelationship among unrestricted intelligibility and all restricted intelligibility. What kind of power could this be? It must be a power that can be in

⁹⁶ Lonergan 1992, pp. 696-697.

relationship to itself and anything extrinsic to itself – a power which is not restricted by a spatial or temporal manifold; a power which has no intrinsic limitations or extrinsic restrictions that would prevent it from being unrestricted in its intelligibility; a power that can act as a unifying agent of every restricted reality and idea as well as for itself; a power which can be completely self-reflective, self-appropriating, self-conscious, and self-transparent because it has no intrinsic restriction preventing it from being present to itself and everything distinct from itself (the whole domain of restricted reality and intelligibility).

This pure mentative power cannot be imagined (i.e., picture thinking), because that would subject it to individuation as well as space and time (which it completely transcends). We can only approach it through an appreciation of its unrestricted and self-transparent unitive and unifying power. Any attempt to further refine this notion will only serve to restrict and particularize it – which would render our conception false.

For Lonergan, then, the only possible source of complete intelligibility is an unrestricted act of understanding – what we have called an unrestricted act of thinking – an unrestricted power capable of comprehensive unification of itself (unrestricted intelligibility) with the whole of restricted intelligibility in a completely self-transparent self-reflective act. This unrestricted mentative power is the ultimate cause of everything else in existence – including restricted powers of mentation (like ours). For this reason, Lonergan refers to it as “God.”

II.F Conclusion

We began this proof with showing the necessity for at least one uncaused reality that exists through itself – without which nothing would exist. We then proceeded to show that such a reality would have to be unrestricted in its explicability and intelligibility. We then showed that an unrestrictedly intelligible reality could only be one – absolutely unique – and then showed that this one unrestrictedly intelligible uncaused reality would have to be the ultimate cause (Creator) of everything else in reality. We then asked what an unrestrictedly intelligible reality would be like, to which we responded that it could *not* be a physical reality, an abstract idea, or a restricted power of mentation. This left only one remaining option – an *unrestricted* power of mentation which is described above. These proven attributes – unique, unrestrictedly intelligible, uncaused reality existing through itself, which is the Creator of everything else in reality and an unrestricted mentative power—may be referred to as “God.” Inasmuch as a denial of the above proof entails either a contradiction of fact (i.e. that nothing exists) or an intrinsic contradiction (e.g. an unrestrictedly intelligible reality which is restricted in its intelligibility), we may conclude that “God” as defined, exists.

Notice that this “God” is a metaphysical God – which emphasizes “*what* God is” – the attributes of God – but does not emphasize “*who* God is” – “the heart of God.” If we are to answer the latter question, we will have to go beyond the domain of reason, logic, and experience – and delve into the domain of revelation. Readers who are interested in the question of “*who* God is” – the heart of God – will want to examine the article called “**Who is God?**” This article can also be found on the second landing page (Happiness and Suffering) and the fourth landing page (Reality of Jesus) on our website, Magiscenter.com.

Third Topic

The Transcendental Attributes of God

Truth, Love, Goodness, Beauty, and Being

The Thomistic metaphysical proof of God (given above in the Second Topic -- Section I) provides the proof for two of the five transcendental attributes of God – perfect being and perfect truth. Recall from Steps 1 through 3 of the proof that the uncaused reality is “existence through itself” which must be unrestricted and unique. Beyond being unrestricted existential power, this reality is also absolutely simple (purely inclusive), transtemporal, and unrestrictedly intelligent. In Lonergan’s proof – given in the Second Topic (Section II) -- we saw that the one uncaused reality (existing through itself) had to be unrestrictedly intelligible, and therefore, an unrestricted act of thinking. If we put these conclusions into the categories of the ancients (beginning with Plato), we could affirm that perfect being (the one unrestricted uncaused reality existing through itself) is perfect truth (an unrestricted act of thinking).

We need not terminate our metaphysical inquiry with the unity of perfect being and perfect truth. The proof that perfect being and perfect truth are *absolutely simple* – purely inclusive – enables us to detect three other transcendental attributes of God – perfect love, perfect justice/goodness, and perfect beauty. As we showed above, an unrestricted reality must be unique and also perfect simplicity (perfect inclusivity). Christian Neoplatonists and Thomists noticed that such perfect inclusivity allows a reality to be a perfect unity – a perfect unifier of distinct realities. This led to the discovery of three other manifestations of perfect unity (perfect unification of distinct realities) – perfect love, justice/goodness, and beauty. We have already seen how perfect simplicity arises out of the unrestrictedness of “existence through itself” (perfect being), and it can be further illustrated in a consideration of how perfect mind – perfect truth – is also a perfect unity.

Unity, Inclusivity, and Perfection of Being – in Mind

Christian Neoplatonists recognized that the power of unification is a kind of “perfection.” For them, the more inclusive and unifying a reality is, the more perfect it is. Conversely, the less inclusive or unifying a reality is, the less perfect it is.

This view is premised on the idea that restrictedness leads to exclusion or opposition. For example, the restriction (or boundaries) of a square *exclude* the boundaries of a triangle, circle, and trapezoid from itself in the same respect at the same place and time. Similarly, the restrictions of an electron’s activities *exclude* the possibility of its acting like a proton or a positron in the same respect at the same place and time. Wherever there are restrictions and boundaries, there will also be *exclusion* of other restrictions and boundaries (in the same respect at the same place and time).⁹⁷

⁹⁷ See the extensive treatment of this in Spitzer 2010 (a), pp. 122-127.

Philosophers have long recognized that matter has more restrictions than mind. Matter is restricted by ways of acting (e.g. electron versus proton behaviors), individuation, and space-time particularity. Mind (thinking) is not limited in these ways. It is capable of *unifying* every restricted reality and idea in order to relate these excluding ideas to one another. When it does this, it finds similarities and differences, causes and effects, and spatio-temporal relations among these excluding realities. This unifying power enables mind to transform perceptual ideas into conceptual ideas (which are free of individuation and space-time particularity).⁹⁸ This allows conceptual ideas to be used as predicates and objects to say something *about* something.

Philosophers have also recognized that mind can unify at very high levels – not just relationships among perceptual (individuated) ideas, but relationships among relationships, and even relationships among complex relationships – achieving higher and higher levels of abstraction. These higher level ideas in logic, grammar, mathematics, and metaphysics give us great powers of analysis and synthesis – enabling creative advancements in mathematics, science, and every other discipline. Thus, mind or consciousness is capable of greater unification than matter – and the more it *unifies* in a single conscious or mentative act, the more powerful and creative it is. We frequently identify genius with the capacity to apprehend and create enormously comprehensive unities among ideas – in mathematics, logic, natural sciences, etc.

Now we can get to our main point. The unique *unrestricted* act of thinking (proved in both the metaphysical proof and Lonergan’s proof) must be the highest possible unifying power. Why so? Because the unique unrestricted act of thinking has no *restrictions* in its intelligibility, and as we saw, restrictions in intelligibility produce exclusions (contrary to unity and unification). Inasmuch as an unrestrictedly intelligible reality produces no exclusions, it is the highest – most inclusive – *perfect* unifying power.

If higher orders of unity indicate less exclusions, and less exclusions indicate less restrictions, then higher orders of unity also allow for greater *perfection* of reality. We have already seen that more inclusive mentation allows for greater unification of ideas and more perfect and comprehensive acts of thinking; but we cannot limit the power of inclusion and unity to the domain of being (existence through itself) and mentation alone; for *wherever* there is greater unity (inclusion), there is less exclusion and less restriction of *reality*. Hence, we should suppose that wherever there are higher levels of unity in reality, there will also be higher levels of perfection in reality.

There Can Be Only One Perfect Unity

Judeo-Christian philosophers recognized at least three other areas of reality susceptible to greater and greater levels of unity – love, goodness, and beauty. These thinkers came to an important conclusion – namely, that perfect unity in being and thinking must coexist in the same reality with all other manifestations of perfect unity -- i.e. perfect love, perfect goodness, and perfect beauty. The following argument will make this clear:

1. Perfect unity can only occur through an *unrestricted* reality because restrictions give rise to *exclusions* which are contrary to unity (see above).

⁹⁸ See Spitzer 2015 *The Soul's Upward Yearning* pp. 115-122 and 131-139.

2. There can be only one unrestricted reality (see Step 4 of the Thomistic metaphysical proof above).
3. Therefore, the one unrestricted reality must be the *one* perfect unity – whether it be manifest as perfect being, perfect mind, perfect love, or perfect beauty.
4. Therefore, the one unrestricted uncaused reality (proved in the Thomistic proof) which is an unrestricted act of thinking (proved in the Lonerganian proof) must be at once perfect being, perfect mind, perfect love, perfect goodness, and perfect beauty.

Now all that remains is to show why perfect love, perfect goodness, and perfect beauty should be considered perfect unities – and therefore the same reality as perfect being and perfect mind (the one unrestricted uncaused reality existing through itself as an unrestricted act of thinking).

I will first discuss why perfect love is perfect unity (a perfect unifier of distinct realities), then discuss perfect goodness, and then perfect beauty.

Perfect Love is Perfect Unity

If it can be shown that love, like mind, is a reality susceptible to greater and greater levels of unity, and that there is no intrinsic limit to the unifying capacity of love, then we can conclude that love is a perfect unity. Since there can only be one perfect unity (one perfect inclusivity – absolute simplicity – unrestricted reality), then perfect love must be an attribute of the one unrestricted uncaused reality.

So, then, is love a reality susceptible to greater and greater unity or unification? Many philosophers, both ancient and contemporary think that it is. We can see this unity in the power of empathy, care, and self-sacrifice.

Empathy (in-feeling; in Greek, *en-pathos*; in German, *ein-Fühlung*, coined by Rudolf Lotze in 1858) begins with a deep awareness of and connection to the other as both given and uniquely good. When we allow this awareness of and connection to the other to affect us, it produces an acceptance of the other and a consequent unity of feeling with the other, which opens upon an identification with the other tantamount to a sympathetic vibration. Though this unity with the feelings and being of another does not cause a loss of one's self or self-consciousness, it does cause a break with the autonomy we feel when we focus on the interior world of our self-consciousness. Were it not for the capacity to be open to the unique goodness of the other, we might be inexorably caught up in egocentricity and radical autonomy. However, empathy does not allow self-consciousness to become radically autonomous and absolute; it presents the possibility of relational personhood whenever we choose to accept our “unity of feeling with the other,” and to identify with the being of the other.⁹⁹

This acceptance and identification of the feelings and being of the other gives rise to concern for the other, which evolves into care for the other as the relationship grows. This care, in its turn, can completely reverse the human tendency toward autonomy (being over against the other), and give rise to a self-giving which can become self-sacrificial (*agapē*). Through

⁹⁹ Edith Stein has written a powerful essay on this phenomenon in *On the Problem of Empathy*. See Stein 1989.

empathy, then, we go beyond our autonomy (our natural tendency to turn inward) to initiate a unity with the other whereby doing the good for the other is just as easy, if not easier, than doing the good for ourselves.

Empathy is a natural power of unification, and love is its completion. When the unifying power of empathy takes hold in our free will and intentionality, we begin to care about the other and care for the other – intensifying our unity with the other. If this process continues, we can lose our sense of self-interest, and open ourselves to self-sacrifice for the beloved. This self-sacrificial love (called “*agapē*”) is the highest form of interpersonal unity.

The unifying power of love does not seem to have any intrinsic or extrinsic limit. If love (empathy → concern → care → *agapē*) can unify the radical autonomy of *two* human beings, why would it not be able to overcome the autonomy of hundreds or thousands, or millions of human beings? Why would it not be able to unify all human self-consciousnesses throughout all history? Indeed, why would it not be able to unify this totality of humanity with perfect self-consciousness (the perfect, self-transparent, mentating activity of the unrestricted act of thinking)?

If there is no intrinsic limit to the unifying power of love, then perfect Love is capable of perfect unification. This implies that it is an attribute of the one perfectly simple reality – the one unrestricted uncaused reality existing through itself which is an unrestricted act of thinking.

Perfect Justice/Goodness is a Perfect Unity

If it can be shown that justice/goodness, like love and mind, is a reality susceptible to greater and greater levels of unity, and there can only be one perfect unity, then it follows that the source of our awareness of perfect justice/goodness is the same as the source of our awareness of perfect love and truth – namely, the unique unrestricted act of thinking. So then, is justice/goodness a reality susceptible of greater and greater unity or unification? Many philosophers think that it is.

Let us begin with Plato’s notion of justice – namely, giving every person their due (what belongs to them and is owed to them). In a broader sense, justice is the drive to keep a society cohesive and at peace—not by external coercion or force, but by our interior conviction to give people what they deserve (and not to deprive them of what rightfully belongs to them). So justice is at once a principle, an ideal, and an intrinsic drive. It is a principle because it is thought to be self-evident and the foundation for all other ethical precepts. It is an ideal because it is thought to be an end or goal (*telos*) of human conduct and life; and it is an intrinsic drive because this end of human conduct is not only *thought*, but *felt* to be a foundational principle for good conduct and a good life. We not only know justice to be self-evidently good, we believe it is essential for a good life, and feel it as a driving force within us – so much so, that when we are unjust, we feel alienated and guilty.

The effects of justice not only occur within the minds and hearts of individuals, but also in the collective conviction and *ethos* of *groups*, such as organizations, local communities, societies, and even states. This intrinsic drive within individuals and groups animates the desire for law and a legal system (even though laws and legal systems can impose obligations and

burdens on individuals). We submit to the law, not only out of self-interest (for protection of our lives and property), but also because the law is noble and good – precisely because it is grounded in justice. Insofar as we *feel* that *justice* is good and noble, we also feel that the law and legal system (inasmuch as they are based upon it) are likewise good and noble.

Regrettably, human beings feel and practice an *opposing* tendency (counter to justice) – namely, the desire to control, dominate, and use power to personal advantage. In certain personalities, this manifests itself as the socially destructive view of “might makes right.” It is precisely this propensity that justice and the common good counteract. Justice overcomes not only a barrier between human beings, it overcomes the *negative effects* of our pursuits of selfish self-interest.

Justice overcomes these invasive, negating propensities not merely through a pragmatic urge, but through genuine *love* of the ideals embodied in it. The love of justice, law, and the common good strikes an uplifting apollonian note within us. We seem to instinctively sense nobility not only behind the power of the law, but behind the notion of justice that the law and its power seek to preserve – justice *inspires* us.

This natural power to love good and shun evil, to love justice and the common good and to shun injustice and the undermining of society, is essentially a *unifying* power. It transforms self-consciousness’ propensity to be over-against others and in conflict with others, into a sense of shared good, common cause, and “*esprit de corps*.”

The “love of justice and the good” is a natural unifier, for it overcomes the natural barriers and enmity arising out of competition for scarce resources, fear of strangers, natural animosity, survival of the fittest, and suspicion of others’ potential injustice. It overcomes the natural barriers and enmity of irresponsibility (responsibility to myself alone, or the complete abdication of responsibility to others) by calling individuals to a higher duty to the just society. It can also lead to self-sacrifice (the sacrifice not only of one’s advantage and aggrandizement, but also of one’s very self) for the sake of the good of society and for goodness and justice within society. These unifying powers of the “love of justice and the good” appear to have no limit – the principle, ideal, and drive of justice can bring together individuals, individuals within groups, groups within one another, groups within communities, communities with one another, communities with society, societies with one another, societies within states, and states with one another. We might say, then, that justice has an unlimited power to overcome the depravity and misuse of power (arising out of greed, pride, and the resultant desire for control and domination) – an unlimited power to inspire and unify an entire planet – and beyond. Justice is not only a unifier of individuals and groups (overcoming the misuse of strength, control, and power), but also a *universal* and *unlimited* unifier. As such, it is capable of being a *perfect unifier* – a *perfect unity*.

Recall that there can be only one perfect unity. Therefore perfect justice must be the same reality as perfect love, perfect mind, and perfect being – that is, the one absolutely simple, unrestricted, uncaused reality existing through itself as an unrestricted act of thinking. As such, God would seem to be perfectly just or good – as well as perfectly loving and perfectly intelligent.

Perfect Beauty is a Perfect Unity

The key characteristic of beauty is harmonious resonance. When different forms blend together, each form brings out hidden aspects of the other. In music, for example, the harmony of two notes brings out aspects of the individual notes unrecognized in their isolation. What note #1 does to note #2 is not recognized when note #1 stands by itself. The same holds true for the visual arts. When one form blends “harmoniously” with another, the two forms bring out aspects of each other which remain hidden when they are in isolation. The same holds true for architecture and poetry, and any other manifestation of beauty. Harmony (a complementary blending), then is more than an absence of conflict or disorder. It is also a revealing of hidden beauty within individual forms.

The harmony of forms elicits feelings of repose, reveling, and enjoyment, and certain harmonies reach to the deepest emotions – the *sublime* emotions within us. In the glory of a Brahms symphony (complex harmonies amidst complex melodies), breathtaking architecture (having large scale amidst minute proportionality), and Elliot’s *Four Quartets* (filled with metaphysical ideas, dense metaphors, and beautiful poetic form), beauty points beyond mere delight, repose, reveling, and enjoyment, to a kind of ecstasy, a sublime reveling, a “*mysterium tremendum*,” or a sense of being at home with the Divine. The more complex, grand, and sustained the harmony, the more it evokes the sublime or exalted emotions, and the more it seems to connect us with the glorious, the beautiful, and the Sublime Itself.

Beauty has another quality which is described as “shining forth,” splendor and luster. This quality too reveals perfection of form or harmony. Complex, grand, and sustained beauty point beyond their complementary unified forms to unity, perfection, and sublimity itself. One might say that simple objects of beauty point to the perfection of the form through which it exists, but complex beauties tend to point beyond the perfection of a particular form to *Perfection itself*. When one hears Mozart’s *Requiem*, one recognizes and then reposes and revels in more than music brought to its perfection, more than the human emotions evoked by the harmonies and melodies. One enjoys the more perfect manifestation of unity, and then reposes and revels in it, feeling a deep and abiding sense of exaltation and glory. Now, when the *Requiem* is performed within a magnificent church with magnificent art, and the music, art, and architecture are unified as a whole, one feels drawn into a perfection bigger than all the forms combined. One is drawn into the perfection of complex unification to which one appends the name, “glorious,” or “magnificent.”

Again, when one beholds not only a beautiful ocean, but a beautiful mountain and waterfall and sky forming a single contiguous whole, with the motion of the sea and the waterfall, and the flight of birds, and the movement of wind rustling through vegetation, the harmonious totality shines forth and points not only to a unity amidst complexity, but a taste of unity itself, a taste of repose itself; perhaps stated best, a taste of ultimate Home itself. Again, we find another manifestation of the blending of forms which not only demonstrates unity, but gives the felt perception of unity. It not only points to the perfection of a form, but points beyond any form to Perfection itself.

This kind of unity seems to have no intrinsic limit. The susceptibility of form to intrinsic unification (as if the forms were created to be unified; created to complement one another; created as radically incomplete anticipating a home in their highest unifications – like mathematics) this kind of anticipatory completion, this perfect anticipatory unity of incomplete form, seems to have as its base “Unity itself” or “Beauty itself.” As the notes are combined with other notes, as musical forms are combined with architectural, artistic, and natural forms, the origin of these partial manifestations of perfection is revealed, and so, at once, we resonate with (we say “we feel”) Unity itself, Perfection itself, and Beauty itself. When we resonate with Perfection itself, we feel at once in ecstasy and at home, in a flurry of activity and at a still point.

It seems that *all* forms have an ideal complementarity with *all* other forms, revealing yet another kind of ideal or perfect unification within the phenomenon of beauty. This ideal or perfect complementarity among diverse forms suggests yet another manifestation of *perfect unity* (in addition to perfect Truth, Goodness, and Love).

Recall once again that there can be only one perfect unity – one perfect inclusivity -- one absolute simplicity -- because there can be only one unrestricted reality. Thus, inasmuch as perfect beauty is a perfect unity, it must belong to the one absolutely simple unrestricted uncaused reality existing through itself as an unrestricted act of thinking (God). Therefore, perfect beauty is an attribute of God – as well as perfect being, perfect mind, perfect love, and perfect justice/goodness.

Conclusion

The logical proofs for perfect being and perfect mind have considerable probative force, because the denial of these qualities results in either a contradiction of fact (the denial of all reality – including oneself) or an intrinsic contradiction (an impossible state of affairs) -- as shown above in the Thomistic metaphysical proof and the Lonerganian proof of God. However, the reasoning process leading to the attribution of perfect love, perfect justice/goodness, and perfect beauty to God (the one unrestricted uncaused reality existing through itself as an unrestricted act of thinking) is less probative because it requires a recognition of the unlimited unifying power of love, justice/goodness, and beauty. This recognition is somewhat subjective, and so the certitude with which we ascribe perfect love, justice/goodness and beauty to God is more tenuous. Nevertheless, if our subjective recognition of the unlimited unifying power of these attributes is correct, then the above reasoning suggest strongly that God is perfectly loving, good, and beautiful.

Fourth Topic

A Catholic Response to Six Contemporary Issues

Six areas of popular inquiry are raised by the above evidence for God:

1. Can the existence of God be disproved? (Section I)
2. If the evidence for God is so probative, why do we need faith? (Section II)

3. If the scientific and philosophical evidence is so probative, why are some scientists atheists?
4. The Bible and science. (Section III)
5. Evolution and Catholic teaching. (Section IV)
6. The possible existence of aliens. (Section V)

I.

Can the Existence of God be Disproved?

It may be thought that the existence of God can be disproved. One obvious difficulty with this contention is that it would entail the denial of the two aforementioned proofs (the contemporary Thomistic metaphysical proof and the Lonerganian proof of God), which in turn would entail a myriad of intrinsic contradictions as well as contradictions of fact (including the denial of one's own existence). But there is a more sweeping problem with this contention, namely, it cannot be accomplished *in principle* because the unrestricted nature of God renders all methods of disproof fruitless. This can be shown by referring back to the three ways of proving the truth or falsity of claims. A claim may be considered reasonable and responsible if:

- 1) it can be affirmed by rigorous public corroboration (*a-posteriori* evidence), *or*
- 2) its denial leads to an intrinsic contradiction (*a-priori* evidence), *or*
- 3) its denial leads to a contradiction of fact (a combination of *a-posteriori* and *a-priori* evidence).

None of these methods can be used to prove the nonexistence of God. The following will make this clear.

The first method (rigorous public corroboration) is quite useful for proving the *existence* of a reality, but useless for proving the *nonexistence* of a reality. If, for example, I wish to prove the *existence* of dogs, I need only experience one, and have other people corroborate that experience. However, if I wish to prove the *nonexistence* of, say, phoenixes, I would have to experience everything that there is to experience, be certain that I had exhausted the entire range of possible experiences, and notice that phoenixes are not there. This would seem to be a rather daunting prospect.

Proving the nonexistence of *God* by this method is even more daunting, for God, as defined (an unrestricted reality without intrinsic or extrinsic restrictions or boundaries), cannot be apprehended as a whole by the *restricted* sensory apparatuses and methods of human observation. If God is to be experienceable, *God* would have to reveal Himself partially – to make Himself accessible to us (such as an experience of His love or beauty – as in mystical or religious experience).¹⁰⁰ Therefore, the first method of disproof cannot be applied to an unconditioned, unrestricted being (God).

¹⁰⁰ It should be noted that not even God can make his *entire* essence – an unrestricted act of thinking – understandable to a subject without the capacity to understand it (e.g., one capable of only restricted acts of understanding). As with the square-circle, this is not a deficiency of God's power, but rather a deficiency solely attributable to the excluding boundaries of a partially simple being. Since humans are capable only of conditioned acts of understanding, God cannot force us to understand what we are in principle incapable of experiencing or understanding (i.e., unrestricted existence or unrestricted thinking).

The second method (proving falsity through intrinsic contradiction), is equally fruitless. As noted above (the Third Topic), contradictions arise out of the *exclusionary* properties of boundaries or restrictions (e.g., the boundaries of square exclude the boundaries of circle, or the boundaries of proton exclude the boundaries of electron, such that one cannot have a square-circle or a proton-electron in the same respect at the same place and time). An entity without *any* intrinsic or extrinsic boundaries or restrictions (i.e., the one uncaused reality existing through itself) would be purely inclusive, and therefore, would not exclude anything *extrinsically* (from Itself) or *intrinsically* (“within” Itself). If there are no exclusionary properties *intrinsic* to “absolutely simple, unrestricted, unconditioned Reality,” then there can *never* be a basis for *intrinsic* contradiction. If there is no boundary or restriction, there is no basis for contradiction.

The third method (proving nonexistence through a contradiction of fact) is also fruitless for a similar reason. If a reality is to be proven contradictory to fact (i.e., to be a contradiction of a publicly corroborated state of affairs), it must be capable of being contradicted. For example, if I am to prove that an electron does not exist at a particular coordinate (x, y, z), then all I need do is prove that there is a proton (or some other contradictory particle or state of affairs) at that coordinate (x, y, z) in the same respect at the same time. The contradictory properties of electron and proton make this kind of disproof possible.

However, as noted above, contradiction is based on the exclusionary property of boundaries or restrictions. Now, if an entity has *no* intrinsic or extrinsic boundaries or restrictions (as has been shown of the uncaused reality existing through itself -- God), it does not exclude any bounded or restricted being *from itself*; it does not extrinsically exclude anything. Therefore it cannot be contradicted by *any* bounded or restricted being (that lies within the range of human experience). Thus, one cannot say, “If protons exist, God cannot exist,” for the boundaries of protons will never exclude the boundarylessness of God. Similarly, one cannot say, “If squares exist, God cannot exist,” for the boundaries of square do not exclude the boundarylessness of God. The same holds true for all finite realities. The boundaries of a restricted entity cannot exclude the boundarylessness of God. Therefore, nothing restricted can ever be used to contradict the existence of God. This means that nothing restricted (and therefore nothing in our world) could ever be the basis for disproving “God.”

Inasmuch as these three methods exhaust the scope of formal proof or disproof, it follows that the existence of God cannot be disproved in principle. Thus, given the above definition of “God” (proved in the contemporary Thomistic metaphysical proof and the Lonerganian proof – i.e. the unique *unrestricted, absolutely simple*, uncaused reality existing through itself as an unrestricted act of thinking), atheism could not be a rational enterprise in the same way as theism.

II.

If there is so much evidence for God, Why do we need Faith?

Even the most cogent reasonable arguments and the best evidence from physics, logic, and mathematics will not be able to perfectly ground trust in the loving God. In Dostoevsky’s *Grand Inquisitor* (in the *Brothers Karamazov*), the protagonist, Ivan, tells a story in which it is

revealed that God will not enslave us to a miracle – He desires freedom coming from the heart.¹⁰¹ He will always leave room for us to escape His presence and reality, because He wants us to respond to His loving call with our own act of openness and love. Therefore, some element of faith will be indispensable.

Nevertheless, the evidence and method of reason can be beneficial because it can make the leap of faith less onerous. God does not expect us to make an infinite Kierkegardian leap of faith, but only a little leap sufficient to respect our freedom to love and respond to His call. Thus God allows us to use reason to build, as it were, a bridge across the chasm from this world to the transcendent – but He does not provide enough material to make that bridge extend completely to the other side. We can get very close to the other side, but ultimately, we are going to have to make an act of the will, muster our resolve, and respond in love to what reason cannot accomplish. God does this – not to be elusive – but to protect our freedom, dignity, and love.

So what is entailed by this “little leap of faith?” It is a movement of the heart to respond to God’s interior call within us. As will be discussed in Part Four of this book (on the spiritual life), this leap is grounded in God’s interior invitation to us. This invitation attracts us to the sacred, the mysterious, the numinous, the spiritual, and the transcendent. Sacred symbols not only have religious or transcendent *significance*, they are also spiritually beautiful and therefore spiritually attractive. This natural attraction to and awareness of the sacred and transcendent has been the source of hundreds of volumes of reflection by philosophers,¹⁰² psychologists,¹⁰³ and theologians.¹⁰⁴ Mircea Eliade, Rudolf Otto, and Karl Rahner are particularly insightful.

¹⁰¹See Fyodor Dostoevsky *The Brothers Karamazov* Part Two, Book Five – “The Grand Inquisitor.”

¹⁰² St. Augustine, St. Thomas Aquinas, Karl Rahner, Mark Buber, Gabriel Marcel, and Max Scheler presented evidence and arguments for our natural awareness of God. Rahner’s “supernatural existential” is perhaps the most comprehensive explanation of it, because he brings out the relational dimension of God’s presence, and assesses it in light of human freedom. Mircea Eliade, in his sixteen volume encyclopedia of religion, takes an empirical approach to religious experience, assessing literally hundreds of world religions both historically and currently. See all of the references to these thinkers in Volume II, Chapter 2.

¹⁰³ The two most well-known psychologists commenting on religious experience are William James and Carl Jung.

William James originated the school of transpersonal psychology which is the inspiration for the *Journal of Transpersonal Psychology*. His book *The Varieties of Religious Experience* is the classic work for American studies of the psychology of religious experience. See William James 2009 *The Varieties of Religious Experience: A Study in Human Nature* (New York: Independent Publishing Platform).

Carl Jung famously responded to Sigmund Freud by noting that the experience of a sacred and transcendent reality was integral to the human psyche (and could not be reduced to any other psychological phenomenon – e.g., fear or libido, etc.). He believed the sense of the transcendent manifested itself in archetypal symbols that appear to be present in most cultural myths. Jungian psychologists use these archetypes as the basis for dream analysis. See Carl Jung 1960 *Psychology and Religion: The Terry Lecture Series* (New York: Yale University Press); also 1955 *Modern Man in Search of the Soul* (New York: Harcourt Harvest); also 1980 *C. G. Jung Speaking: Interviews and Encounters* Ed by W. McGuire & R. F. C. Hull (London: Pan Books).

¹⁰⁴ The philosophical work initiated by St. Augustine and St. Thomas Aquinas has borne considerable fruit in both Protestant and Catholic theology. Friedrich Schleiermacher initiated a resurgence in our natural awareness of God. Rudolf Otto developed Schleiermacher’s thought particularly in the area of creature consciousness and fascination (and attempted to show that this awareness is irreducible to any other interior disposition). Otto influenced a host of Protestant and Catholic philosophers and theologians including Mircea Eliade, Max Scheler, C.S. Lewis, Paul Tillich, and Karl Rahner – to name just a few. These thinkers stressed a systematic *explanation* (as well as description) of our interior awareness of God.

Virtually every culture throughout human history has had a natural proclivity toward religion, and that religion is the source not only of transcendent worship, but also of the law, healthcare, social welfare, and in some cases education. The reason for the omnipresence of religion and its powerful formative influence lies in the fact that virtually every person has *an interior awareness of the spiritual-sacred domain*. We instinctively believe that we are more than just our material bodies, that our lives extend beyond this world, and that our being is distinct from that of other animals. This “spiritual instinct” is so strong that it requires repeated education (or brainwashing) to drum it out of us.

This interior awareness of the divine is the invitation to “the leap of faith.” It draws us into the search for evidence from reason, to pursue religion, to be fulfilled by sacred worship and spiritual beauty, and to take the risk (in loving conviction) to leap into the transcendent domain where reason cannot take us.

This is not a leap into the abyss, but rather a leap into a transcendent reality present to us, or as Rahner would say, a leap into a relationship with the transcendent Being. We are not forced or manipulated into this relationship, but only invited into it. Therefore, we are free to respond in whatever way we choose. That is why faith can never be a merely rational procedure (the assembling of scientific and rational evidence leading toward a well-founded *intellectual* conclusion). It must also include a dimension of the heart or the will, because faith is fundamentally a free response to the invitation of the transcendent personal Being within us.

This response is not automatic. Some people may not *want* (choose) to be in relationship with a “supernatural other,” some may see this “other” as an imposition, some may screen out or choose to ignore this Being’s presence for various motives, and some may be talked out of believing in this Being. Though most people choose to respond positively to this Being, it is clear that they do not have to – they are free to ignore or reject, or to resent or love this Being, because the Being does not *demand* a response but only offers an invitation.

Therefore, if we are to proceed with a life of faith, we will have to choose to respond to the transcendent Being’s invitation; we will need a movement of our hearts and wills – not just an operation of our minds. Though evidence for God, the soul, and even the love of God can help to rationally ground and solidify our faith, it cannot take the place of faith. It can make our leap of faith smaller and less challenging, but it cannot replace the movement of the heart or will.

The Christian mystical tradition has also stressed our natural awareness of God, but these writings are mostly descriptive, and non-systematic. They do however speak much more fully about interior transformation when one responds to God’s initial invitation. The most particular presentation of this may be found in St. Teresa of Avila, St. John of the Cross, and in the contemporary work of Evelyn Underhill. See the references for all the above thinkers in Chapters 7 and 10.

If we respond to God's interior invitation to us, our relationship with Him becomes explicit which results in grace (favor from God, such as, inspiration, guidance, supernatural assistance, and a deeper and closer relationship with Him). Grace is a surprising and inspiring gift from God that leads us on a journey (or perhaps better, an adventure) directing us to our most pervasive, enduring, and deep purpose in life.

Grace is interactive because God comes to us in our failings and needs, and also in our desires and strengths. God knows what we need, respects our freedom, works through both strength and suffering, integrates our needs with those of others, and is capable of real surprises. In view of this, we must concentrate on being open to the inspiration of God more than following a set of prescriptions or techniques. If we are open to His inspiration and guidance, God will reveal Himself to us ever more deeply, and allow us to be an ever greater source of truth, love, and goodness to the world. How can we be more open and responsive to God's invitation and grace? For the moment, suffice it to say that we need a spiritual life (including a church community, prayer, and a commitment to virtue and service) that befits a *dialogue and a journey* – a dialogue where God is calling us and we are responding, or we are calling upon God and He is responding; a journey where we may be moving in a counterproductive direction and God is trying to tell us to change that direction. Or, we are moving in a productive direction and God is encouraging us in that direction. We are always being exposed to new ideas – reading books, listening to others, hearing the news, and surfing the net – and those ideas can be productive or unproductive in helping us to actualize our most pervasive, enduring, and deep purpose in life. Life's circumstances can change on a dime and these circumstances can affect the actualization of our purpose in life. God wants to interact with us as we encounter these changing circumstances so that He can help us move to our highest potential (while respecting our free will). These matters will be discussed more fully in Part Three (the moral life) and Part Four (the spiritual life) of this book.

In a way then our faith journey not only *begins* with a little leap of faith (an open and loving response to the invitation of God), but also *continues* with little leaps of trust in His providential love guiding us through good news and bad news, successes and failures, joy and suffering, and light and darkness. As we begin to recognize God's loving providence throughout our lives, the little leap of faith becomes even littler, and ultimately resolves itself into a certainty that He has been our ever-present and ever-loving guide on the stages of life's way.

There is another factor that must be considered. Though reason, science, and experience can probatively indicate the existence of a “unique, unrestricted, absolutely simple, uncaused reality existing through itself as an unrestricted act of thinking which is the Creator of everything else that exists” – and can indicate less probatively the perfect love, justice/goodness, and beauty of that Being – it cannot go further, leaving unanswered a myriad of questions:

- a. Is God unconditionally loving?

- b. Does God redeem suffering?
- c. Does God answer prayers?
- d. Does God guide us in our everyday lives?
- e. Can God make good come out of evil?
- f. What is the path to salvation (communion with God in the next life)?
- g. Is it possible to stray from the path to salvation?

Why can't science and philosophy answer these questions? Because it requires an understanding of the *heart* of God. Though we can get some indication of God's heart from the transcendental attributes (perfect love, justice/goodness, and beauty), we cannot get enough insight to answer the above questions -- and many others. For example, Aristotle in the Classical Period and deists in the modern period all held to rational proofs of a unique transcendent creator, but they thought this god was fundamentally disinterested in and even bored by human beings. Einstein held this belief as well. Since they restricted themselves to the domain of reason, they did not believe in a God who was compassionate, and certainly did not believe that God would want to be with us -- face to face -- as Emmanuel ("God with us"). So what recourse do we have to discover whether God is disinterested in us or loves us unconditionally? God himself will have to reveal this to us -- and so we have to seek revelation as well as reason -- and put our faith in that revelation when we have found it. This will be discussed in detail in Chapter 2 of this book.

III.

If the Scientific and philosophical evidence is so probative, why are some scientists atheists?

As noted in the introduction to the First Topic, over 40% of bench scientists are declared believers, and most of the remainder are agnostics (uncertain) -- not atheists. Furthermore, five of the greatest minds in physics and mathematics were declared theists -- including Einstein, Planck, Heisenberg, Eddington, and Gödel. Nevertheless, the question remains, if it is impossible to disprove God scientifically, philosophically, or any other way -- and there is considerable scientific evidence for a beginning of physical reality and fine-tuning for life at the Big Bang, why are there atheistic scientists and intellectuals?

After considering the material in the previous subsection (on the need for faith), the answer might be clear. The decision to believe in God is not only a matter of finding reasonable and responsible probative evidence for God, but ultimately it is a choice about how to live -- a choice about what is important, a choice about who is sovereign -- ourselves or a perfect reality, and a choice about how to interpret (or ignore) the evidence in light of these other personal choices. If we are open to a sovereign beyond ourselves, open to a life of prayer and worship, open to the transcendental dignity of ourselves and others, and open to the moral and ethical consequences of those choices, the evidence given above will likely be quite persuasive. But if we are not open to this kind of life and worldview, then the evidence given above will be nothing more than "the ramblings of theists" which can be ignored and marginalized without even investigating it. Recall the second rule of logic in evidence -- there are far more errors of

omission than commission, and the greatest errors of omission occur when we choose to ignore or marginalize probative sets of data and evidence because we dislike what they are saying and where they are pointing.

That being said, what are some of the motives that atheists profess for their choice to reject God (and the evidence for him)?

1. Atheism and Suffering.

According to the case studies of Ignace Lepp (*Atheism in our Time*¹⁰⁵), one primary motive for atheism arises out of an inability to give a positive interpretation to suffering. This causes people to counterpose suffering and love, which in turn incites the thought that God must be unloving (or even mean-spirited). In many cases, this thought induces anger and resentment, and as such, can lead to the rejection of God. It is interesting to note that many of these individuals do not reject the idea of God, but much more the person of God who seems to have allowed them to suffer. In Christianity, suffering has a positive interpretation, and even a set of prayers and methods to turn suffering into a means of love, and growth in love (see Part Four of this book). Christians should help this group to bring positive meaning into their suffering. This kind of atheism is not based on rational evidence, but on an *emotive disposition* – involving sadness, and resentment – which leads to a personal *choice*.

2. Atheism and the Rejection of Moral Authority Beyond the Self.

Friedrich Nietzsche declared himself to be an atheist as a part of “his will to power” (the assertion of his own individuality and autonomy over-against everybody and everything else).¹⁰⁶ In his view, God would have to interfere with this “will to power” and so God had to be rejected. We see this kind of Nietzschean atheism in people who do not want to be responsible to a moral authority above or beyond themselves (God). Again, note that this is a *choice* based on a desire – not a decision made on the basis of evidence. Furthermore, this choice requires that we decide for ourselves what is right or wrong – without the help of divine wisdom and law. This has always been a scary prospect for me, because as I always say, “Give me five minutes, and I can rationalize anything.” Additionally, I need the help of God’s grace to live according to his wisdom and law, and so I find faith to be invaluable in reaching my true potential and becoming my true self – connecting with perfect truth, love, justice (goodness), and beauty. God does not have to interfere with our individuality and authority – He can help us bring our own free decisions to fulfillment through His wisdom and grace.

¹⁰⁵ Ignace Lepp was an ardent communist, Marxist, and atheist who saw the inherent weaknesses in both atheism and Marxism through his studies of psychology. He converted to Christianity and later became a Catholic priest. He explores the psychology of atheism through many cases in his work *Atheism In Our Time* 1965 (New York: Macmillan).

¹⁰⁶ Friedrich Nietzsche 1968 *The Will to Power* trans by Walter Kaufmann and R.J. Hollingdale (New York: Vintage) pp 85-145.

3. Atheism and the Accusation of “Wishful Thinking.”

Sigmund Freud declared himself to be an atheist because he felt that religion was essentially “wishful thinking” or an “illusion.”¹⁰⁷ Many people who subscribe to atheism do not want to be considered weak, naïve, or reliant on “a crutch,” and so they reject God to engender a sense of personal strength and authentic regard for the truth. Freud’s most well-known student, Carl Jung, disagreed with him and declared that religion was not wishful thinking, but induced by a sense of God’s presence within us. This is confirmed by Rudolf Otto’s analysis of the numinous experience in comparative cultures throughout history (*The Idea of the Holy*).¹⁰⁸ Freud’s contentions also run contrary to the work of Mircea Eliade (the greatest philosopher of comparative religion¹⁰⁹) as well as the work of the American Psychiatric Association.¹¹⁰ Please note – Freud does not appeal to reason for his atheism, but rather to the avoidance of what he deems is wishful thinking (a choice). According to Jung, Otto, and Eliade – among many others, Freud falsely attributed our interest in religion to the avoidance of fear (wishful thinking). The above philosophers and the American Psychiatric Association show that our religious interest has very little to do with avoidance of fear (wishful thinking), but rather with following one the most deeply engrained psychic intuitions within human consciousness -- a sense of the sacred and Transcendent God within us.¹¹¹

4. Atheism and Historical Revisionism.

In *The Communist Manifesto*, Karl Marx reinterprets the history of economics and politics as fundamentally a class struggle between the merchant class (the bourgeoisie) and the laborers (the proletariat). There is an implication throughout that religion has caused the proletariat to endure their unjust situation by focusing them on a “life beyond.” As a result, the proletariat did not rise up in revolution – which Marx deemed necessary for economic justice.¹¹² Marx is but one of many philosophers and historians who have tried to blame the injustices in the world on religion. However, these revisionist views of history ignore the fact that religion gave rise to social order and laws, that the prophets continuously spoke out against social injustice and championed the cause of widows, orphans, and the poor, that Christian teaching within the Roman Empire eventually led to the overcoming of the injustices of slavery, and that Christianity gave

¹⁰⁷ See Sigmund Freud 1989 *The Future of an Illusion* (New York: W.W. Norton & Company).

¹⁰⁸ See Rudolf Otto. 1958. *The Idea of the Holy: An Inquiry into the Non-Rational Factor in the Idea of the Divine and its Relation to the Rational*. (New York: Oxford University Press).

¹⁰⁹ See Mircea Eliade 1987. *The Sacred and the Profane: The Nature of Religion*. (New York: Harcourt Brace Jovanovich).

¹¹⁰ The 2004 study published in the *American Journal of Psychiatry* indicates that religion is so deeply intrinsic to human consciousness that those who reject it are susceptible to increased suicide rates, familial tensions, drug use, and a sense of meaninglessness and despondency. See Dervic K, Oquendo M, Grunebaum M, Ellis S, Burke A, Mann JJ, 2004. “Religious Affiliation and Suicide Attempt.” In *American Journal of Psychiatry* (Vol. 161, No. 12). pp 2303-2308. <http://ajp.psychiatryonline.org/article.aspx?articleid=177228>.

¹¹¹ For a detailed explanation of the interior experience of God as sacred, mysterious, fascinating, and spiritual – and its origins within the human psyche, see Robert Spitzer *The Soul’s Upward Yearning* Chapters 1&2.

¹¹² See Karl Marx, 2014 *The Communist Manifesto* (International Publishers Co).

rise to the first public education systems, social welfare systems, and healthcare systems. Even today, the largest international educational, social welfare, and healthcare systems are based in the Christian religion – especially the Catholic Church. No doubt, there were many religious *people* who did not follow the teachings of their leaders, publicly sinned, and even perpetrated injustice – but these people do not represent the majority of religious adherents – and they certainly did not live up to the momentum of justice and equality promoted by their founders. Any objective view of the role of religion in history reveals a huge *positive* world-changing momentum – not something unjust and harmful.¹¹³

5. Other *Personal* Motives for Atheism.

There are many personal motives for the rejection of God/religion. Frequently these motives are not so much a rejection of God, but a rejection of religion. Many individuals became acquainted with God in their childhood as a being to be feared – a being who is disrespectful, demanding, contemptuous, and hateful. Even though these views of God are completely contrary to the Father of Jesus Christ (portrayed as the father in the Parable of the Prodigal Son), these “false images” of God persist into adulthood causing people to grow distant, resentful, and retributive. Frequently these attitudes lead to the rejection of God and religion all together. Again, it is incumbent upon Christians to convey the correct teaching about God from Jesus.¹¹⁴

Let’s move from atheism to agnosticism for a moment. As we noted above, agnosticism simply means “don’t know,” and manifests uncertainty about the existence of God and the evidence for God. There are many causes of this uncertainty – many individuals simply do not apportion the time or psychic energy to study the evidence carefully – and so they don’t make a judgment about the evidence, because they really do not understand it. Frequently they don’t even know that the evidence exists. This is not a particularly good reason for being an agnostic – it is simply a proxy for indifference and apathy. Another common reason for agnosticism might be called “persistent naturalism,” which is an avoidance of proposing a supernatural explanation until *every possible* and natural explanation has been ruled out. Evidently, *every possible* natural explanation can never be ruled out, because we don’t know every possible natural explanation, and we can never know whether we have discovered every possible natural explanation (we would have to know everything about everything to do so). Thus, this viewpoint rules out belief in the supernatural by default – “you simply cannot get there from here.”

Naturalism is a proper perspective when doing science, but science does not exhaust the whole of human endeavor. Science intentionally restricts itself to observations – and therefore to the natural world. But human endeavor is not restricted to the natural world. There are no infinities in nature, but there are in mathematics, metaphysics, and philosophical theology. If we assume that science exhausts human knowledge, we would never be able to think about ultimate causes and grounds of reality, transphysical dimensions, infinities, the unconditioned and uncaused, and even the transcendent. We would not even be able to affirm the reality of love,

¹¹³ See Christopher Dawson 1991 *Religion and the Rise of Western Culture* (New York: Image).

¹¹⁴ For a detailed treatment of this see Robertt Spitzer 2016 *God So Loved the World: Clues to our Transcendent Destiny from the Revelation of Jesus* (San Francisco: Ignatius Press) Chapters 2&3.

goodness, or beauty, because they are not reducible to physical processes alone. To assume that science (naturalism) is the only legitimate intellectual endeavor is like giving ourselves a gigantic lobotomy – cutting off, as it were, all inquiry into the spiritual, transcendent, infinite, eternal, unconditioned, and ultimate. Why would we want to do this when there is so much evidence for these transcendental areas – evidence from experience, from reason, near death experiences, and even physics itself? Furthermore, science does not exhaust the domain of the heart – that is, the domains of love, justice/goodness (ethics), art, and spirituality. The great astrophysicist, Sir Arthur Eddington was an adamant proponent of this (see the citation in the introduction to the First Topic above). Perhaps it is best to follow the lead of Sir Arthur Eddington and to allow for both the intellectual pursuits of science and the mystical pursuits of the spirit – and if the intellectual pursuits of science and philosophy lead us also to the domain of the spirit – to follow it – instead of needlessly cutting ourselves off from our transcendental nature.

IV. The Bible and Science

Introduction

There is a popular cultural myth that states that the Bible and science are in conflict. No doubt the biblical and scientific accounts of creation are quite different, but does that mean that the Bible and science are in conflict? As we shall see, it does not because theology and science have different objectives, methods, and, as one might expect, legitimate conclusions. Confusion about the Church’s position on “the Bible and science” has led to further confusion about the legitimate belief in evolution. Can Catholics believe in evolution? Are there limits to what Catholics can believe? As we shall see, Catholics have incredible latitude and freedom -- not only for belief, but also for belief in all legitimately established scientific facts and theories. Faith and science cannot be in conflict – for they come from the *same source* – the infinite mind and all loving heart of God.

There *seems* to be some disagreement between what the Bible tells us and what science teaches us. A prime example would be what the Bible says about creation and what science has discovered about creation. Is this an impasse where both cannot be right? Pope Pius XII, in 1943, stated in a papal encyclical¹¹⁵ entitled *Divino Afflante Spiritu*, that the purpose of the Bible (in which God speaks through inspired authors) is to manifest truths of salvation. He goes on to tell us the Bible does not present scientific truths but sacred truths. Why did he say this? Because he wanted to clarify that there are two approaches to creation and the understanding of nature:

- a. The Bible – which reveals sacred truths necessary for salvation.
- b. Science – which uses an empirical-mathematical method to give descriptions and explanations of the physical world.

Pope Pius XII also made another important clarification. He indicated that God’s inspiration of the biblical author was intertwined with the thoughts and capacities of the biblical author – God

¹¹⁵ Papal encyclicals are public letters written by the pope to the church. One purpose of an encyclical is to clarify and communicate the Church’s teaching on important matters.

and the biblical author were “partners,” so to speak, in the writing of the biblical text. God is clearly the source of inspiration, and so the primary source of revelation, but He uses the biblical author to produce a work which can be understood by and appeal to the biblical author’s audience – situated within a particular culture and time.

Notice that this “*partnership*” theory of inspiration is quite different from the “*dictation*” theory. The dictation theory holds that God simply spoke to the mind of the biblical author, who in turn, wrote down what he “heard” -- *verbatim*. In this view, the biblical author plays only a transcriber’s role, while God does everything else, so that every word in the Bible is the truth of God – and all of it must be taken *literally*. Though some Christian denominations hold this view, Catholicism does not – which was clarified by Pope Pius XII’s encyclical.

The “partnership” theory of divine inspiration holds that the biblical author plays a role in the production of the revealed text. He brings his thinking patterns, his culture, his sense of history, and his categories to the writing process. Why would God allow this? Because he wants to communicate with the people in the biblical author’s audience. The author and audience of Genesis 1 (in about 500 BC) could not possibly have understood a scientific explanation of creation (as we understand it today). They did not understand the method and mathematics of science – nor did they have the instrumentation necessary to discover scientific data. According to Pope Pius XII, God was really not concerned with giving a proper scientific account of creation when he inspired the biblical author – He was concerned only to give – through the author’s and audience’s own categories and culture – sacred truths necessary for salvation. This is a long held belief within the Catholic Church which was summed up by St. Thomas Aquinas when he said, “Whatever is received is received according to the manner of the receiver.” Thus, if God wants to communicate his truth to a 6th Century BC Israelite audience, he will have to use the categories and mindset of a 6th Century BC Israelite audience – and what better way to do it than to “work with” a 6th Century BC Israelite author. By doing this, he communicates effectively with past audiences, and does not impede communication with future audiences, for those audiences would be able to clearly understand the categories and mindsets of a less sophisticated, non-scientific time and culture.

Today we can understand the salvific truths in the Genesis narrative (see below) as easily as the biblical author’s audience in 500 BC. *If* we do not confuse the salvific intention and content of God’s revelation with the method and content of the natural sciences, there will be no contradiction between the biblical and scientific accounts of creation. Each account has its own purpose with its own method and its own content – conflating them is a misunderstanding of God’s intention in revealing himself to us through the Bible.

It is important to be aware that the Catholic Church was integral to the development of science throughout the centuries. Professor Stephen Barr – supersymmetry physicist at the University of Delaware has written extensively on priests who were involved in the development of science.¹¹⁶ Some of the highlights are:

¹¹⁶ Stephen M. Barr 2003 *Modern Physics and Ancient Faith* (South Bend, IND: University of Notre Dame Press) pp 9-10.

- a. Nicholas Copernicus, a Catholic cleric, developed the heliocentric (sun-centered) model of the solar system.
- b. Gregor Mendel, an Augustinian monk and abbot, is acknowledged to be the founder of modern genetics.
- c. Nicolas Steno, a Danish Catholic bishop, is acknowledged to be one of the founders of modern stratigraphy and geology.
- d. Fr. Georges Lemaître is acknowledged to be the founder of contemporary cosmology – after discovering the Big Bang Theory in 1927 – a revolutionary, rigorously established comprehensive theory of universal origin.

Some have contended that the Catholic Church manifested an “anti-scientific attitude” during the controversy with Galileo, but the controversy was not about the veracity of scientific method or its seeming heliocentric conclusion. The Jesuits of the Roman College helped Galileo to confirm mathematically his version of the heliocentric theory, and considered him to be an esteemed colleague and friend. The relationship broke down only when Galileo disobeyed the Pope about announcing the heliocentric universe as *fact* (before adequate astronomical observations could be made to confirm the theory through a technique called “stellar parallax”).¹¹⁷ He exacerbated the strained relationship when he called the Pope and the Jesuits “fools” because of their reservation. The Catholic Church has never been “anti-science,” but rather creatively instrumental in its development, making science an integral part of its intellectual tradition.

The Genesis Narrative

What are the “sacred truths necessary for salvation” conveyed in the Genesis 1 narrative? In order to answer this question, we will first want to understand the problem faced by the inspired biblical author in the 6th Century BC. At that time, several surrounding countries – Babylon, Assyria, Egypt – among others wrote myths of creation that presented themselves as “rival explanations” to the revelation of *Yahweh* to Israel. The most well-known of these myths was the Gilgamesh Epic (probably dating from 2100 BC and originating in the Kingdom of Ur). This myth – and others like it, diverged from God’s revelation to Israel in four major ways:

1. The rival myths presented many gods, while Israel believed in one God.
2. Rival myths spoke of nature gods (such as a moon god, an ocean god, etc.), while Israel believed that the one God created everything else. Hence, all natural objects were viewed by Israel as *creations* of God – not *as* gods.

¹¹⁷ The stellar parallax technique is essential to confirming the earth’s movement around the sun, but astronomical observations of distant stars were not accurate enough to confirm the earth’s movement relative to the sun until over 200 years after Galileo – in 1839 by Friedrich Bessel. The Pope and the Jesuits were justified in asking Galileo not to claim his theory as fact until this critical astronomical observation had been made. Unfortunately, he chose not to do so, and the controversy (and breakdown of a long standing collegial relationship) began. Unfortunately, distortions of the story abound.

See Wallace 1984 and DeMarco 1986 pp 23-51 and 53-59.

3. Rival myths presented human beings as mere “playthings” and even “cannon fodder” for the gods, while Israel believed God created human beings in his own image and likeness – giving human beings an ultimate and transcendent dignity.
4. Rival myths believed that matter was fundamentally evil while Israel held that matter – since it was a creation of God – was fundamentally good (“And God saw that it was good”).

So, are these four revelations necessary for salvation today? Absolutely – as necessary today as in the 6th Century BC. All of them are very fundamental – without them we would still be immersed in polytheism and nature worship and we would have no sense of our true ultimate dignity or even the blessedness of creation. Can we understand these truths as well as a 6th Century BC Israelite audience? Of course – and now we see them in an even greater context of world history and culture. The truths of salvation in the Bible still stand firm guiding our minds and hearts to the God of Jesus Christ.

Well, what about the implication that the world was created in six days? First, we should not consider the duration of creation to be a truth of salvation. Secondly, we cannot take the term “day” literally, because it is used not to indicate a quantity of solar time (there was no sun on the first day...), but rather to indicate distinct stages within God’s creative process. What about the implication that the world is only 5,000 years old (if you add up all the generations in the Bible)? Again this is not a truth necessary for salvation, and the generations of Israel are certainly not meant to be an indication of the age of the universe. So these images do not contradict the scientific account that God created the universe 13.8 billion years ago (plus or minus 100,000 million years), that the earth and sun are 4.5 billion years old, and that a physical evolutionary process took place over 9.3 billion years to give rise to our very special planet, Earth.

Are there any points of intersection between the biblical account and the scientific account of creation? As a matter of fact, there are, but these cannot be considered the main motives of God’s inspiration of the Bible – which is to convey truths of salvation. One huge coincidence is the identification of light (energy) as the first moment of creation; another is the identification of darkness and an abyss prior to the moment of the creation of energy; still another is the idea that creation happened in stages over time; and another is the idea that life was created in stages over time -- with human life being the highest life form (last to develop) – having the image and likeness of God – as the culmination of the creation process.

As long as we let the Bible be salvific and let science be descriptive of the physical universe, we need not worry about contradictions, but if we force the biblical author to be a scientist, or force scientists to give truths of salvation, we will find ourselves in a world of confusion. Pope Pius XII has cleared the air, and we can allow both pursuits to enjoy their distinct discoveries and revelations.

V.

Evolution and the Church – Is There a Conflict?

Evolution is a scientific theory that explains the development of species using evidence from genetics, genetic similarities among species, fossil evidence, and geographic distribution

and similarity among species. While it may not contain a complete explanation of the development of different species, it is considered by most scientists to explain biological (physical-organic) development within and among biological species.

At first glance there appears to be a conflict between the Bible and evolutionary theory. The Bible suggests that human beings are a special creation of God independent of other biological species (such as chimpanzees, pre-homo-sapiens – such as homo-habilis, homo erectus, and Neanderthal). However, the theory of evolution suggests that human beings did come from an evolutionary progression. Can the two be reconciled?

First, we must keep in mind that the Bible is not *doing* science. The Bible is making the theological point in Genesis that human beings were created as distinct from the animals and “made in the image and likeness of God.” Can these two theological truths be consistent with the truth of evolution? Yes – so long as we hold that human beings are not only biological organisms (subject to an evolutionary process), but have a unique transphysical soul individually created by God. This was the teaching of Pope Pius XII in an encyclical entitled *Humani Generis* (1950). The encyclical held that Catholics are free to believe, or not believe, in evolution so long as they do not deny the creation by God of a unique transphysical soul in every human being. Evidently, a transphysical soul is not physical (biological), and so it is not susceptible to an evolutionary process.

Furthermore, the soul cannot be reduced to any physical or biological structure or process. Thus, so long as Catholics hold that human beings are transcendental and have a transphysical soul that did not evolve from chimpanzees or pre-homo-sapiens, they are faithful to Church teaching. Can Catholics believe that the physical-biological part of human beings evolved from other species? Yes. Can they believe that even the cerebral cortex came from an evolutionary process – from homo-erectus to Neanderthal to homo-sapien? Yes. It should be mentioned that the presence of the soul in human beings probably affected the development of the cerebral cortex in the fashion it developed.¹¹⁸ As we shall see in the next chapter, there is considerable evidence for a transphysical soul from the medical studies of near death experiences and from our five transcendental desires.¹¹⁹

Pope John Paul II declared that evolution is more than just a hypothesis, and reiterated in his letter to the Papal Academy of Sciences that Catholics have the freedom to believe in the theory of evolution within the condition stated by Pope Pius XII (about having a transphysical soul). He stated in Section IV of that document the following:

Today, more than a half-century after the appearance of that encyclical, some new findings lead us toward the recognition of evolution as more than a

¹¹⁸ See the hylomorphic theory developed by Michael Polanyi as interpreted by Robert Spitzer 2015 *The Soul's Upward Yearning: Clues to Our Transcendent Nature from Experience and Reason* (San Francisco: Ignatius) Chapter 6.

¹¹⁹ If you are interested in more on this topic, see Robert Spitzer 2015 *The Soul's Upward Yearning: Clues to our Transcendent Nature from Experience and Reason* which describes six indications of a soul – from Kurt Gödel's Proof of trans-algorithmic mathematical intelligence in human beings, the work of Sir John Eccles on the transphysical nature of human intelligence, and the work of David Chalmers on the hard problem of human self-consciousness – among other contemporary studies.

hypothesis. In fact it is remarkable that this theory has had progressively greater influence on the spirit of researchers, following a series of discoveries in different scholarly disciplines. The convergence in the results of these independent studies—which was neither planned nor sought—constitutes in itself a significant argument in favor of the theory.

On this issue – as well as all other issues of science and faith – Catholics should always seek the truth, for there can be no contradiction between reason and faith. As St. Thomas Aquinas implied -- how can there be a contradiction? Faith and reason come from the same source – the all-knowing God. We conclude again with the words of Pope John Paul II in his letter to the Papal Academy of Sciences:

In celebrating the 60th anniversary of the re-foundation of the Academy, it gives me pleasure to recall the intentions of my predecessor, Pius XI, who wished to bring together around him a chosen group of scholars who could, working with complete freedom, inform the Holy See about the developments in scientific research and thus provide aid for reflections. To those whom he enjoyed calling the Scientific Senate of the Church, he asked simply this: that they serve the truth. That is the same invitation which I renew today, with the certainty that we can all draw profit from "the fruitfulness of frank dialogue between the Church and science (Section 1).

VI. The Possibility of Aliens

Given that there are 10^{22} (a billion trillion) stars situated within 10^{11} (a hundred billion) galaxies in our universe (which is fully anthropic -- designed for life – since the Big Bang), and that recent discoveries of planetary systems suggest that there may be at least a hundred billion planetary systems accommodating rocky planets (very conservatively), it seems likely that there could be life on other planets in the universe. Many conditions would have to be fulfilled in order for a particular planet to accommodate life, but nevertheless, given the number of rocky planets, there could also be planets which meet all of these conditions.

It is one thing to say that there may be life on other planets – such as bacterial life, plant life, and even simple animalic life forms – such as insects or earthworms, but it is quite another to say that creative, self-reflective, rational, and transcendently oriented life exists. The reason for this is that these higher functions of thinking and reflectivity may not be explicable in terms of physical-biological systems and processes alone. It does not seem that the five transcendental desires (described in the next chapter) – the desire for perfect truth, love, justice (goodness), beauty, and home -- could have come from either the physical world around us or from our physical brain. There is something about these desires that goes beyond physics and the physical world. The transcendental desires are not the only evidence of our transphysical soul, there is also our self-consciousness, our trans-algorithmic mathematical thinking, and our ability to form conceptual ideas (that pass the Chomsky Linguistic Test) – all of which imply transphysical powers within us.¹²⁰ This transphysical nature is confirmed by the evidence of a transphysical

¹²⁰ See Spitzer 2015 *The Soul's Upward Yearning*, Chapters 3-6.

soul capable of surviving bodily death (from medical studies of near death experiences – see Chapter 2 of this book).

So here is the question – what are the odds that there are alien beings like ourselves with these transphysical powers? As you can imagine, it is far, far, far less likely than discovering rocky planets, bacteria, plants, and earthworms – far, far, far less likely than discovering mammals with developed brains. The development of the human cerebral cortex is so complex and refined that the odds of it occurring by pure chance in the relatively young age of our universe (13.8 billion years old), is highly, highly unlikely. Even non-religious philosophers of mind, such as Thomas Nagel, do not believe that this could occur through a strict neo-Darwinian evolutionary process alone – because there is simply not enough time for it to occur.¹²¹

Even if we ignore this gigantic problem, does that mean that a being like ourselves can develop within the universe through physical processes (and their evolution) alone? We believe that this is not possible, because it would require that the aliens in question have transphysical powers to explain self-consciousness (Sir John Eccles), the five transcendental desires (Lonergan, Rahner, Coreth), and trans-algorithmic mathematical awareness (Gödel). Moreover, if such beings also experienced a transphysical soul after clinical death (as we do), there would be little doubt that they could not be reduced to physical processes (and their evolution) alone. They would – like us – have to have a transphysical soul, and the only known origin of such a soul would be a transphysical reality – like God.

Thus, if we were to encounter aliens like ourselves with the above transcendental powers, we would have to conclude that they were given a transphysical soul by God independently of any physical process in the universe. We would have to further conclude that the development of their refined, complex cerebral cortex occurred because of the presence of that soul in them. Furthermore, if they desire perfect and unconditional truth, love, justice (goodness), beauty and home as we do, then we would have to conclude that their ultimate fulfillment could only come from a God who is perfect truth, love, justice (goodness), beauty and home – in which case, we would have to assume that their path to that fulfillment could come from the revelation and grace of Jesus Christ (who proclaimed God to be perfect love, and defined that love through the father in the Parable of the Prodigal Son).

What does that mean? If we discover an alien being like ourselves on another planet (or if they discovered us on *this* planet), we should catechize them and baptize them, because they were created by God for the same fulfillment we are – a fulfillment that can and does come from the Father of Jesus Christ.

This gives rise to one last set of questions – assuming that these alien transphysical beings would also have committed original sin (because they too would have been self-conscious and would have “tried to make themselves gods”), would the redeeming act of Jesus Christ (Incarnation, passion, and resurrection in Israel) also apply to them? Absolutely -- Jesus’ Incarnation in Nazareth and his crucifixion and resurrection in Jerusalem (on this planet) would be completely sufficient to redeem every transphysical being throughout the universe – because

¹²¹ See Thomas Nagel 2012 *Mind and Cosmos: Why the Materialist Neo-Darwinian Conception of Nature is Almost Certainly False* (New York: Oxford University Press).

his salvific action is an act of unconditional love – which, when performed by God is an act of unrestricted or infinite love – and that is enough to redeem the totality of finite transphysical beings.

Therefore, we must have the same attitude toward aliens as the early missionaries had toward bringing the Gospel from Israel to the Roman Empire – and then to India – and then to China, Asia, and then the New World. It really does not matter where the Son of God entered into the condition of “unredeemed” transphysical intelligent beings – “human or otherwise” -- His infinite act of love at that specific place and time¹²² is sufficient to redeem not only our world, but the universe – and even beyond – for all time. In view of this, if we find alien beings who are like us in creativity, intelligence, transcendental desire, and transphysical soul, it is incumbent upon us to tell them of the infinite love of God brought to us in concrete space and time by Jesus Christ – for those beings will be yearning for that love as much as we do.

¹²² Please note that Jesus’ infinite act of love also redeems “people of good will and conscience” **before** his Incarnation. This is implied in Jesus’ dying words on the cross – which represent the whole of Psalm 22: “All the rich of the earth will feast and worship; *all who go down to the dust will kneel before him—those who cannot keep themselves alive.* Posterity will serve him; future generations will be told about the Lord. They will proclaim his righteousness, declaring to a people yet unborn: He has done it!”