

New Proofs for the Existence of God

Contributions of Contemporary Physics and Philosophy

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Contents

Acknowledgments	xiii
Introduction	1
I. The Contemporary Theistic Scene	3
II. Why Are These Proofs New? A Brief History of the Five Approaches	4
III. The Rest of the Book	10
PART ONE	
Indications of Creation and Supernatural Design in Contemporary Big Bang Cosmology	13
Introduction to Part One	13
Chapter One: Indications of Creation in Big Bang Cosmology	14
Introduction	14
I. The Big Bang Theory	14
II. Can Science Indicate Creation?	22
III. Arguments for a Beginning of the Universe in Big Bang Cosmology	24
III. A. The Second Law of Thermodynamics	24
III. B. Why a Bouncing Universe Cannot Have Been Bouncing Forever	27
	vii

Contents

III. C. Space-Time Geometry Arguments for a Beginning of Time	30
III. D. Quantum Cosmology	32
III. E. The Borde-Vilenkin-Guth Theorem's Boundary to Past Time	33
IV. Conclusion	43
V. Metaphysical Implications	44
Chapter Two: Indications of Supernatural Design in Contemporary Big Bang Cosmology	47
Introduction	47
I. Universal Constants	52
I.A. Constants of Space and Time	53
I.B. Energy Constants	55
I.C. Individuating Constants	55
I.D. Large-Scale and Fine-Structure Constants	56
II. The Extreme Improbability of Our Anthropic Universe	57
III. Many Universes or Supernatural Design?	67
Conclusion to Part One	73
Postscript to Part One: Inflationary Cosmology and the String Multiverse, by Bruce L. Gordon, Ph.D.	75
Introduction	75
I. <i>All</i> Inflationary Cosmologies Must Have a Beginning and a Transcendent Cause	75
I.A. String Cosmologies Entail a Beginning and a Transcendent Cause	77
I.A.1. A Primer on String Theory	77
I.A.2. Steinhardt-Turok Cyclic Ekpyrotic Universes Require a Beginning and a Transcendent Cause	80
I.A.3. Gasperini-Veneziano Pre-Big-Bang Scenarios Require a Beginning and a Transcendent Cause	81
I.B. Deflationary Intermezzo for Strings	83
II. A Preliminary Assessment of Inflationary Cosmology	84

III. All Inflationary and Non-Inflationary Cosmologies Appear to Require a Beginning and Transcendent Cause	86
IV. Inflation and Cosmological Fine-Tuning	87
V. Fine-Tuning and String Cosmology	90
VI. Conclusion	102
PART TWO	
Three Philosophical Proofs for the Existence of God	105
Introduction to Part Two: Methodological Presuppositions of Philosophical Proof: Reasonable and Responsible Belief	105
Chapter Three: A Metaphysical Argument for God’s Existence	110
Introduction	110
I. Step One: Proof of the Existence of at Least One Unconditioned Reality	111
I.A. Complete Disjunction Elucidating the Whole Range of Possibilities for All Reality	111
I.A.1. Definitions	111
I.A.2. Consequences of the Complete Disjunction	112
I.B. Proof That “Hypothesis F” Must Be False for Any Conditioned Reality	114
I.C. Proof That “Hypothesis ~F” Must Be False for Any Conditioned Reality	116
I.D. Proof That a Circular Set of Conditions Is False for Any Conditioned Reality	117
I.E. Conclusion: There Must Exist at Least One Unconditioned Reality in All Reality	119
I.F. Another Refutation of Hypothesis ~UR	120
II. Step Two: Proof That Unconditioned Reality Itself Is the Simplest Possible Reality	121
II.A. The Principle of Simplicity	122
II.B. Unconditioned Reality Itself Must Be the Simplest Possible Reality	128

Contents

III. Step Three: Proof of the Absolute Uniqueness of Unconditioned Reality Itself	132
IV. Step Four: Proof That Unconditioned Reality Itself Is Unrestricted	135
V. Step Five: Proof That the One Unconditioned Reality Is the Continuous Creator of All Else That Is	140
V.A. The Unique, Absolutely Simple, Unrestricted, Unconditioned Reality Itself Is the Creator of All Else That Is	140
V.B. The Creator Must Continuously Create All Else That Is Real	142
Conclusion	143
Chapter Four: A Lonerganian Proof for God’s Existence	144
Introduction	144
I. Definitions of “Understanding” and “Intelligibility”	146
II. Proof of the Existence of God	153
II.A. There Must Be at Least One Unconditioned Reality	154
II.B. An Unconditioned Reality Must Be Unrestricted Intelligibility	156
II.C. Unrestricted Intelligibility Must Be Unique — One and Only One	163
II.D. Unique, Unrestricted Intelligibility Must Be an Unrestricted Act of Understanding — Understanding Itself	168
II.E. All Other Intelligibility Besides the One Unrestricted Act of Understanding Must Be Restricted and Be a Thought Content of the One Unrestricted Act of Understanding	172
II.F. Conclusion to the Proof	174
III. The Mystery of Human Understanding: The Notion of Being	174
Chapter Five: Proof of a Creator of Past Time	177
Introduction	177
I. An Analytical Contradiction	180

II. An Ontological Explanation of Real Time	183
II.A. Description, Scientific Explanation, and Ontological Explanation	185
II.B. An Ontological Explanation of Space	186
II.C. Real Time	187
II.C.1. Existential Non-Coincidence	187
II.C.2. Real Time as a Non-Contemporaneous Distensive Manifold	188
II.C.3. Time as the Limiting Condition of Existence	189
II.C.4. The Succession of Time and the Asymmetry of Events	191
II.C.5. Manifestations of Real Time	193
III. Hilbert’s Prohibition of Actual Infinities	197
III.A. Three Kinds of Infinity	197
III.B. The Mathematical Prohibition of C-Infinities	201
IV. A Formal Argument Against the Infinity of Past Time in Any Changeable Universe	204
V. Proof of a Creator of Past Time Which Is Not Itself Conditioned by Time	210
Conclusion	215
Chapter Six: Methodological Considerations and the Impossibility of Disproving God	216
Introduction	216
I. Common Methodological Elements	216
I.A. Complete Disjunction Within Metaphysical Assertions	217
I.B. The Notion of “Infinity”	219
I.C. Causality	220
II. Three Approaches to the Notion of “God”	225
III. The Impossibility of Disproving the Existence of God	229
IV. The Tenuous Rationality of Atheism	232

Contents

PART THREE	
The Transcendentals: The Divine and Human Mysteries	239
Introduction to Part Three	239
Chapter Seven: The Divine Mystery: Five Transcendentals	242
Introduction	242
I. The Interrelationship Among Absolute Simplicity, Perfect Unity, and Unrestricted Understanding	242
II. The Ontological Status of Love, the Good, and the Beautiful	245
II.A. The Ontological Status of Love	246
II.B. The Ontological Status of the Good	248
II.C. The Ontological Status of the Beautiful	253
Conclusion	257
Chapter Eight: The Human Mystery: Five Yearnings for the Ultimate	259
Introduction	259
I. The Desire for Perfect Truth	259
II. The Desire for Perfect Love	266
III. The Desire for Perfect Justice/Goodness	268
IV. The Desire for Perfect Beauty	277
V. The Desire for Perfect Home	281
Conclusion to Part Three: The Divine and Human Mysteries	285
CONCLUSION	
Five Questions Toward the Unconditional Love of God	287
References	292
Index	308

Introduction

The last few years have seen several books championing agnosticism or atheism making their way into the popular press. These books leave most informed readers quite baffled, because they ignore the vast majority (if not the entirety) of the considerable evidence for theism provided by physics and philosophy during the last few decades. This evidence is capable of grounding reasonable and responsible belief in a super-intelligent, transcendent, creative power that stands at the origins of our universe or any hypothetically postulated multiverse. The main purpose of this book is to give a brief synopsis of this evidence to readers who are interested in exploring the strongest rational foundation for faith that has come to light in human history.

The great physicist Sir Arthur Eddington remarked in his classic work *The Nature of the Physical World*:

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.¹

1. Eddington 1928, pp. 327-28.

Introduction

Perhaps this light is responsible for the persistent rational pursuit of ultimate grounds and causation which has been frequently associated with God since the time of Plato² and Aristotle.³ Though there have been centuries of controversy about the legitimacy of these proofs (particularly from the late eighteenth to early twentieth centuries), contemporary developments in physics, philosophy, and mathematics have led to a rekindled interest and an expanded pursuit of them.⁴

In the twentieth century, David Hilbert (the father of finite mathematics) has given new probative force and depth to the argument for the intrinsic finitude of past time (implying a timeless Creator) in his article "On the Infinite."⁵ Quantum Theory has expanded the horizons of ontology by obliging it to contend with non-location and information fields, which, in their turn, have given new evidence for non-materialistic (information-like) dimensions of physical reality. The General Theory of Relativity has forced us to re-envision the universe as a dynamically integrated finite whole in contradistinction to Newton's infinite universe of mass points in empty space.

2. Incipient proofs for the existence of God may be found in "the argument for participation in perfect Goodness" (in Books VI and VII of the *Republic*, Plato 1961); in the intimations of an eternal Creator from which all else is a fleeting image (in the *Timaeus*, Plato 1961, p. 1167; 37d-39e): "Wherefore [the eternal Creator] resolved to have a moving image of eternity, and when he set in order the heavens, he made this image eternal but moving according to number, while eternity itself rests in unity; and this image we call time." See also Being, one of the five greatest forms, in the *Sophist* (Plato 1961, pp. 999-1007; 254c-259e).

3. Aristotle formulates the first *a posteriori* proofs for the existence of God, arguing to a first *efficient* Cause of all reality in Book VIII of the *Physics*, and a first *final* Cause of reality in Book XII of the *Metaphysics*. He initiates his proof for a first efficient Cause as follows: "... the fact that there must exist something which is immovable and exempt from all external change, both unqualified and accidental, and which can move another, is clear from the following considerations" (Aristotle 1991, *Physics*, Book VIII — 252b10ff.). In *Metaphysics*, Aristotle articulates his solution to the problem of how the first Mover can move without being in motion, namely, by drawing (as a final Cause) all subsidiary movers into locomotion: "That the final cause exists in immovable things is clear by distinguishing the two meanings of 'final cause.' . . . and it [the final cause] causes motion as something which is loved, and that which is moved moves the others. If, then, something is moved, it can be otherwise with respect to place, even if not with respect to its substance. And since there is some mover which causes motion but is itself immovable and exists as actuality, this can in no way be otherwise than as it is" (Aristotle 1991, *Metaphysics*, Book XII — 1072b1-9).

4. Adler 1980, Craig 1979 and 1993, Lonergan 1992, Plantinga 1964, and Ross 1969, to name just a few.

5. See, for example, Hilbert 1964. This is discussed extensively in Chapter 5 of this book.

Big Bang cosmology has introduced the probability of the finitude of the observable universe and contemporary universal inflationary theory has shown the strong probability of an initial singularity, implying a causative power transcending universal space and time. When these and other discoveries are allowed to complement traditional proofs for the existence of God, they provide a remarkable rational foundation for the existence of a unique, unconditioned, unrestricted, absolutely simple, super-intelligent, continuous Creator of all else that is.

I. The Contemporary Theistic Scene

Parts of this book could not have been written before 2003 when Borde, Guth, and Vilenkin established the requirement for a singularity in all inflationary model universes,⁶ and when the data of the MAP satellite helped to verify the inflationary universe and the age of the universe — 13.7 billion years; other parts could not have been written before 1989 when Roger Penrose calculated the odds *against* an anthropic universe compatible with the second law of thermodynamics emerging from the big bang.⁷ The *classical* Big Bang model could not have been addressed before 1964 when evidence indicated the likelihood of finite space and time in our *observable* universe, and quantum cosmology could not have been addressed prior to that time.

These developments not only have an important effect on Chapters 1 and 2 of this book, but also on the philosophical proofs given in Chapters 3-5, because they give greater credence to classical and medieval philosophical ideas that lost credibility during the era of Newtonian mechanics (which affected philosophy all the way through the early twentieth century). Today, concepts like “ontological simplicity,” “conditioned and unconditioned realities,” and “formal cause” (particularly in the “information fields” intrinsic to quantum fields) enjoy a veracity and significance beyond that of their classical and medieval origins. These discoveries provide experimentally verifiable examples of concepts used to prove the existence of God in Chapters 3-5.

In view of this, I here offer my rendition of a “state-of-the-art” formulation of the proofs. I hope to provide a staging area to assemble the work of

6. Borde, Guth, and Vilenkin 2003, pp. 3-4.

7. Penrose 1989(a), pp. 344-45.

Introduction

great astrophysicists, cosmologists, and philosophers who have contributed so much to this field, and to bring their thoughts together in a single, comprehensive volume.

II. Why Are These Proofs New? A Brief History of the Five Approaches

Significant updates in rational approaches to God have been achieved in five major areas over the last seventy years:

- 1) evidence from physics and cosmology about an initial singularity (implying a creation event transcending universal space-time asymmetry — Chapter 1),
- 2) evidence of the extremely high improbability of an anthropic universe (one that will allow the emergence of *any* life form), implying the possibility of supernatural design (Chapter 2),
- 3) development of the notions, and corroboration of the reality, of causation and simplicity in quantum theory and cosmology, which can be applied to what was traditionally conceived as the “uncaused Cause argument” (Chapter 3),
- 4) an ontological grounding for Bernard Lonergan’s proof for the existence of God in *Insight: A Study of Human Understanding* (Chapter 4), and
- 5) contemporary developments in the ontological explanation of time and the Hilbertian prohibition of “infinities hypothesized within finite structures,” which has led to a credible contemporary formulation of the long-discarded proof of the impossibility of infinite past time (Chapter 5).

A brief history of each of these developments and their effect on the rational approach to God will be discussed below.

Chapter 1 begins with a brief account of the general elements of *classical* Big Bang cosmology, and shows how those combined elements ground the contemporary position that our observable universe is approximately 13.7 billion years old and 13.7 billion light years in radius (from its theoretical originative center). The chapter then gives a brief account of developments in the *contemporary* Big Bang model that allow for an initial state that may be conceived in terms of quantum cosmology and/or string theory, and

universal inflation (a hyper-accelerating phase of expansion in the early universe, seemingly caused by “vacuum energy” or “dark energy”).

The *classical* Big Bang model seemed to indicate a beginning of the universe at a Hawking-Penrose singularity, but this was mitigated by the *contemporary* Big Bang model, which opened up the possibility of an early quantum cosmological era and an inflationary dynamic (allowing our universe to be but one amidst a multiplicity of possible universes within a theoretical multiverse). This mitigating view was itself subsequently mitigated by the discovery of Borde, Guth, and Vilenkin that every inflationary model universe (and/or multiverse) must have a beginning. Since this indicates an edge of time (prior to which there is no time), the conclusions of Borde, Guth, and Vilenkin point strongly to a creation of the universe (from no previously existing *physical* matter-energy). The cause of such a creation would then have to transcend our universe (and any multiverse in which it may be situated).

Chapter 2 considers the so-called teleological argument (the argument from design) from the vantage point of contemporary Big Bang cosmology. Prior to the time of Newton, the argument from design had an intuitive appeal because it was grounded in the idea that the number of *higher-order complexes* (producing higher-order activities such as self-motion, eyesight, intelligence, etc.) which could be produced by the interaction of simpler constituents is extremely remote by comparison to the number of *non-productive combinations* of those simpler constituents. From the vantage point of both physics and probability theory, this is not an erroneous idea.

However, when Newton theorized that space, time, and mass points were infinite (and his theories were virtually dogmatically accepted), philosophers began to reason that even though “higher-order complexes giving rise to higher-order activities” were extremely improbable, literally *any* highly improbable event could occur in an infinite amount of time, in an infinite amount of space, with an infinite amount of mass. Once an infinite number of possibilities is inserted into the probability equations, improbability disappears — and literally anything becomes possible. Thus, the teleological argument slipped from the horizon for nearly 270 years.

But then came two remarkable developments in cosmology: (1) the classical and then later contemporary models of Big Bang cosmology, and (2) the discovery of additional universal constants. (A universal constant is a fixed quantity that mathematically governs the fundamental equations of physics throughout the observable universe during its duration, such as the

Introduction

speed of light constant, Planck's constant, the gravitational constant, weak force constant, strong force constant, mass of a proton, mass of an electron, charge of an electron/proton, etc.)

As noted above, Big Bang cosmology put an end to the Newtonian assumptions of infinite time and mass in our *observable* universe. Now the universe was thought to be only 13.7 billion years old and to have 10^{53} kg of visible mass, and a finite amount of dark matter and vacuum (dark) energy. It was all quite finite, and that meant that the probability equations would once again have to be taken seriously. When this eventuality was combined with the discovery of additional universal constants, a host of exceedingly improbable "cosmic coincidences" were discovered.

Essentially, our universe should *not* be anthropic (capable of sustaining *any* kind of life form), because the range of anthropic values for our universe's constants is exceedingly small by comparison to the immense range of non-anthropic values. This meant that a random occurrence of the anthropic values of our universe's constants is so remote as to be virtually impossible. As a result, physicists began to advocate that it might be just as reasonable, if not more reasonable, to believe in a super-Intellect "setting the values of the constants at the inception of the universe," as to believe in their random occurrence. Even persistent atheists like Fred Hoyle changed their minds and openly declared their belief in such a "super-Intellect."

Chapter 2 will set out seven of these cosmological coincidences so that readers might be able to verify for themselves the unbelievably high improbability of an anthropic universe emerging from the big bang by pure chance. Notice that we are not talking about the emergence of life *as we know it*, but about the very conditions necessary for the possibility of *any* life form. It is this universality that makes the teleological argument more powerful than it ever could have been in any previous age.

I am not responsible for the research set out in Chapters 1 and 2, and so I am deeply indebted to the fine work of Roger Penrose, Arvind Borde, Alan Guth, Alexander Vilenkin, Brandon Carter, Walter Bradley, Fred Hoyle, Paul Davies, and many others whose insight and research have contributed so much to unveiling the mystery behind our anthropic universe.

I include a Postscript to Chapters 1 and 2 written by Dr. Bruce Gordon, who analyzes and criticizes some recent attempts by physicists to wriggle out of the preponderance of evidence for intelligent, transcendent, universal design. His incisive response to Steinhardt's and Turok's cyclic ekpyrotic hypothesis, Gasperini's and Veneziano's string perturbative vacuum phase within inflationary cosmology, and Susskind's, Polchinski's,

Bousso's, and Linde's inflationary string landscape theory reveals the strength and probative force of the conclusion that our universe had its origin in an intelligent transcendent cause. He concludes with the words of the string landscape theory's key proponent, Leonard Susskind, who worries out loud that if his theory proves to be inconsistent, physicists will be left without any alternative to intelligent design.

Chapter 3 initiates our philosophical arguments, and reconsiders what has come to be known as Saint Thomas Aquinas's uncaused Cause argument (which has its roots in Aristotle's unmoved Mover argument). This argument suffered greatly from the seventeenth- and eighteenth-century view of causation, which was concerned more with "bodies and forces" than with Aristotle's four causes. The early twentieth century completely transformed the view of the physical universe from Newton's "mechanics of bodies" to the "activity of fields" (quantum fields, electromagnetic fields, space-time fields, plasma fields, etc.), which changed the view of both physical reality and causation.

These new views of causation and physical reality shed new light on the metaphysical argument (the uncaused Cause argument) given in Chapter 3. I begin that chapter by dropping the terminology of "causation," which carries an enormous amount of historical baggage, and turn instead to an ontological use of the concepts "conditioned reality," "conditions," and "unconditioned Reality," which I have borrowed from Bernard Lonergan's *Insight: A Study of Human Understanding*. The result is that these concepts do *not* exclude *any* of the kinds of causation discovered by contemporary physics and cosmology (such as causation within and through space-time fields, quantum fields, strings, plasmas, etc.). The inclusivity, universality, and versatility of these concepts allow a truly *meta*-physical argument to be developed that will not be discounted by future developments in causation. This is explained in Chapter 3 (Section I) and Chapter 6 (Section I.C).

Moreover, contemporary developments in physics and cosmology reinvigorated the notion of ontological "simplicity." Ancient and medieval philosophers used the notion of "simplicity" to explain higher and higher levels on the "tree of being" (i.e., higher and higher levels of activity such as cognition and self-consciousness, which arise out of "less intrinsic and extrinsic restrictions within a power or substance").

When science and philosophy turned to a more mechanistic viewpoint beginning in the seventeenth century, this idea of simplicity seemed superfluous because it was thought that higher-order activities could be explained

through aggregates and complexity *alone*. Thus, if one wanted to explain higher-order activities, one only needed to explain the complex of lower-order bodies or activities that produced them. This approach seemed to be valid for a while, until electromagnetic fields became an inescapable datum. Then the world of physics experienced a proliferation of fields. Quantum theory revealed quantum fields. General Relativity Theory revealed that space was not a vacuum or emptiness, but a dynamic field that could interact with mass energy. Plasma physics revealed plasma fields with non-aggregative unities. These fields could not be explained by aggregations of bodies and Newtonian forces, because they were more like unities (organic mediums) than aggregates (collections of things).

The notion of “simplicity” is very capable of explaining fields because it puts unity before aggregate, manifold (continuum) before body (self-enclosed, discrete entity), and activity before “thing.” Therefore, a complexity of bodies was not the only way of explaining higher-order activities. They could also be explained by a lack of intrinsic or extrinsic restrictions in powers or activities (simplicity). This gave physics and philosophy a new way of explaining not only higher-order activities, but also fields, unities, space-time, etc.

This notion of simplicity is useful not only in physics, but also in metaphysics; for as will be seen in Chapter 3, one can use this notion to explain the highest level of power or activity, namely, an unconditioned Reality (which does not depend on anything for its existence). As will be proved, an unconditioned Reality must be absolutely simple, and that absolute simplicity must be unique (one and only one) and unrestricted. This requires that it also be the continuous Creator of all else that exists.

Chapter 4 presents a Lonerganian argument for the existence of God. As many readers may know, Bernard Lonergan was a twentieth-century philosopher, and his proof for the existence of God has been written about extensively.⁸ So, why call this a *new* proof? Because it grounds his premises in an ontological rather than an epistemological starting point. It is well known that Lonergan’s cognitional theory gives rise to his epistemology; his epistemology to his ontology; and his ontology to his metaphysics and philosophy of God. Thus, the grounding premises of his argument for the existence of God are traced back to his epistemology (particularly his self-affirmation of the knower and his pure, unrestricted desire to know). Though these epistemological underpinnings do not in any way undermine his ontology,

8. Lonergan 1992, Chapter 19.

metaphysics, or proof for God's existence, I thought it might be helpful to present a version of Lonergan's proof with what I hope to show is an unassailable ontological foundation, namely, the proof of at least one unconditioned reality.

Lonergan's argument is so versatile that one can begin with this proof of an unconditioned Reality (the denial of which requires that there be absolutely nothing in reality), and then prove that this unconditioned Reality must be unrestrictedly intelligible, and then that unrestricted intelligibility must be unique (one and only one), and finally that this unique, unrestrictedly intelligible, unconditioned Reality must be an unrestricted act of understanding — understanding Itself.

Why begin with an ontological starting point? Because, first and foremost, it can be done; second, it complements and reinforces Lonergan's proof; and third, it will make the proof accessible to readers who prefer an initial ontological (rather than epistemological) foundation. I am deeply grateful to Bernard Lonergan and to his many interpreters for the epistemological insights, the ontological analysis of intelligibility, and the intricate reasoning leading toward the unrestricted act of understanding — understanding Itself.

Chapter 5 reconsiders the long-rejected proof for a creator of past time which entails proving the impossibility of *infinite* past time. Aristotle and Saint Thomas Aquinas did not consider such a proof to be truly probative because their view of time and mathematics was not sufficiently developed to see contradictions in the application of infinity to past time (a finite structure). Newton and other classical physicists followed this Aristotelian assumption.

However, developments in contemporary physics (particularly Relativity Theory) showed that the Aristotelian notion of "time" (as the "number/measure of motion") was not adequate. In General Relativity Theory, time was not merely a measure, it was *something* which could have an effect on the emission and interaction of various forms of energy. There not only seemed to be a minimum interval of time (duration), but also a minimum unit of space, and even a minimum unit of energy emission. These natural minimums have predictable physical effects, and so it became more and more difficult to relegate time (and its real interaction with space and energy) to the realm of mere measure. This development led a host of philosophers (including myself) to write books on the ontological status of time. Most of these volumes affirm that ontological status.

When this reality of time was combined with an important develop-

Introduction

ment in mathematics (i.e., the Hilbertian prohibition of “infinities hypothesized to be actual within finite or aggregative structures”), the impossibility of infinite past time in any standard universe manifested itself. (The famous mathematician David Hilbert and other contemporary mathematicians have shown that the hypothesis of an infinity within finite or aggregative structures not only undermines the axioms of finite mathematics, but even the realities to which finite mathematics can be applied, making such infinities inapplicable to a standard universe.) Now, if time is real, and the axioms of finite mathematics apply to it (particularly its distensive manifold), then Hilbert’s prohibition must also apply to the hypothesis of infinite past time, making infinite past time impossible. This makes the argument for a Creator of past time quite probative.

III. The Rest of the Book

The new evidence for creation and design (from physics and cosmology) and the more complete and probative formulations of the three philosophical proofs require a fresh look at eight issues that have been associated with the philosophy of God throughout the centuries:

- 1) the distinct methodologies of physics and metaphysics (Chapter 6, Section I.A),
- 2) the non-use of an infinite regression argument (Chapter 6, Section I.B),
- 3) causation in light of the new proofs (Chapter 6, Section I.C),
- 4) how to *comprehend* the infinite Being — the *via negativa*, the hyperphatic way, and analogy (Chapter 6, Section II),
- 5) the impossibility of disproving the existence of God (Chapter 6, Section III),
- 6) the dubious rationality of atheism (Chapter 6, Section IV),
- 7) the unity of the five transcendentals: perfect Being/Unity, perfect Truth, perfect Love, perfect Goodness/Justice, and perfect Beauty (Chapter 7), and
- 8) the human mystery: the desire for perfect Truth, Love, Goodness/Justice, Beauty, and Home (Chapter 8).

If even half of these topics are taken seriously, they cannot help but transform our view of the universe, transcendence, our destiny, and the

meaning of life. I think we are fortunate to have such an abundance of evidence for theism today. Robert Jastrow, founder and former director of NASA's Goddard Institute of Space Studies, provides a suitable conclusion in his book *God and the Astronomers*:

[The scientist who has lived by his faith in the power of reason] has scaled the mountains of ignorance; he is about to conquer the highest peak; as he pulls himself over the final rock, he is greeted by a band of theologians who have been sitting there for centuries.⁹

9. Jastrow 1978, p. 116.