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The Proof that History Forgot: Samuel Clarke's Cosmological Argument

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In his work, *A Demonstration of the Being and Attributes of God,* Samuel Clarke presents what he considers a single cohesive cosmological argument for God's existence. Closer analysis of his argument reveals three distinct arguments, however, each of which is dependent upon three concepts that distinguish Clarke from other modern writers. These concepts include: the principle of sufficient reason, his unique notion of a necessary being, and his framing the argument in terms of Newtonian natural philosophy. Clarke's argument represents, in many ways, a reconciliation of early modern science and natural theology. Clarke brings to the traditional cosmological argument a keen logical insight and an in depth understanding of Newtonian natural philosophy, the result of which is the strongest and most articulate formulation of the argument in the early modern period. Not only does Clarke's argument make clear the cosmological arguments dependence upon the principle of sufficient reason and the conception of a necessary being, but also its use of Newtonian natural philosophy represents a tour de force against early modern naturalistic explanations for the origin of the universe. Clarke's distinctive views on these topics become evident through an analysis of his argument, and an evaluation of the argument in light of its greatest critic, David Hume.

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To Summer and Lori, the two most important people in my life.

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"…but it is not to be conceived that mere mechanical causes could give birth to so many regular motions, ….This most beautiful system of the sun, planets, and comets, could only proceed from the counsel and dominion of an intelligent and powerful Being" *Isaac Newton, The Principia*

"From one ancestor he made all the nations to inhabit the whole earth, and he allotted the times of their existence and the boundaries of the places where they would live, so that they would search for God and perhaps grope for him and find him-though indeed he is not far from each one of us. For 'In him we live and move and have our being'…" *Acts 17:26-28*

I

Introduction to Samuel Clarke: The Birth of Science and Scientific Rationality

"Cosmological arguments" are not typically associated with Samuel Clarke, an obscure philosopher of the 18th century. Rather, they are most popularly connected to the writings of Plato, Aristotle, Bonaventure, Thomas Aquinas, Duns Scotus, and Gottfried Leibniz, to name a few. Leibniz, in particular, stands as a towering figure in the history of early modern thought, and his is probably the most commonly acknowledged version of the cosmological argument of its era. Indeed, the most widely read of Clarke's work is his correspondence with Leibniz, in which most commentators have minimized Clarke's influence, attributing most of the ideas to Newton. Although some rudimentary similarities exist between the Leibnizian version of the argument and Clarke's presentation of the argument, the differences are highly significant. The following is an extrapolation of Clarke's argument, with hopes that such an exercise will demonstrate the originality and viability of Clarke's version, in light of the fact that his cosmological argument has often and unfortunately been overlooked.

When Samuel Clarke was still a very young boy, one of his parents asked him, "Can God do anything"? Clarke answered "yes" God can do anything he pleases. "But," questioned the parent, "can God tell a lie"? Clarke, undeterred by the conundrum he was presented with, gave a negative answer. From these questions posed by his parents, and from his answers given, Clarke was lead to believe that lying was the only thing that God was unable to do. However, Clarke recounts that it seemed to him, at the time, that there were other things God was unable to do; namely, to annihilate the space within the room in which he and his parents were standing[1]. Even to the young Clarke, space represented a fundamental, indeed necessary, aspect of physical reality. This story from Clarke's childhood is indicative of Clarke's fascination with space, a

[1] J.P. Ferguson, *An Eighteenth Century Heretic Dr. Samuel Clarke* (Kineton: The Roundwood Press, 1976) 2.

fascination that permeates Clarke's writings and one which will play a pivotal role in his arguments for the existence of God.

In his work, *A Demonstration of the Being and Attributes of God,* Samuel Clarke presents what he considers a single cohesive cosmological argument for God's existence. Closer analysis of his argument reveals three distinct arguments, however, each of which is dependent upon three concepts that distinguish Clarke from other modern writers. These concepts include: the principle of sufficient reason, his unique notion of a necessary being, and his framing the argument in terms of Newtonian natural philosophy. Clarke's argument represents, in many ways, a reconciliation of early modern science and natural theology. Clarke brings to the traditional cosmological argument a keen logical insight and an in depth understanding of Newtonian natural philosophy, the result of which is the strongest and most articulate formulation of the argument in the early modern period. Not only does Clarke's argument make clear the cosmological arguments dependence upon the principle of sufficient reason and the conception of a necessary being, but also its use of Newtonian natural philosophy represents a tour de force against early modern naturalistic explanations for the origin of the universe. Clarke's distinctive views on these topics become evident through an analysis of his argument, and an evaluation of the argument in light of its greatest critic, David Hume.

Samuel Clarke was born on October 11, 1675 in Norwich England, and was the child of Edward and Hannah Clarke. Clarke's first education consisted to private tutoring, followed by five years of education at the Free Grammar school beginning at age ten. After leaving the Grammar school, Clarke was admitted at an early age to Cambridge and it was at Cambridge that Clarke studied Newton. In order to complete his studies and earn his degree Clarke was required to perform a certain exercise, known as "acts and opponencies". During this exercise, the student

was required to propose three propositions and to defend these propositions against three opponents, each of whom presented eight arguments against the proposed propositions. A moderator who directed and evaluated the ensuing debate also oversaw the exercise. Clarke choose as his propositions aspects of the emerging Newtonian natural philosophy, which, at the time, were not widely accepted. J.P. Ferguson notes that that the presentation was well received, and that witnesses noted Clark's masterful knowledge of Newtonian philosophy. Ferguson cites a witness to the event, Hoadly, who later recollects that "…in this study [Clarke] made such uncommon advances, that he was presently master of the chief parts of Newtonian philosophy…"[2]

The intellectual landscape of Clarke's time, particularly within the natural sciences, was dominated by Cartesian natural philosophy. Clarke lived in an era in which fundamental changes had taken place in regard to how people viewed and understood the world around them. Aristotelian thought, which had dominated the western intellectual world for close to two thousand years by Clarkes's time, came to be regarded as archaic. New world systems had stepped in to replace these ideas, most notably those of Copernicus, Kepler and Galileo. Furthermore, elemental changes had taken place in the method of natural philosophy that lead to radically new systems of thought. A notable example of this fundamental change in thought can be seen in the emergence of a new conception of space, a conception that would prove fundamental to Clarke. The rapidly changing method lent itself to and gave priority to "scientific" thought and the "scientific revolution" would forever change our conception of reason. D'Alembert sums up the eighteenth century in the following way: "In short, from the

[2] Ferguson, *Samuel Clarke,* 6.

earth to Saturn, from the history of the heavens to that of insects, natural philosophy has been revolutionized; and nearly all other fields of knowledge have assumed new forms…"[3]

The scientific revolution produced new standards of what is and is not to be considered reasonable. Clarke represents, among other things, an individual who deeply incorporates scientific thinking into his work, including his arguments for the existence of God. A brief explanation of the key features of this new movement in natural philosophy, as well as an overview of some of its major thinkers leading up to Clarke, will be helpful in unveiling why and how Clarke formulated the cosmological argument in the manner in which he chose.

Perhaps paramount among the changes that occurred, and one which defines the beginning of the scientific revolution, is what historian John Henry calls the "Mathematicalization of the world". What made the scientific revolution distinct from the middle ages was the consolidation of mathematics and natural philosophy. The purpose of natural philosophy, according to Aristotle, was to describe the physical operations of the world in terms of causes; particularly, material, formal, efficient, and final causes. However, mathematics alone was unable to provide anything resembling a causal explanation for physical phenomena, and was therefore seen as subordinate to the causal explanations of natural philosophy. If mathematics was employed, its function was strictly instrumental, that is, as a tool for calculations. Yet, as Aristotelian philosophy came increasingly under attack, "…some mathematical practitioners and even some philosophers began to insist that mathematics could reveal important truths about the way things really were"[4]. Consequently, some of the early scientists during the scientific revolution assumed a form of mathematical realism. Individuals, such as Nicholas Copernicus, began to use mathematical calculations to reveal how the world,

[3] Ernst Cassirer, *The Philosophy of the Enlightenment* (Princeton: Princeton University Press, 1951) 3.
[4] John Henry, *The Scientific Revolution and the Origins of Modern Science* (Hampshire: Palgrave Macmillan, 2008) 19.

and other planets ought to move. Copernicus, paving the way for all future astronomers, argued that his calculations must be physically true. He offered abstract mathematical arguments to support his claims regarding natural philosophy[5].

Building on the writings of Copernicus, Johannes Kepler argues in a similar way for the viability of mathematical descriptions of reality. Kepler suggests that the purpose of a hypothesis is to actually describe a physical phenomenon. In his *A Defense of Tycho against Ursus,* Kepler distinguishes between two kinds of hypotheses in astronomy: the astronomical hypothesis and the geometrical hypothesis. The difference between the two is subtle. Kepler suggests that an astronomical hypothesis is one that describes an observation, such as "…the path of the moon describes an oval shape…"[6] A geometrical hypothesis, in this instance, would consist of a mathematical explanation of the oval, or how the oval is constructed. Nevertheless, it remains the task of the astronomer to provide and support both types of hypotheses, as well as to make general observations. According to Kepler, in the field of astronomy, the method of demonstration is primarily observation and numerical detailing that describes such observation. Kepler explains the constitution of an astronomical hypothesis: "… (the astronomer) promises to demonstrate with syllogistic necessity both those observed positions of the stars…and also, so he hopes, those which are about to appear in the future." [7]

With this definition of a astronomical hypothesis in mind, Kepler presents a clear distinction between a true astronomical hypothesis and a false one, namely, accurate calculations and the prediction of future phenomena. Furthermore, this allows Kepler to demarcate between astronomy and non-astronomy, and to claim that any hypothesis that does not meet this

[5] John Henry, *The Scientific Revolution…,* 21
[6] N. Jardine, *The Birth of History and Philosophy Kepler's A Defense of Tycho Against Ursus with Essays on its Provenance and Significance* (Cambridge: Cambridge University Press, 1984) 153.
[7] N. Jardine, *The Birth of History and Philosophy,* 139.

definition is clearly false. A hypothesis must "…be true in every respect."[8] Hypotheses are not simply devices used to organize data, but rather they tell us something real about the world. In other words, a hypothesis does not inform observation, but is rather derived from observation.

While Kepler made a strong case against Reimers Ursus concerning the nature of astronomical hypotheses, Galileo Galilei solidified mathematics as the basis for the natural sciences. Galileo introduces an approach to the study of nature that is centered on mathematics. In his book *The Assayer*, Galileo states the following:

> "Philosophy is written in this grand book, the universe, which stands continually open to our gaze. But the book cannot be understood unless one first learns to comprehend the language and read the letters in which it is composed. It is written in the language of mathematics, and its characteristics are triangles, circles, and other geometric figures without which it is humanly impossible to understand a single word of it; without these, one wanders about in a dark labyrinth."[9]

In *The Assayer*, Galileo argues that quoting traditional authorities, and proceeding with syllogistic reasoning, is not how true knowledge is gained. Rather, true knowledge is gained by reading the book of nature. Nature, according to Galileo, is something that presents itself to us and that can be understood through mathematics. Yet, Galileo is not simply claiming that mathematics is an abstract process that the philosopher applies to nature. To the contrary, mathematics is something that is found in nature and is the means by which nature operates. Nature is bound to operate in an orderly manner, dictated by mathematics. As E.A. Burtt claims "…this rigorous necessity in nature results from her fundamentally mathematical character-

[8] N. Jardine, *The Birth of History and Philosophy,* 143.
[9] A.W. Crosby, *The Measure of Reality: Quantification and Western Society 1250-1600* (New York; Cambridge University Press, 1997) 240.

nature is the domain of mathematics."[10] The naturalization of mathematics allowed Galileo to legitimate sciences that had previously been considered of secondary importance, most notably Galileo established mechanics as a science.

Rene Descartes, building on Galileo, sought to establish what he called the "mathesis universalis," or the universal mathematics. In essence, the purpose of Descartes universal mathematics is to establish mathematics as the foundation of all the sciences. The reason for basing all sciences on mathematics is simple. Descartes states "Of all the sciences so far discovered, arithmetic and geometry alone are, as we have said above, free from the taint of falsity or uncertainty."[11] Descartes claims that mathematics alone arises from pure and simple "intuition," mathematical propositions are not derived from sense experience, which is subject to interpretation. According to Descartes there are two ways to certain knowledge: intuition and deduction. Intuition, according to Descartes, is a clear indubitable conception of the mind that proceeds solely from the reasoning process of the mind. Likewise, deductions are inferences that follow from intuitions. Due to the fact that mathematics is based solely on intuition and deduction, Descartes claims that "…they alone are concerned with a object so pure and simple that they make no assumptions that experience might render uncertain…"[12] In addition to establishing mathematics as the basis for all the sciences, Descartes was also able to bring together previously unrelated areas of mathematics. The combining of arithmetic and algebra with geometry, by demonstrating a direct correlation with the numbers used in the former with the figures in the later, resulted in what Descartes called "analytical geometry." The importance

[10] E.A. Burtt, *The Metaphysical Foundations of Modern Science* (Mineola: Dover Publications INC, 2003) 75.
[11] Rene Descartes. "Rules for the Direction of the Mind," in *The Philosophical Writings of Descartes,* vol. 1, transl. John Cottingham, Robert Stoothoff, and Dugald Murdoch (Cambridge: Cambridge University Press, 1985) 12.
[12] Rene Descartes, "Rules for the Direction of the Mind," 12.

of this discovery, in relation to Clarke, is the effect that this had on early modern notions of space, and the philosophical system that Descartes built on it.

By linking arithmetic and algebra with geometry Descartes was able to formulate a mathematical way of describing space. According to E.A. Burtt, "He perceived that the very nature of space or extension was such that its relations, however complicated, must always be expressible in algebraic formulae…"[13] Extension, according to Descartes, is the fundamental aspect of matter, and is also a characteristic of space. Furthermore, extension is something that an individual naturally intuits from sense perception. To say that a particular object is extended requires no explanation; hence, it is intuited from the natural light of reason. Yet, Descartes is quick to note that when he says that "a body is extended," he is not implying that "extension" and "body" are referring to different things. Rather, to be a body is to be extended in space. Additionally, Descartes ascribes three characteristics to extension: dimension, unity, and shape. Dimension simply refers to the measurable aspects of extension, such as weight and motion. Descartes defines unity as "…the common nature which, we have said above, all the things which we are comparing must participate in equally."[14]

Descartes speculations concerning the nature of matter and extension lead him to posit his famous vortex theory. Several aspects of this theory need to be addressed in order to understand Clarke's adverse reaction to it and to understand the foundation of his arguments. Concerning motion, Descartes believed that God was the primary cause, or reason, of things in motion. Descartes exclaims that "In the beginning <in his omnipotence> he created matter, along with its motion and rest; and now, merely by his regular concurrence, he preserves the same

[13] E.A. Burtt, *The Metaphysical Foundations…,* 106.
[14] Rene Descartes, "Rules for the Direction of the Mind," 63.

amount of motion and rest in the material universe as he put in there in the beginning."[15] The implication of Descartes statement is that motion and rest are inherent qualities of matter itself. An object moves because God has created that object to move. This statement also excludes the existence of a vacuum. Space consists of a fine matter that Descartes refers to as "ether". The universe is essentially "full" of matter and an object moving through space is communicating this property of motion through the impact of the object against other matter. While ether itself is unobservable, its effects are. For example, consider the motion of the planets around the sun. God has ordained that at certain locations Ether will fall into a series of "vortices," one of which exists at the center of our solar system. This ether carries the planets along, and this effect operates in accordance with the laws of motion.[16]

Isaac Newton departed starkly from the natural philosophy of Descartes, both in the content of his scientific claims and in the method by which he establishes those claims. The factual claims that differentiate Descartes and Newton will be made evident in Clarkes arguments. However, the difference in their method must be noted. Newton's method emphasizes not only the mathematical demonstration of natural phenomena, but also the observation of natural phenomena. Borrowing heavily from Kepler, Newton posited that that the observation of phenomena ought to come first. Observation is then followed by an attempted mathematical demonstration, whose accuracy is dependent upon how well it matches the observation. Therein lies the primary difference between Descartes' and Newton's method.

Descartes argues that the science ought to be based on self-evident propositions, and that one ought to proceed deductively from these propositions until a particular phenomenon is sufficiently explained. Like Descartes, Newton also seeks a universal mathematics, but he does

[15] Rene Descartes, "Principles of Philosophy," 240.
[16] E.A. Burtt, *The Metaphysical Foundations…,* 112.

not believe that this is to be found in analytic geometry nor can physics be reduced to geometry. To the contrary, as Ernst Cassirer observed, Newton "…advocates rather the independent function and the unique character of physical investigation, and this character is founded in the method of experimentation and the method of inductive reasoning."[17] Hence, Newton's method is primarily inductive and has no need for indubitable or metaphysical principles. While Newton's natural philosophy is generally free from metaphysics, there is one notable exception, namely, his conception of space, which will be discussed in the context of Clarke's argument.

Clarke's objections to Descartes, and to other natural philosophies that follow upon Descartes, will become evident as Clarke unpacks his argument. What should be noted, especially concerning Clarke's argument, is that Clarke found the implications of Descartes natural philosophy, and others which sprang from it, deeply unsettling. Burtt notes that the importance of Descartes vortex theory is that "…It was the first comprehensive attempt to picture the whole external world in a way fundamentally different from the Platonic-Aristotelian-Christian view…"[18] Descartes paints a picture of the universe as a machine. The universe is considered to be a machine in the sense that it operates on, and does not deviate from, observable mathematical laws. Thus, the universe is predictable, and runs in a consistent manner like any good machine would.

While Descartes still believes that God created this machine, God is nevertheless regulated to the position of a first cause. A simple analogy will help to explain the implications of such a view of the universe. Suppose a mechanic builds a perpetually running car engine, one that will never break down. All the mechanic has to do is start the engine and it will run indefinitely. Clarke views the God of Descartes as the mechanic who builds the engine. While

[17] Ernst Cassirer, *The Philosophy of the Enlightment,* 52.
[18] E.A. Burtt, *The Metaphysical Foundations…,* 113.

God may have created the world, there is no longer a place for God *in* the world. The presence of God in the world is replaced by matter and motion, which operate on mathematical laws and which simultaneously eliminate any notion of teleology. Clarke believes that such a view of the universe is akin to Deism, which inevitably leads to atheism.

It was due to these factors that Clarke accepted an invitation to deliver the "Boyle Lectures". Robert Boyle is perhaps best known to us today as one of the fathers of modern chemistry; indeed, his work *The Skeptical Chemist* stands as a corner stone of the subject. Yet, Boyle was also a deeply devoted Christian, and one who saw the need for apologetics in the emerging scientific age. In his will, Boyle funded the establishment of a series of lectures that, according to Boyle, ought to "…prove the truth of the Christian religion against infidels, without descending, scruples, etc."[19] Clarke was invited to give a series of eight lectures over the course of the year of 1704, by the current Archbishop of Canterbury Thomas Tenison. The Lectures were delivered in St. Paul's Cathedral, and they bore the title that the book now shares, *A Demonstration of the Being and Attributes of God.* His lecture series was so popular that Clarke was invited back the following year for another series of lectures, which Clarke entitled *A Discourse concerning the Unchangeable Obligations of Natural Religion, and the Truth and Certainty of the Christian Revelation.*

The lectures were appreciated by laymen and intellectuals alike. The logician George Boole commented that Clarke's arguments are "…almost always specimens of correct logic, and they exhibit a subtly of apprehension and a force of reasoning which have seldom been equaled, never perhaps surpassed."[20] The two series were eventually published together and over a short

[19] J.P. Ferguson, *Samuel Clarke, 23.*
[20] William L. Rowe, *The Cosmological Argument (*New York: Fordham University Press, 1998) 8.

period of time reached wide spread popularity, as is evident by the fact that by 1749 the book had gone into its tenth edition.

It is the content of Clarkes first book, which will from now on be referred to as *The Demonstration,* that claims to demonstrate the existence of God "…by one clear and plain series of propositions necessarily connected and following one from another…"[21] While Clarke does present a series of sequential propositions, he does not present one coherent argument for the existence of God. Rather, there are three arguments that are distinctly present in the work; namely, a cosmological, ontological, and a additional argument based upon Newtonian natural philosophy. Furthermore, the third argument reveals an underlying motivation for the work as a whole.

Besides being viewed as an argument for the existence of God, *The Demonstration* can also be viewed as one of Clarke's ongoing defenses of Newtonian natural philosophy. Due to the reliance of Clarkes thought on that of Newton's, it will be necessary to understand some basic concepts of Newtonian natural philosophy in order to understand Clarke's argument. Beside the work of Newton, it will also be necessary to examine some of Clarke's correspondences to better understand aspects of his arguments, particularly his correspondence with Leibniz and Butler. I will first examine Clarke's cosmological argument and then turn to his ontological argument. Lastly, I will consider Clarke's argument from time and space. After I have presented these three arguments, I will turn to Hume's critique of Clarke's argument from his *Dialogues Concerning Natural Religion,* and I will critique Clarke's argument in light of Hume's assessment.

II

The Eternity of the world and the Principle of Sufficient Reason

[21] Samuel Clarke, *A Demonstration of the Being and Attributes of God,* ed. Ezio Vailati (Cambridge: Cambridige University Press) 7.

Due to the complexity of Clarke's arguments, it is necessary to define a few terms in order to understand the difference between the arguments he employs. David Hume, in his *An Inquiry Concerning Human Understanding*, claimed that he was able to divide all propositions into two categories, specifically, relations of ideas and matters of fact. Hume defined relations of ideas as those propositions which "…are discoverable by the mere operation of thought, without dependence on what is anywhere existent in the universe."[22] In other words, relations of ideas are those propositions whose truth values are affirmed independent of experience, through means such as definitions. Consider, for example the statement, "all bachelors are unmarried." If one knows the definition of the word bachelor then one knows that bachelors are unmarried, and there is no need to observe a bachelor to confirm this statement. Hume also includes mathematical statements, such as the postulates of Euclid, into this category.

The second category Hume calls matters of fact, and these are propositions whose truth value depend upon experience. The statement, "The cat is on the mat.", is one such example of a matter of fact. One's idea of what a cat is does necessarily include the notion that the cat must be on the mat, that is, one can easily imagine that the cat is not on the mat. Hence, in order to verify the proposition one must experience the proposal. The contemporary differentiation made by Immanuel Kant between "analytic" and "synthetic" propositions corresponds with the distinction made by Hume, where relations of ideas are equivalent to analytic propositions, and matters of fact are equivalent to synthetic propositions. From this point on Kant's, terminology will be employed.

Analogous to the difference between the two types of propositions is the difference between the types of arguments made for the existence of God, which typically fall into two

[22] David Hume. "An Inqury Concerning Human Understanding," in *Modern Philosophy: An Anthology of Primary Sources,* ed. Roger Ariew and Eric Watkins (Indianapolis: Hackett Publishing Company, 1998) 500.

camps: a priori and a posteriori. The first type of argument for the existence of God is the a posteriori argument; examples include the cosmological and teleological argument. Clarke's cosmological argument commences by positing the existence of the world, a synthetic proposition, and concludes with the existence of a necessary being. A priori arguments for the existence of God are arguments that claim to employ the use of analytic propositions in order to prove that God exists. The ontological argument is a prime example of an a priori argument. Clarke's ontological argument begins by affirming that God is a necessary being, and proceeds to demonstrate that this necessary being must have certain qualities, one of which is existence. However, while these distinctions are often helpful for categorizing arguments, they are not absolute distinctions. As William Rowe observes in his book *The Cosmological Argument,* "…it will mislead us if we conclude that the really basic principles appealed to in the cosmological argument are a posteriori."[23] Rowe's observation is an accurate one, for in Clarke's very first proposition, which appears to be a simple a posteriori statement, there is an underlying metaphysical claim that is itself, strictly speaking, a priori.

The first argument, and perhaps the one which Clarke considered the only one present, is identifiable as a version of the cosmological argument. Clarke's version of the argument comes in two parts. The first is an argument that commences with the fact that something now exists, and proceeds to demonstrate from this that a necessary being must exist. The second argues that this necessary being is the being that Christian's call God. The first part of the argument is sequenced as follows:

1. Something has existed from all eternity, as is evident from the fact that something now exists.
2. Whatever exists has a reason, or cause, for its existence.

[23] William Rowe, *The Cosmological Argument,*

3. Things exist either out of the necessity of their own nature or they are caused to exist by some other entity. So, either there must exist some necessary being who exists necessarily by its own nature, or there has existed an endless secession of contingent beings with no cause at all.
4. It is impossible that there be an endless secession of contingent beings, for this would mean that their existence was uncaused (which is a contradiction).
5. Therefore: There must exist some necessary being who is the cause of its own nature.

The first proposition for which Clarke argues is that "…something has existed from all eternity."[24] To the contemporary reader this proposition may seem awkward, and even factually incorrect. According to Stephen Hawking, "Einstein's general theory of relativity, on its own, predicted that space-time began at the big bang singularity and would come to an end at the big crunch singularity or at a singularity inside a black hole."[25] The picture of the universe painted by Einstein and other physicists or astronomers is one in which time-space had a beginning, and one in which the universe will eventually come to an end. Hence, contemporary proponents of the cosmological argument would probably take the existence of the universe as a contingent fact, that is, as a fact that may or may not have been actualized. However, for Clarke, and others before Einstein, this simply was not the case. While Clarke would admit that the earth, in its present condition, may well have been different, to say that time and space might not have existed at some point is nonsensical.

In Newtonian natural philosophy, there are four fundamental concepts: force, mass, space, and time. Force, according to Newton, is that which acts upon bodies which are then "…either mutually impelled towards each other, and cohere in regular figures, or are repelled and recede from each other…"[26] The central force with which Newton becomes preoccupied with is that of gravity. Concerning mass, Newton implemented the view of Galileo, that mass

[24] Samuel Clarke, *A Demonstration…,* 8.
[25] Stephen Hawking, *A Brief History of Time (*Toronto: Bantam Books, 1988) 115.
[26] Isaac Newton, *The Principia* (New York: Prometheus Books, 1995) Preface.

was the most fundamental aspect of matter. When dealing with space and time, Newton makes the distinction between absolute and relative. Absolute space always maintains the same proportions and is always immovable. Contrariwise, relative space "…is some movable dimension or measure of the absolute spaces, which our senses determine by its position to bodies…"[27] Absolute space, due to its nature, is indistinguishable to our senses, due to the fact that space cannot be divided or separated in any way. Max Jammer explains the distinction by stating that "Since space is homogeneous and undifferentiated, its parts are imperceptible and indistinguishable to our senses, so that sensible measures have to be substituted for them."[28] In order to perform mathematical calculations one must place some sort of sensible points by which to measure space. These "coordinate systems" constitute what Newton intends by his term relative space. Newton proceeds to make the same distinction regarding time, dividing it between absolute and relative time. Absolute time, like absolute space, is that which continues without relation to any particular body. In order to measure time, one must segment it, and make arbitrary distinctions in its duration, and this denotes the meaning of relative time for Newton. One of the paramount implications of positing the existence of absolute time and space is that the universe is infinite in duration and extension.

So, if relative time and space is all that is needed for calculations, why did Newton posit the existence of absolute time and space? The answer lies in Newton's conception of motion. Newton's first law of motion states that "Every body of motion perseveres in its state of rest, or of uniform motion in a right line, unless it is compelled to change that state by forces impressed thereon."[29] To say that a body will move in uniform motion in a right line requires a reference

[27] Isaac Newton, *The Principia,* 244.
[28] Max Jammer, *Conceptions of Space: The History of Space in Physics* (Cambridge: Harvard University Press, 1969) 100.
[29] Isaac Newton, *The Principia,* 29.

system in which coordinates are not arbitrarily defined. The implication of the first law is that there is an absolute reference system, namely, absolute space. Furthermore, not only does rectangular motion presuppose absolute space, but the idea that a body can be in a state of rest presupposes absolute space.[30] Newton gives the example of a ship at sea. The relative position of the ship is a position on the ship that moves along with the ship. On the other hand, absolute rest "…is the continuance of a body in the same part of that immovable space, in which the ship itself, its cavity, and all that it contains, is moved."[31]

Clarke wholeheartedly embraced Newtonian natural philosophy, along with its implications concerning time and space. So, the proposition that "something now exists and has always existed" is one which Clarke presupposes. To conceive that something has not always existed, Clarke argues, leads to error. Clarke offers a simple *reduction ad absurdum* to prove his point:

Argument 1A:

1. It is evident that something now exists.

2. If something now exists and if something has not always existed, then what exists has been caused by nothing (for everything that exists has a cause for its existence).

3. Therefore, nothing caused the universe to exist.

The conclusion of this argument is, of course, absurd. The absurdity of the conclusion gives validity to the opposing proposition; specifically Clarke's opening statement that "something has always existed." Clarke affirmed, as Parmenides had before him, that "From nothing comes nothing." Yet, Clarke's position is not without its difficulties, particularly the metaphysical paradoxes that arise upon positing the existence of an actual infinite. Clarke admits that "…there is nothing in nature more difficult for the mind of men to conceive than this very

[30] Max Jammer, *Conceptions of Space,* 102.
[31] Isaac Newton, *The Principia, 14.*

first plain and self-evident truth."[32] If absolute time does exist, as Newton claims that it does, and the existence of the universe extends infinitely in the past, then how is it possible for an infinite amount of time to elapse in order to reach the present?

One such paradox that arises from the positing of an actual infinite is one of Zeno's paradoxes, that of Achilles and the tortoise. Suppose that Achilles and a tortoise race and Achilles gives the tortoise a head start. Zeno claims that Achilles will never reach the tortoise. Achilles begins at point X and the tortoise at point Y, by the time Achilles reaches point Y the tortoise has reached point Y1. This process continues *ad infinitum* with Achilles always one point behind the tortoise. This paradox is important because its basic concept can be applied to an infinite duration of time, with Achilles representing past events and the tortoise representing the present. If the world has indeed always existed, then it is impossible to imagine how any duration of time has elapsed to reach the present. In other words, it is hard to conceive of how a successive addition of any amount of time can form an infinite amount of time, and how movement through an infinite amount of time is possible.

Clarke's response is that, although it may not be possible for our minds to conceive of an infinite amount of time this does not necessarily mean that it is not the case. Metaphysical difficulties arise, according to Clarke, due to the mistake of applying finite measurements and relations to that which is infinite. The inability to apply finite measurements to that which is absolute is precisely the reason why Newton makes a distinction between absolute and relative space. One must choose an arbitrary mathematical point by which to measure distance, but this point must not and cannot be used to measure absolute space. As Clarke declares, the mistake arises "…from supposing finites to be aliquot parts of infinite, when indeed they are not properly

[32] Samuel Clarke, *A Demonstration…,* 8.

so but only as mathematical points to quantity, which have no proportion at all…"[33] The mathematical coordinates by which one is able to measure parts of time or space are not themselves actual points in time or space. Rather, these coordinates are tools that enable measurements. Due to this fact, Clarke does not believe that the metaphysical paradoxes that arise pose actual threats to the validity of his first proposition, which affirms that something has always existed. These paradoxes are the result of a simple mistake, and ought not cause doubt concerning proposition that are known to be true.

Yet, the second premise of the argument above deserves more attention, for it contains a metaphysical assumption upon which Clarke's whole argument rests on what Leibniz called the "principle of sufficient reason." Clarke will effectually use this principle to establish the need for an existence of a necessary being. Clarke states the principle in the following way:

> "Whatever exists has a cause, a reason, a ground of its existence, a foundation upon which its existence relies, a ground or reason why it does exist rather than not exist, either in the necessity of its own nature (and then it must have been of itself eternal), or in the will of some other being (and then that other being must, at least in the order of nature and causality, have existed before it)."[34]

Alexander Pruss claims that, at a basic level, the principle of sufficient reason (which will hence forth be referred to as the PSR) claims that "…an existent or occurrent thing has an explanation."[35] Based on Pruss's definition one can see the principle's close connection to causation. Clarke accepts the PSR as an indubitable fact about the nature of reality, one that requires no explanation. Indeed, the principle has an almost innate appeal. Consider any example

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[33] Ibid*, 9.*
[34] Samuel Clarke, *A Demonstration…,* 8.
[35] Alexander Pruss, *Ex Nihilo Nihil Fit: Arguments New and Old for the Principle of Sufficient Reason,* American Catholic Philosophical Association meeting (2002) 1.

of a story on the nightly news, such as an explosion in a local factory. A reporter interviews an explosive expert who determines that the initial tests reveal no cause for the explosion. So, what is the viewing audience to believe? Most, I would imagine, would not believe that the explosion just randomly happened, and that for no reason items started blowing up. To the contrary, the highly informed viewing audience would rather interpret the explosive expert's statement to mean that no particular cause was found for the explosion. Hence, the appeal of the PSR; most people would find the claim that there was no cause for the explosion completely absurd. The PSR has a long history, but what is relevant to the discussion at hand is the difference between Leibniz and Clarke's use of the principle.

In his *Monadology*, *Theodicy,* and in his correspondence with Clarke, Leibniz claims that human reasoning is based upon two great principles: the principle of contradiction and the principle of sufficient reason. The principle of contradiction, according to Leibniz, is to affirm that two mutually exclusive propositions both claiming to be true cannot possibility be true at the same time. Contained within this principle is also the law of identity, which Leibniz believes is contained within the principle of contradiction. Benson Mates explains that when thinking about Leibniz's view on the subject, "We only have to keep in mind that, for him the proposition 'A is B' (essential) is equivalent to the generalized conditional 'If something is A, then it is B.'"[36] The second great principle is the principle of sufficient reason, and like the first, Leibniz suggests many different versions throughout his writing. Loosely defined, Leibniz defines the PSR by stating that every cause has a reason for its being caused. Yet, on closer inspection it becomes evident that what Leibniz proposes by "reason" is closely connected with another principle that Leibniz posits, that is, his predicate-in-notion principle.

[36] Benson Mates, *The Philosophy of Leibniz: Metaphysics and Language (*New York: Oxford University Press, 1986) 154.

Leibniz's predicate-in-notion principle states that "The predicate of every true affirmative proposition is contained, either explicitly or implicitly, in the subject."[37] If predicate is contained explicitly, then the proposition is an analytical statement. To use the example again, "All bachelors are unmarried." The predicate "unmarried" is contained in the subject "bachelor" explicitly, meaning that because one knows what a bachelor is one also knows that he is unmarried. If the predicate is known implicitly, then the proposition is a synthetic statement. Again, consider the synthetic statement, "The cat is on the mat." Leibniz claim is that if one were to truly know the subject "cat" one would also know that the predicate "to be on the mat" is contained within the subject of "cat." In other words, it is within the nature of the cat to be on the mat. Yet, Leibniz claims that only one being has the knowledge of implicit predicates, and this being is God. So, the sufficient reason for why the cat is on the mat would essentially be an a priori reason; namely, that to be on the mat is in the complete concept of the cat. Leibniz, like Clarke, also used the PSR to posit the existence of God. Leibniz says that "…since there is no reason for an existing thing except in another existing thing, there must necessarily exist some one being of metaphysical necessity, or a being whose essence belongs existence."[38] However, by using the principle in this way, Leibniz has made a stronger application of the principle by moving from the statement that nothing happens without a reason, to the position that everything has a cause. Hence, there appears to be two forms of the principle, a weak and strong version. The weak version of the principle was demonstrated in the example of the explosion above. The strong version, accepted by both Clarke and Leibniz, states that everything that exists has a cause for its existence.

[37] C.D. Broad, *Leibniz: An Introduction* (London: Cambridge University Press, 1975) 9.
[38] Benson Mates, *The Philosophy of Leibniz…,* 158.

While both Clarke and Leibniz accept the strong version of the PSR, there are some notable differences in Clarke's version from that of Leibniz's version. Clarke distinguishes between two types of being: necessary and dependent beings. A necessary being is a being whose grounds for existence lie within itself, that is, it is self-existing and thereby eternal. A dependent being is, as the name suggests, is a being who owes its existence to the causal activity of other beings. Thus, both types of beings have a sufficient reason for their existence. Initially, Clarke's version of the PSR in his *Demonstration* is limited to the contingent facts concerning the existence of these two types of beings. Yet, in his correspondence with Leibniz, Clarke is forced to clarify his position regarding the PSR. The version of the PSR that Leibniz employs in the correspondence states that "…nothing happens without a reason why it should be so rather than otherwise."[39] To the surprise of Leibniz, Clarke accepts both his principle of contradiction and his principle of sufficient reason, but Clarke adds a clause that Leibniz felt undermined the whole principle: "But this sufficient reason is often times no other than the mere will of God."[40] According to Leibniz, this emasculates the basic tenets of the principle. Even God must have a sufficient reason for choosing one thing over another, which is distinct from mere will. To use the words of Ferguson, Leibniz fears that "A mere will without motive is a mere fiction and if it existed it would be another name for chance."[41] Leibniz's concern was that Clarke was effectively denying the principle by insisting that God's will constituted a sufficient reason.

Clarke defends his position from the objections of Leibniz by arguing that Leibniz's version of the PSR strips God of free choice. In his *Theodicy*, Leibniz argues that there is "…never such thing as an indifference in equilibrium, that is, where every circumstance is

[39] G.W. Leibniz and Samuel Clarke, *Correspondence* (Indianapolis: Hackett Publishing Company, 2000) 7.
[40] Ibid*,* 11.
[41] J.P. Ferguson, *Samuel Clarke,* 108.

perfectly equal on both sides, so that there is no inclination to one side over another."[42] Leibniz holds to the idea that there would always be a reason to choose one thing over and against another. Contrariwise, Clarke believes that there need not be a sufficient reason for a particular choice, other than the fact that one has willed it to be so. For example, consider a cow that is standing in the middle of the road with two different pastures on each side of the road. To which pasture will the cow choose to go? Leibniz asserts that if it were possible for the cow to equally like both pastures, then the cow would be unable to make an actual choice and would ultimately starve. Leibniz then declares that this illustrates the validity of the PSR, for such a situation seems absurd. William Rowe states that "Clarke held that in the case of two choices, where nothing recommends one over the other…there is no sufficient reason for the will contingently making the *particular* choice that it makes."[43] In other words, Clarke maintained that in such situations there is no sufficient reason other than the choice of the will. So, when Clarke formulates the PSR he allows for free choice, particularly the free choice of God. Clarke states that Leibniz's position "…would tend to take away all power of choosing and introduce fatality."[44]

Clarke's argument based on the PSR can be summed up in the following way:

Argument 1B:

1. Something exists.

2. If something exists, then it either exists out of the necessity of its own nature, or it was caused by some other being.

3. If something exists out of the necessity of its own nature, then it must be eternal.

4. If a being is caused by some other being, then that other being must have existed before the caused being.

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[42] G.W. Leibniz and Samuel Clarke, *Correspondence,* 91.
[43] William Rowe, *The Cosmological Argument,* xiii.
[44] G.W. Leibniz and Samuel Clarke, *Correspondence,* 11.

5. Therefore: Something has always existed.

Clarke inserts an interesting phrase after proposition four when he claims that if a being is caused, then the other being which caused it "… must, at least in the order of nature and causality, have existed before it."[45] The inclusion of this statement, as Rowe suggests, is more than likely due to the fact that Clarke wants to allow for something to have always existed, and at the same time be caused by another being.[46] Clarke recognizes the dilemma facing Newtonian natural philosophy which holds that time/space have always existed; and at the same time, that these two entities are somehow caused by God. For instance, the universe having a cause does not entail that it is not eternal. With respect to the universe itself, Clarke believes that it is impossible to demonstrate that it is not eternal. Since space and time have always existed, it is quite possible that the universe has also always existed. That the universe was created *in* time is something Clarke admits has to be accepted by faith. In taking this position, Clarke has made an argument similar to that of Thomas Aquinas. Aquinas claims that, "Hence it is held that it does not follow necessarily that if God is the active cause of the world, He must be prior to the world in duration; because creation…is not a successive change…"[47] The passage from Aquinas shows that both Clarke and Aquinas believed that positing the existence of something which is eternal, and at the same time claiming that God created the eternal thing is not a contradiction. Hence, the "before" in proposition four does not always mean "before" in a temporal sense, that is, meaning the secession of one event after another. Rather, it may imply that the cause of an eternal object "…will not exist temporally prior to its effect but will be prior only in the order of nature, causality, and dependence."[48]

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[45] Samuel Clarke, *A Demonstration…,* 8.
[46] William Rowe, *The Cosmological Argument,* 67.
[47] William Rowe, *The Cosmological Argument,* 69.
[48] Ibid, 70.

Clarke's formulation of the PSR is crucial for the development of his argument. As mentioned above, Clarke employs the use the strong version of the PSR, but the strong version is not necessarily essential for the cosmological argument as a whole. For example, instead of insisting that whatever exists has a cause for its existence, Clarke could have claimed that whatever *begins to exist* has a cause for its existence. As Rowe notes, Clarke's conclusion "…follows from the simpler, more plausible premise set (whatever begins to exist), just as it does from Clarke's more complex and less plausible premise set."[49] However, the reason Clarke employs the strong version of the PSR will become evident in Clarke's second proposition. In his second proposition Clarke begins his argument for the existence of a necessary being, starting with the statement that, "There has existed from eternity some one unchangeable and independent being."[50]From the second proposition, Clarke will make the connection that this one unchanging and independent being must itself be self-existing and necessary. Hence, the first part of Clarke's argument moves in three sequential steps with each step building on the previous one, while the second part assumes the conclusion of the first and then proceeds to make deductions from the conclusion. Clarke's cosmological argument, as Michael Tooley proposes, should be dichotomized and classified as a strong cosmological argument. Tooley claims that a strong cosmological argument "…entails an ontological argument" and that a weak cosmological argument "entails an a priori argument for the conclusion that something exists."[51] Clarke's use of the strong PSR is leading to the existence of a necessary being, and from the existence of this necessary being, Clarke will provide an ontological argument. He must first demonstrate, however, that there has existed from eternity an unchanging and independent being.

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[49] Ibid, 72.
[50] Samuel Clarke, *A Demonstration…, 10.*
[51] Michael Tooley, "Does the Cosmological Argument Entail the Ontological Argument?" The Monist 54 (1970): 421.

III

Necessity and the Ontological Argument

Clarke intends to demonstrate is that there has always been some one independent being. Clarke's second proposition serves to connect the first with the third, and it states that "There has existed from eternity some one unchangeable and independent being."[52] By "independent" Clarke means that this being must not be contingent; by the phrase "some one" he means that there must be "at least" one of these beings. It should also be noted, however, that due to Clarke's formulation of the PSR, an independent being must still have a cause. Moreover, an independent being's cause is found in its own nature and not in another being. The first proposition was designed to show that there are two types of beings: necessary and contingent. According to the version of the PSR that Clarke employs, everything that exists must have a reason or a cause for its existence. Now, the reason why a necessary being exists is due to its nature, that is, the reason for its existence is found in its own nature. Contingent beings, on the other hand, are dependent upon other beings for their existence. Since it has already been demonstrated that something now exists, and has existed from all eternity, then there can only be one of two explanations for why this is the case. The first option is that there has existed from eternity some one unchangeable and independent being from whom all other beings derive their existence. Clarke's second option is that "…there has been an infinite secession of dependent and changeable beings produced from one another in an endless progression without any original cause at all."[53] The primary purpose of Clarke's second proposition is to prove that the second option is not possible. Clarke presents his argument as follows:

1. Something has existed from all eternity

[52] Samuel Clarke, *A Demonstration…,* 10.
[53] Samuel Clarke, *A Demonstration…,* 10.

C1. Either there must exist some necessary being who exists necessarily by its own nature, or there has existed an endless secession of contingent beings with no initial cause at all.

2. It is impossible that there be an endless secession of contingent beings, for this would indicate that their existence was uncaused (which is a contradiction

C2. There must exist some one necessary being.

In order to demonstrate his point, that the third premises leads to absurdity, Clarke relies heavily on the PSR and his two categories of beings, rather than on the impossibility of an infinite series of events. Clarke begins by asking the reader to consider an eternal series of casually dependent beings. This endless series of beings constitute all that there is in the whole universe, that is, they represent the whole of existing things. If this is the case, then "The reason for the existence of an infinite succession of dependent beings must be found, Clarke infers, wither in the causal efficacy of some other being-i.e., a being outside of the succession-or within the nature of the succession itself."[54] Yet, if this series contains the whole of existing things, then the cause or reason for the existence of this infinite chain of dependent things must come from within the series. For if there were some external cause for this sequence, then it would be included in the whole of existing things that makes up the sequence. Based on Clarke's argument thus far, it is evident that no being within the whole of what exists is self-existing or necessary, due to the fact that every being within the whole is a dependent being. Thus, the infinite progression of conditional beings cannot have within itself any cause of reason for its existence.

Accordingly, since the whole of what is contains no necessary being, then one must conclude that this infinite series of dependent beings was caused by nothing. But this is a contradiction. William Wollaston, an English philosopher who Clarke studied, gives an analogy that helps to conceptualize the problem that Clarke is raising. Wollaston contributes the example

[54] William Rowe, *The Cosmological Argument,* 124.

of a chain consisting of millions of links, one part of which is resting on the ground while the other part extends out of sight into the sky. If someone were to come along and ask, "What is supporting this chain?" Wollaston affirms that it would be an insufficient answer to go about describing how each link is dependent upon and supported by the link above it, *ad infinitum*. For if one were to give such an answer then the interlocutor could then respond, "Very well then, but what holds up the *whole* chain?" The chain needs grounding, a point that supports the chain as a whole. Wollaston concludes that "…if they should be infinite, unless agreeably to what has been said there is some cause upon which they all hang or depend, they would be but an infinite effect without an efficient."[55] The collection of dependent beings that extend back into eternity require an explanation. To argue that the whole of what exists is nothing but dependent beings is absurd, for this supposes that the whole of what is arrived from nothing. Furthermore, since each of the beings are contingent and could not have existed, the whole of existing beings itself is contingent. To increase the duration of this chain of dependent beings to infinity, argues Clarke, is to do nothing more than extend the question of its first cause out of sight. However, simply because one cannot perceive how far back this chain of beings progresses does not render the demand for a cause void. Since the idea of a chain of dependent beings leads to a contradiction, then it must be the case that a necessary being who has the reason for its existence in its own nature exists.

Clarke's third proposition states that the "…unchangeable and independent being which has existed from eternity, without any external cause of its existence, must be self-existent, that is necessarily existing."[56] Clarke clarifies that to be "self-existent" does not mean to be produced by itself, but rather it implies that it exists necessarily. The necessity of a being's existence

[55] Samuel Clarke, *A Demonstration…,* 11.
[56] Ibid, 12.

originates from that thing's nature, that is, a necessary being by definition is a being that exists. Clarke understands the statement "A necessary being exists" to be an a priori truth, one that is true by definition. According to Clarke, one may understand the statement "a necessary being exists" as equivalent to the statement "all bachelors are unmarried," insofar as both statements contain the predicate within the subject. Additionally, from what has been said above, when Clarke uses the term "necessity," what he appears to be referring to is what contemporary philosophers have defined as *logical* necessity. Clarke's notion of God as a "logically" necessary being will play a pivotal role in his formulation of the ontological argument. Yet, it will first be helpful to unpack what Clarke suggest by necessity.

In his lifetime, Clarke's argument came under attack by many notable, and not so notable, theologians and philosophers. Two figures in particular, Joseph Butler and Daniel Waterland, leveled scathing attacks against Clarke's use of necessity. Clarke's correspondence with Butler took place between November 1713 and February 1714. Clarke subsequently published their letters.[57] Butler takes issue with the fact that Clarke claimed that since God is a necessary being, then it is impossible for God to not exist. In fact, when Clarke gives his argument from time and space, he states that God cannot be thought not to exist, for to do so would to be to think that space and time do not also exist, which is impossible. Butler responds that the only idea this proves is, "…that if a being can without a contradiction be absent from one place at one time, it may without a contradiction be absent from another place, and so from all places, a different times…"[58] Clarke responds that what is necessary is *absolutely* necessary, that is it applies to every part of time and space without exception. Over the course of the letters, as Larry Stewart points out, "It became clear from Clarke's answers that his view was based

[57] Larry Stewart, "Samuel Clarke, Newtonianism, and the Factions of Post-Revolutionary England," Journal of the History of Ideas 42 (1981): 58.
[58] Samuel Clarke, *A Demonstration…, 96.*

entirely upon the assumptions of the necessity of the existence of space and time which Newton had demonstrated as the only solution."[59] Clarke's connection between a necessary being and time/space will be addressed later; another relevant aspect of the discussion is Clarke's insistence that whatever is necessary must be absolutely necessary. For Clarke, God's existence must be considered as absolutely necessary, and as such God cannot be considered a nonexistent entity.

In his book *Inquiry into the Ideas of Space, Time, Immensity, and Eternity,* the philosopher Edmund Law includes an anonymous dissertation that addresses aspects of Clarke's argument. Scholars such as J.P. Ferguson and Robin Attfield accept that the author of this anonymous work was Daniel Waterland, who was an English theologian and contemporary of Law.[60] In his work, Waterland distinguishes between four types of necessity: logical, physical, moral, and metaphysical. Logical necessity refers to analytical statements whose negation implies a contradiction. Waterland interprets physical necessity as that which deals with the association between the cause and effect of objects, and also the relation between God and creatures. Moral necessity refers to the correlation among means and ends, such as the connection between exercise and good health. Finally, Waterland defines metaphysical necessity as that which deals strictly with God alone, and involves the relation "…between Existence and Essence."[61]

Waterland's definition of metaphysical necessity separates him from Clarke. Clarke's argument begins with the premise that something now exists and ends with the premise that a necessary being exists. This necessary being is necessarily self-existent, and as such cannot be thought not to exist. As mentioned above, by "absolutely necessary" Clarke understands something akin to logical necessity and thus believes he has concluded his argument with the

[59] Larry Stewart, "Samuel Clarke, Newtonianism…, 58.
[60] Robin Attfield, "Clarke, Independence and Necessity," British Journal for the History of Philosophy 1 (1993): 68.
[61] Ibid, 72.

existence of a being whose existence is inconceivable. Moreover, Clarke notes that this necessity is not a property that one ascribes to a being after one supposes that this being exists, rather, necessity is "…antecedently the cause or ground of that existence…"[62]

Waterland's objection to Clarke's argument is that Clarke need not conclude with such a strong notion of necessity. The conclusion of Clarke's argument, that a necessary being exists, does not need to refer to a logically necessary being, according to Waterland's interpretation. Rather, what is meant by "necessary" could instead refer to *modal* necessity, and "This modal necessity is a property of the independent being, denoting its immutable permanency, His infinite stability."[63] Waterland's use of the term "modal" is connected with his notion of metaphysical necessity. A mode denotes a type of existence that refers to the thing itself. The mode of existence for animals is that they are contingent, perishable, finite, etc. The modes of God's existence, on the other hand, may include such characteristics as immutability, infiniteness, etc. What is clear about Waterland's description of modality, as Attfield helpfully points out, is that it "…concerns a certain manner of existence, as opposed to mere existence; this sense is to be contrasted with logically necessary existence…"[64] Modal necessity is describing the required aspects of a thing's essence, and does not make existence a required antecedent. Using Waterland's designation of God as a metaphysically necessary being, one may still conclude that God is infinite, unable to change, or a variety of characteristics. Yet, what is important about this notion of metaphysical necessity is that God's existence is not inevitable.

In his essay entitled "Divine Necessity and the Cosmological Argument," Bruce Reichenbach juxtaposes both logical and "metaphysical" necessity, as Waterland understood the term. Reichenbach explains that metaphysical necessity "…is an adjective which modifies

[62] Samuel Clarke, *A Demonstration…,* 102.
[63] Robin Attfield, "Clarke, Independence…," 69.
[64] Ibid, 72.

being."[65] Ontologically, one may distinguish between two types of beings: contingent and necessary. A contingent being's mode of existence is that it is dependent upon other beings for its existence, and therefore one may imagine a state of affairs in which a contingent being may not exist. Likewise, a necessary being's mode of existence is one such that if it actually exists, then it is impossible that it not exist. Thus, the first type of necessity that Reichenbach describes is one that corresponds with Waterland's understanding of metaphysical necessity. Yet, it is clear that Clarke understood the term "necessary being" to denote something quite different. Reichenbach continues on to explain the second meaning of the term "necessary." "Necessity," could also be used "…not as a modifier of things or beings, but rather of propositions."[66] Using the second definition as a guide, a necessary proposition may be understood as one in which negation implies a contradiction. As stated above, it is clear that Clarke's conclusion that a "necessary being exists," utilizes an understanding of necessity similar to that of the second definition. Clarke would agree that to deny the statement "a necessary being exists" would be committing an explicit contradiction.

While it may be convenient to label Clarke as a proponent of the second kind of necessity that Reichenbach defines, this would be a hasty judgment. The second notion of necessity that Reichenbach establishes is the foundation for the ontological argument. Anselm, in his *Proslogium*, defines God as "…a being than which nothing greater can be conceived…"[67] From this proposition Anselm is able to deduce that God exists, for to deny that God exists would be to conceive of something greater than that which nothing greater can be conceived, which is absurd. God is necessary insofar as the denial of Anselm's first proposition leads to an explicit

[65] Bruce Reichenbach, "Divine Necessity and the Cosmological Argument," The Monist 54 (1970): 404.
[66] Ibid, 405.
[67] St. Anselm, "Proslogium," in *St. Anselm Basic Writtings,* trans. S.N. Deane (Chicago: Open Court Publishing Company, 1962) 53.

contradiction. Even though Clarke would have denied that he employed the use of the ontological argument, his critics claimed that he "…effectively resuscitated that argument in declaring necessity antecedently the cause, ground and foundation of God's existence."[68]

On the surface, it appears that Clarke's critics were correct in their assessment of his argument. Clarke's argument has two clear stages. The first stage proceeds as follows:

1. Something has existed from all eternity, as is evident from the fact that something now exists.
2. Whatever exists has a reason, or cause, for its existence.
3. Things exist either out of the necessity of their own nature or they are caused to exist by some other entity. So, either there must exist some necessary being who exists necessarily by its own nature, or there has existed an endless secession of contingent beings with no cause at all.
4. It is impossible that there be an endless secession of contingent beings, for this would mean that their existence was uncaused (which is a contradiction).
5. Therefore, there must exist some necessary being who is the cause of its own nature.

The first stage of the argument concludes with the existence of a necessary being. The second stage of Clarke's argument builds on the conclusion of the first, and concludes that this necessary being must have certain attributes. The second part of Clarke's argument continues as follows:

1. There exists one necessary being, who contains the cause of its own existence.

2. A self-existent being must also be eternal, because self-existence implies that this being exists independent of any external cause, so it must have always subsisted.

    2A. For a being to exist eternally implies that this being has existed at all times, that is past, present, and future. To say that there was a time in which a necessary being did not exist would render that being contingent.

3. There must be only one necessary being, for a necessary being is "...simple, and uniform, and universal, without any possible difference, deformity, or variety whatsoever."[69]

[68] Robin Attfield, "Clarke, Independence…," 68.

> 3A. The existence of two necessary beings implies a contradiction. For suppose two necessary beings existed, N1 and N2. If N1 and N2 are distinct necessary beings, then it is possible for both of them to exist alone. However, if it is possible for N1 to exist alone then it is also possible for N2 to not exist at all. Since it is absurd to imagine a necessary being not being able to exist it therefore means only necessary being can exist.[70]

4. Since a necessary being is self-existing and independent it must also be unalterable, for to be altered implies that one is able to be affected from some external cause.

5. A self-existent being must be infinite and omnipresent because, "For a necessity which is not everywhere the same is plainly a consequential necessity only, depending upon some external cause, and not an absolute one in its nature."[71]

Can the second part of the argument be considered an ontological argument based on the existence of a necessary being? Strictly speaking, the second part of Clarke's argument, posed alone, does represent a form of the ontological argument. Yet if this is the case, then why did Clarke himself not consider it an ontological argument? The answer lies in an additional meaning of Reichenbach's second definition. The second definition of "necessity" applies to propositions whose negation implies a contradiction. Accordingly, this definition can be applied either to an individual proposition, or to a conclusion that has been demonstrated by a set of premises. The first instance may be found in the traditional ontological argument employed by Anselm. Anselm begins with the existence of a necessary being and proceeds to argue from this first premise. While Clarke employs a similar technique in the second part of his argument, it ought to be noted that the second part is dependent upon the first for its validity. Reichenbach defines a logically necessary proposition as a proposition "…the self-contradiction of whose opposite one must discern solely through an analysis of the meaning of the terms involved."[72] If one considers Clarke's argument alone, it appears that Clarke concludes with the existence of a logically necessary being in the first part of his argument. Yet, the fact that this being is logically

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[69] Samuel Clarke, *A Demonstration…,* 35.
[70] Ibid, *36.*
[71] Ibid, *33.*
[72] Bruce Reichenbach, "Divine Necessity…," 408.

necessary is not immediately self-evident; Clarke has to demonstrate that it is so. Hence, there is a second type of necessary propositions which Reichenbach states are "…propositions which derive their necessity, not from an analysis of the meaning of the terms contained within the proposition, but rather from being the conclusion of a valid argument."[73] It is this type of necessity that Clarke has in mind when he concludes the first part of his argument, what Reichenbach calls conditional necessity.

Clarke's use of the term "necessity" is difficult to grasp because of his strong use of diction, such as "…necessity is the ground, or reason, or foundation of existence, both of the divine substance and of all the attributes."[74] Yet, Clarke did not believe that he was presenting an ontological argument similar to Anselm's argument. In light of this fact, it seems plausible that Clarke would have resisted the statement that "God is logically necessary." An examination of Clarke's objection to the ontological argument will shed some light on this apparent conundrum. The essence of the ontological argument is that somehow the definition of God entails the existence of God. A being who contains absolute perfection must also contain existence, and the argument makes the assumption that to exist in reality is greater than existing merely in the understanding. This assumption, though it has incurred many critics throughout the history of philosophy, has a strong intuitive appeal. Any hungry person would admit that a cheeseburger existing in reality is greater than a cheeseburger existing solely in the understanding. While Clarke does not outright reject the ontological argument, he does raise serious objections in opposition to it.

The Anselmian ontological argument begins with the definition of God "as that which nothing greater can be conceived," and proceeds to infer that one may conclude that God does

[73] Ibid, 409.
[74] Samuel Clarke, *A Demonstration…,* 123.

exists. Clarke states that such a transition from the definition of God to existence of God is unwarranted. He explains "…it is not satisfactory that I have in my mind an idea of the proposition 'there exists a being endowed with all possible perfections' or 'there is a self-existent being.' But I must also have some idea of the thing. I must have an idea of something actually existing without me."[75] Clarke's objection is complicated, but it concerns the truth-value of existential propositions, although this category in logic was not introduced by Gottlob Frege until well after Clarke's death. Existential quantifiers, represented symbolically as ∃x, are used to represent statements such as "There exists x." An existential proposition is true "…if and only if it has *at least one* true substitution instance."[76] In other words, the statement "dogs exist" is either true or false depending upon whether or not a dog actually exists. Since it is clearly observable that, in this particular instance, there is a dog sleeping on my couch, I may say with confidence that the existential proposition "dogs exist" is true. Building from the truth conditions of an existential proposition, Clarke objects that the proposition "God exists" can only be true if God actually exists in reality, that is, independent from the one conceiving of God. William Rowe sums up the crux of Clarke's objection: "What [Clarke] is saying is that, from the definition, we cannot infer the existential proposition that God exists."[77] Existence must be verified apart from the proposition that claims existence.

Even if the assumption that existence is contained within the definition is granted as correct, in order for the existential proposition to be true, it must be verified that the term God denotes an existing thing. Clarke claims that the idea of God presented in the ontological argument does not establish a connection with "…an idea of something actually existing without

[75] Ibid, 16.
[76] Irving M. Copi and Carl Cohen, *Introduction to Logic,* 13th edit (Upper Saddle River: Pearson Hall, 2009) 442.
[77] William Rowe, *The Cosmological Argument,* 187.

me."[78] However, Clarke's argument against the ontological argument becomes muddled when he asserts that the existence of a self-existing and absolutely perfect being is a necessary truth. It seems that Clarke is making an argument that he then proceeds to raise serious and unanswered objections against. He claims that the notion of a necessary being must "…antecedently force itself upon us whether we will or not, even when we are endeavoring to suppose that no such being exists."[79] Is Clarke not admitting in this statement that God is a logically necessary being, and thereby accepting the claim that a logically necessary being must exist? Although it appears this way in his writing, Clarke himself does not seem to think so.

One might characterize Clarke's position in this way: Although "[He] believes that it is logically necessary for the concept of a self-existent being to be exemplified…he does not think that this belief can be *justified* by merely examining the concept of a self-existent being."[80] While Clarke posits the existence of a necessary being, it is helpful to think of this logical move using Reichenbach's definition of a being that is "conditionally necessary." It is not evident based on an examination of the conclusion of the first argument that the necessary being must exist. In other words, the claim that God is a necessary being is not immediately self-evident. Clarke must prove that God is self-evident by demonstrating that the other possibilities, such as the infinite existence of contingent beings, is invalid, and that as such God must be necessary. Clarke believes that he has accomplished this feat in his first two propositions, and it is only after this demonstration that he posits the existence of a necessary being. Hence, Clarke's notion of a necessary being is dependent upon his previous arguments. Since the second part of Clarke's argument, the "ontological" argument, depends upon the first for its validity, the cosmological

[78] Samuel Clarke, *A Demonstration…,* 16.
[79] Ibid, 13.
[80] William Rowe, *The Cosmological Argument, 197.*

argument, it is understandable why Clarke did not consider that he was presenting an ontological argument.

IV

Clarke's Defense of Newtonianism and the argument from Time/Space

In his third proposition, Clarke concludes that God must be a necessary being. Included under his discussion of this third proposition is an additional argument for God's existence based on the nature of time and space. Clarke's third proposition includes a defense of Newtonianism in response to John Toland, as well as an extended refutation of Cartesianism. In this section, Clarke draws heavily from Newtonian natural philosophy, and it is important to examine aspects of Newton's philosophy that relate to Clarke's discussion of the third proposition.

While Newton was skeptical of metaphysics, there are aspects of his works that pertain to Clarke's propositions, particularly Newton's personal arguments for God's existence. The theological implications of the principles laid out in Newton's *Mathematical Principles of Natural Philosophy* and his *Opticks* were soon recognized by his contemporaries, who were eager to use this new scientific approach to support the Christian faith. Indeed, Newton himself grasped at the potential for his science to be used in such a manner. In a letter to Richard Bentley regarding his *Principia*, Newton claimed that, "…when I first wrote my treatise about our system…I had an eye upon such principles as might work with considering men for the belief of a deity…"[81] Newton was firmly convinced that the scientific principles that he pioneered pointed to the One who had created those principles operative in nature.

In 1687, Newton published his *Philosophiae Naturalis Principia Mathematica.* In his *Principia,* Newton not only developed a theory for how bodies moved through space, but also postulated his law for universal gravitation. According to Newton, "…each body in the universe

[81] Richard Westfall, *Science and Religion in Seventeenth-Century England* (Archon, 1970) 193.

was attracted toward every other body by a force that was stronger the more massive the bodies and the closer they were to each other."[82] It is this force, which Newton calls gravity, that causes the planets to move in ellipses and which causes objects on the earth to fall. In this work, Newton was able to create a solution to the conundrum that had plagued the mechanical philosophy of his time. With one elegant theory, Newton was able to unite celestial and terrestrial mechanics with a system that sufficiently accounted for both phenomena. He was also able create a theory that described the world in mathematical laws so that any educated person could understand.

While Newton's work was groundbreaking, there was a deep-seated theological question that troubled Newton greatly. This question concerned the mechanical philosophy and the mechanical explanations of his time, not excluding his own theories. Newton, as a Christian, believed that God was intimately involved in creation, directing history toward a foreordained end. Yet, how would this deity operate and direct history in a world that was bound by irreversible mathematical laws? If the operations of the universe could be explained solely on the basis of mechanical laws, without any reference to God, does this suggest that God is unnecessary, or even nonexistent ?[83] Newton's solution to this problem came in the form of a cosmological argument, but one that was distinct from its history of predecessors.

One such argument is found in Query 31 of Newton's *Opticks,* in which Newton speculates on the nature of gravity. Newton begins the query with a discussion of the active powers in nature and the manner in which those powers interact with each other. "Have not the small Particles of Bodies certain Powers, Virtues or Forces, by which they act at a distance…produc[ed] a great part of the phenomena of Nature?"[84] The question inevitably leads

[82] Steven Hawking, *A Brief History…,* 4.
[83] Betty Jo Teeter Dobbs and Margaret C. Jacob, *Newton and the Culture of Newtonianism* (Amherst: N.Y, Humanity, 2009) 23.
[84] Isaac Newton, *The Optics,* trans. Andrew Motte (New York: Prometheus Books, 1995).

Newton to a discussion of gravity and the conceivable causes of motion. Newton presents a view of the world in which bodies move through space and time in accordance with the laws of motion, previously demonstrated as absolute concepts in his *Principia*. The first law of motion states that every object will continue in either a state of constant velocity or rest. An object is at rest unless acted upon by an outside force. The second law states that the change in an object's motion is proportional to the force that is acting upon it. The third law maintains that when one body acts on another, there will be an equal and opposite reaction. Hence, on a planetary level, the sun, due to its mass, exerts a gravitational force stronger than that of the other planets. This event causes the planets to react to the sun's gravitational force in conformity with the laws of motion.[85]

On a smaller scale, bodies in general "…seem to be composed of hard Particles…," which Newton identifies as atoms. These hard impenetrable atoms "may be reckon'd the Property of all uncompounded Matter."[86] All matter, from planets to human beings, is composed of atoms. According to Newton, these atoms are: solid, weighty, and by definition, impenetrable. Furthermore, all occurrences in nature are the result of the interaction, disjointing, and motion of these atoms. Yet, matter in and of itself "…is dead, inert, passive; and therefore it must be given its original impetus and order by some active agent."[87] The active agent that Newton has in mind is undoubtedly God, who not only gave the initial motion to the atoms, but also put matter in order: "For it became him who created them to set them in order."[88] However, Newton was not content to conclude the argument here.

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[85] Betty Jo Teeter Dobbs and Margaret C. Jacob, *Newton and Culture…,* 44.
[86] Isaac Newton, *Optics,* 364.
[87] Robert Hurlbutt, Hume, *Newton, and the Design Argument* (Lincoln: University of Nebraska, 1985) 21.
[88] Isaac Newton, *Optics,* 378.

Not only does Newton claim that God must have endowed matter with motion, but he also claims that God is the creator and sustainer of the universe. So far, Newton has described detailed observations about how the universe operates and provided mathematical proofs to support these observations. Yet, the observations and the laws derived from them are unable by themselves to account for the existence of the universe. Newton provides two reasons for supposing the universe to be inexplicable based solely on mechanical laws. The first is that these laws of nature could not have arisen by chance, and that it is impossible that the world, "…might arrive out of Chaos by the mere laws of Nature…"[89] The universe that Newton attempted to explain in his *Principia* and *Opticks* is simply too complex to have arisen by chance. As Newton remarked in his *Principia*, "…this most beautiful system of the sun, planets, and comets, could only proceed from the counsel and dominion of an intelligent and powerful Being."[90] The universe is orderly, beautiful, and amenable to mathematical principles. This complexity is a clear sign of a Creator.

The second reason that Newton uses to support the idea that mechanical reasons alone are unable to account for the universe's existence is: the universe oddly enough is disordered. What Newton intended by a "state of disorder," is that the universe is progressively deviating from its current state, and is therefore becoming more chaotic. While the planets move around the sun in what appears to be an orderly fashion, over a period time the motions become "irregular," that is, irregular in reference to the current "regular" motions. Newton perceives no reason that the universe, if it merely operated by a mechanical process, would appear as it does currently. Based on his calculations, Newton found that over a period of time the orbits of the planets would gradually deviate form their normal rotations. Due to the irregular actions that will progressively

[89] Ibid, 378.
[90] Robert Hurlbutt, Hume, *Newton, and the Design Argument*, 14.

build upon one another, Newton claimed that "the mutual Actions of Comets and Planets upon one another, and which will be apt to increase, till this system wants a Reformation".[91] When Newton claimed that the universe will want a "Reformation," he was claiming that it will be necessary for God to intervene and correct the irregularities in the universe, thereby restoring order. In sum, the fact that our solar system exhibits the current order that it does reflects the work of God, because the mechanical laws themselves lead to increasing disorder. As William Lane Craig points out, "the present state of disequilibrium points to a beginning of the universe…he [Newton] took it as evidence that the universe had a Creator."[92]

There are two techniques that Newton applied to the cosmological argument in order to draw theological conclusions from his scientific observations. Firstly, Newton utilizes the cosmological argument to provide an answer for the questions that his science does not explain adequately. His scientific observations do not sufficiently provide an explanation for the apparent order and origin of the universe. Newton's position is a response to the atheistic tendencies of the mechanical philosophy of his day, in particular, that of the Cartesians. With a rapidly growing body of knowledge that was elucidating how and why the world functioned, the role of God was quickly fading. By synthesizing scientific observations with theological ideas, Newton feels that he is able to combat the Cartesians by demonstrating that mechanical laws alone were not enough to provide a satisfactory solution for observable natural phenomena.[93] Newton pointed out that there are certain elements in mechanical theories that can only be explained by divine intervention. Secondly, the very phenomena that Newton's system describes, such as motion, gravity, etc, provides evidence for a Creator. The natural phenomena that Newton observed could be explained by and formulated in his mathematical laws. By reducing

[91] Isaac Newton, *Optics,* 378.
[92] William Lane Craig, *The Kalam Cosmological Argument* (Eugene: Wipf and Stock Publishers, 1979) 132.
[93] Betty Jo Teeter Dobbs and Margaret C. Jacob, *Newton and Culture…,* 22.

natural phenomena to mathematical formulas, Newton could view the operations of the universe as "…one gigantic mathematical harmony, moving to the music of the dynamical principles established by the terrestrial experiments and inductions of Galileo and himself."[94]

Clarke employs his knowledge of Newtonian natural philosophy in his critiques of the Cartesians and John Toland. Again, while Descartes conceives of the world as a gigantic machine, Clarke claims that they have incorrectly categorized matter as a necessary being. Descartes divides everything that is into two categories: the first group he calls "thinking things," which are those things which pertain to the mind, and the second category is "material things," which are those things "…which pertain to extended substance or body."[95] Regarding material things, Descartes claims that they are qualities that we clearly perceive, such as size, shape, motion, position, and duration. Likewise, there are also qualities that our senses project onto material objects. Unlike the qualities that we clearly perceive, these qualities are not in the objects themselves. Examples of the second type of qualities include color, pain, smell, and taste. However, the most basic characteristic of all "material things" is extension. Even the other attributes of matter that are clearly perceived, such as size, shape, and motion, are simply aspects of extension. Descartes' inclusion of motion as an aspect of extension leads to a unique view of causation. The metaphysical picture that Descartes paints is one in which "…bodies are characterized solely by size, shape, and motion, and all changes they undergo are the result of impacts among them on their parts."[96] The implications of Descartes' claim become evident when one examines a particular phenomenon. For example, why does a raindrop fall to the ground? Under Descartes' physical system, one is unable to explain why a raindrop falls in terms of water particles accumulating mass; Descartes does not consider weight a primary quality.

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[94] Robert Hurlbutt, Hume, *Newton, and the Design Argument*, 4.
[95] Rene Descartes, "Principles of Philosophy," 208.
[96] Andrew Janiak, *Newton as Philosopher, (*New York: Cambridge University Press, 2008) 102.

Instead, the falling raindrop must be explained in terms of other bodies that impact the raindrop, causing it to fall. Descartes rejects any notion of a vacuum, and instead posits that the universe is "full" of matter. Hence, all physical phenomena in the universe is explained by the impact of one piece of matter on another. During Clarke's lifetime, Descartes' natural philosophy lead some Cartesians to posit that matter is eternal, and therefore necessary.

John Toland, an eighteenth century English philosopher, accepted the basic tenets of Cartesian natural philosophy, particularly that motion was a primary quality of matter and that the universe was full of matter. Clarke, under his third proposition, notes "One late author indeed has ventured to assert, and pretend to prove that motion (that is, the conatus to motion, the tendency to move, the power or force that produces actual motion) is essential to all matter."[97] The passage quoted above is undoubtedly a reference to Toland. Toland professed that motion is an essential quality of matter, and as such is a part of the physical make-up of matter. Thus, matter is inherently active. Toland himself claims, "…one motion is always succeeded by another motion, and never by absolute rest, no more than any parcel of matter the ceasing of one figure is the ceasing of all, which is impossible."[98] Toland's description of motion is indistinguishable from Descartes': The space through which an object moves is filled with blocks of matter that, upon collision with the object, transfer motion to the moving object. However, there is one major difference between Descartes and Toland; namely, Descartes never described motion as an inert quality of matter. Descartes explicitly states that "…the motion which [God] preserves is not something permanently fixed in given pieces of matter…"[99] Nevertheless, Toland interpreted the predisposition of matter to move as a sign that matter be innately endowed with motion. Toland even quotes Newton's definition of the *vis inertiae*, or

[97] Samuel Clarke, *A Demonstration…,* 19.
[98] Larry Stewart, "Samuel Clarke, Newtonianism…," 54.
[99] Rene Descartes, "Principles of Philosophy," 243.

the resistance that an object exhibits while maintaining its current state of motion or rest. Toland presents the principle of the *vis inertiae* in such a way that emphasizes his own notions of motion and rest, while additionally ignoring Newton's insistence that matter is fundamentally passive. According to Toland, the belief in the passivity of matter leads directly to belief in "empty space," or a void, which Toland rejected unequivocally.

Clarke responds to Toland's critique of Newtonianism in two ways. First, Clarke affirms the complete passivity of matter, and second, Clarke argues for the existence of a void. Adherents to a strict mechanical position, such as Toland, account for motion by pointing to the interaction between material objects. Newton, on the other hand, claimed that matter was inert, and that motion was the result of different forces acting on a body, which subsequently cause it to move. While it is still a matter of scholarly contention as to what Newton intended by "force," nevertheless one may state that "Forces are not obviously properties of material objects, nor are they obviously objects in their own right."[100] In his *Principia,* Newton focuses on the mathematical treatment of forces that are measurable due to the effects on other objects. While the nature of "forces" within Newtonian thought may be disputed, one may say with certainty that a force is not an inherent quality of matter, but rather something that acts upon matter. With Newton's notion of force in mind, Clarke objects that motion cannot be intrinsic to every particle of matter. Clarke argues that if matter is innately endowed with motion then this motion must "…be either a tendency to move some one determined way at once, or to move every way at once."[101] Either option leads to complications. The first choice, that mater is endowed with motion and is determined to move in a certain direction, begs the question, "Determined by what?" As mentioned above, Newton speculates that the material cause of gravity may be the

[100] Andrew Janiak, *Newton as Philosopher,* 59.
[101] Samuel Clarke, *A Demonstration…,* 19.

result of God endowing atoms with motion, which subsequently causes the atoms to move. Yet, as a deist, Toland is unwilling to posit a similar description of motion, for that would mean that God is actively involved in the universe. Clarke concludes that the only possibility is that a tendency to move "…in some one determined way cannot be essential to any particle of matter, but must arise from some external cause…"[102] Furthermore, Clarke claims that the second alternative produces an absolute contradiction, for it is evident that objects move in an ordered and predictable fashion. For every particle of matter to move in every direction would produce chaos.

Clarke's second objection focuses on Toland's rejection of a vacuum. Clarke begins with an examination of the *vis inertiae* from Newton's *Principia;* a definition cited by Toland. Crucial to Newton's understanding of his *vis inertiae is* his attribution of mass as the primary quality of matter. As mentioned above, Descartes argues that extension is the primary quality of matter. Even though they differ on the primary attribute of matter, Descartes was nonetheless able to formulate a precursor to Newton's first law of motion, that objects will continue in their current state as long as possible. In light of Newton's discoveries, the problem with Descartes' theory of motion is twofold. First, Descartes is unable to reduce motion to a calculable level. The second problem is "…the fact that two bodies geometrically equivalent may move differently when placed in identical relations with the same other bodies."[103] Newton, on the other hand, posited the crucial definitions required to reduce motion to a quantifiable level. He was especially successful in accounting for the variations in bodies that were geometrically similar by explaining that the variations in motion is the result of varying mass, or weight. In his third definition, Newton explains that the inner force of an object, the *vis inertiae*, "…is ever

[102] Ibid, 19.
[103] E.A. Burtt, *The Metaphysical Foundations…,* 240.

proportional to the body whose force it is; and differs nothing from the inactivity of the mass…"[104] It is clear, in the previous passage, that Newton equates the inner force of an object with that objects mass.

Newton's notion of *vis inertiae* is precisely what Clarke has in mind when he affirms that "Tangibility or resistance…is essential to matter, otherwise the word matter will have no determinate significance."[105] Since all matter contains some element of tangibility, and considering that each particle of matter is respectfully composed of the same elements, then it would seem to follow that if the universe is full of matter then the amount of resistance in fluid or air would be equal. No matter how "empty" a space may appear to be, Clarke claims that the proponent who proposes that the universe is a plenum must still hold that the apparently "empty" space still contains matter. So, an object moving through outer space must encounter the same amount of resistance from the surrounding space at each point in its journey. Clarke objects that common experience shows that resistance in space is not equal, and that "…there being large spaces in which no sensible resistance at all is made to the swiftest and most lasting motion of the most solid of bodies."[106] Newton's law of gravitation, in conjunction with Kepler's laws of planetary motion, revealed that the weight and speed of an object differs depending upon its relation to a center of gravity. Thus, the resistance that an object encounters when traveling through space does change, and therefore space cannot be filled with matter.

To garner additional support of the existence of vacuums, Clarke draws heavily from Newton's *Principia*, proposition VI, corollary III, book III. In this corollary, Newton makes an argument similar to the one given by Clarke. In this proposition, Newton gives the results of pendulum experiments he conducted. Newton filled separate wooden boxes with various

[104] Isaac Newton, *Principia,* 9.
[105] Samuel Clarke, *A Demonstration…,* 19.
[106] Ibid, 20.

materials, including gold, silver, lead, glass, etc. Once the box was filled with a single substance, he attached it to the pendulum using an eleven-foot thread and released the box from a set height. Using the pendulum, Newton was able to measure that the force that acted upon each box filled with different material was the same. The osculation of the pendulum was equal despite the different material placed in the box. Newton deduced from this simple experiment that "all spaces are not equally full…"[107] This is, of course, in direct opposition to Descartes who defined matter as extension, and as a result "…each body of a given volume has the same extension and therefore the same *quantitas materiae.*"[108] Newton notes, however, that if the universe were full of matter, then the different weights of the material used in the pendulum experiment would cause the pendulum to move at different speeds and distances depending upon the weight of the material. The more weight an object has, the more gravity that object exerts. Therefore, it is feasible to hypothesize that a "thicker" medium results in greater resistance. Clarke explains, "For if in the pendulum there were any matter that did not gravitate proportionally to its quality, the *vis inertiae* of that matter would retard the motion of the rest…"[109] To understand Clarke's point more clearly, suppose that one drops a rock and a ball of paper from a equal height into a pool of water. The rock, upon impact, would penetrate the surface of the water and sink to the bottom. Contrariwise, the ball of paper would hit the water, perhaps penetrate the surface a bit, and float to the top. Newton reasons that if the universe were full of matter then one might observe a similar phenomenon as objects move through space. The heavier an object is, the faster it ought to move through the medium. However, Newton's pendulum experiment demonstrates that objects move at the same speed. Thus, the universe is not equally filled with matter, and it is

[107] Isaac Newton, *Principia,* 332.
[108] Andrew Janiak, *Newton as Philosopher,* 103.
[109] Samuel Clarke, *A Demonstration…,* 20.

possible for a vacuum to exist. The upshot of the existence of vacuums, according to Clarke, is that it is possible for matter not to be; therefore, matter cannot be a necessary being.

Clarke believes that the existence of a vacuum demonstrates not only a refutation of Cartesianism and Toland's argument, but also Spinoza. Descartes held that there were ultimately three substances in the universe: mind, matter, and God. By separating mind and matter from God, Descartes was able to construct a mechanical system of the world that Spinoza wholeheartedly embraced. Yet, as Yirmiyahu Yovel claims, "Spinoza embraced the Cartesian revolution in science, but argued it should be grounded in a different ontology,"[110] this ontology that Yovel refers to is God. Instead of positing the existence of three distinct substances, Spinoza proposes that God is the only true substance. Not only is God the only real substance, but every attribute of mind and matter are contained within God. Yovel continues to explain that "The absolute substance is at once God and world, and (as attributes) both physical and mental. Only this construal allows it to be truly substance-infinite, self-grounding, absolutely unrestricted, and inherently necessary."[111] Hence, Spinoza eliminates the possibility of God or humanity having the ability of free choice.

Spinoza begins his ethics by defining a necessary being as one whose existence is contained within the notion of its essence. Spinoza continues to define God as "…a being absolutely infinite, i.e., a substance consisting of an infinity of attributes…"[112] Clarke interprets Spinoza's claim to mean that God is a part of every substance, including mind and matter, and as a result God becomes indistinguishable from the physical universe. According to Clarke, another implication of Spinoza's claim is that since God contains all attributes present in the universe,

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[110] Yirmiyahu Yovel, "Spinoza, the First Anti-Cartesian" Idealistic Studies 33 (2003): 125.
[111] Yirmiyahu Yovel, "Spinoza, the First Anti-Cartesian," 125.
[112] Baruch Spinoza, "Ethics," in *The Collected Works of Spinoza,* ed. and trans. Edwin Curley vol.1 (Princeton: Princeton University Press, 1985), 409.

then matter must also be a necessary existing being. Clarke protests that Spinoza's philosophy leads to the view that God "…is a boundless pool of matter, and the motion following necessarily from God's nature distinguishes and separates particular bodies from one another in that pool of matter."[113] Since matter flows directly from God's necessity, then it follows that the composition of the physical universe could in no way be any different than it is in its present state. Clarke believes that the implications of such a belief lead to several absurd positions, such as the conviction that the universe is full of matter or that there is no such thing as a void. Moreover, Clarke maintains that he has clearly demonstrated that these ideas are erroneous, based on experiments drawn from Newton's *Principia*. Secondly, both Newton and Clarke posited the existence of absolute rest. Yet, the idea of a full universe contradicts such an idea, for in a full universe, matter is always pressing against matter, and thus always producing motion. The other option that Spinoza could take, is "…that motion, as a dependent being, has been eternally communicated from one piece of matter to another…"[114] However, this too proves to be unsatisfactory, for this would mean that pieces of matter would not have a cause for their movement, and thus violate the PSR.

Believing that he has successfully defended Newtonian natural philosophy from its critics, Clarke puts forward a third argument for the existence of a necessary being: The reason why the idea of a necessary being forces itself upon us is due to the nature of time and space. Clarke's argument can be summarized as follows:

1. When examining the nature of the physical universe one often finds within one's mind the ideas of "infinity" and "eternity."

2. To suppose that the notions of infinity and eternity can be removed from the universe implies a contradiction. "To suppose any part of space removed is to suppose it removed from and out of itself; and to suppose the whole to be taken away is

[113] Charles Huenemann, "Spinoza and Prime Matter," Journal of the History of Philosophy 42 (2004), 21.
[114] Samuel Clarke, *A Demonstration…,* 22.

supposing it to be take away from itself…"[115] In other words, even if one attempts to remove these concepts from his or her notion of space, these concepts inevitable remain.

3. The ideas of infinite space and time are, by their very nature, attributes or modes of existence and as such they must inhere to their substance.

4. Therefore, By admitting the necessary existence of infinite space and time one also admits the existence of the substance that these attributes belong. Such a substance, containing the attributes of infinity and eternity, can only be what is commonly referred to as God.

The crux of Clarke's argument hangs on the second premise, which states that to suppose a part, or the whole, of space removed is to imply a contradiction. The second premise rests wholly upon Newton's concept of absolute time and space as presented in his scholium, definition eight, in book one of his *Principia.* According to Newton, it is absurd to believe that any part of absolute time or space can be removed. Clarke elaborates on Newton's proposal and states that the primary attributes of absolute time and space, immensity and eternity, also cannot be removed. To understand Clarke's argument one must understand Newton's conception of absolute time and space and the reason why Newton supposed the existence of such concepts. As discussed in the first chapter, there are four fundamental concepts to Newtonian natural philosophy: force, mass, space, and time. For Newton to posit the existence of absolute space and time may surprise the readers of his *Principia,* for by doing so Newton forsakes of his trademark empiricism. Absolute space is not distinguishable by our senses; rather, what an individual perceives when he or she examines space, is actually relative space. Relative space is the space "…which our senses determine by its position to bodies…"[116] In other words, the individual's perception of space will always be relative, and Newton makes similar remarks regarding the nature of time. Newton proposed that space and time are absolute due to certain

[115] Ibid, 13.
[116] Isaac Newton, *Principia,* 13.

mathematical demands regarding motion, but Clarke and others also noticed theological considerations for such a position.

Space and time, as commonly perceived, refer to the distances between various objects or events. For example, one may calculate the time it takes a runner to travel from point A to point B. Such a measurement would be, in Newton's understanding of time, a measurement of relative time. Newton distinguishes relative time and space from absolute time and space, which are understood "…without regard to anything external…"[117] The earth, for example, may move through a portion of space from point A to point B, but this movement occurs within the context of absolute space. Understood in this way, absolute time and space "…are infinite, homogeneous, continuous entities, eternally independent of any sensible object or motion by which we try to measure them; time flowing equably from eternity to eternity; space existing all at once in infinite immovability."[118] In a similar manner, Newton distinguishes between absolute and relative motion. Absolute motion is the movement of an object from one place in absolute space to another. By "place" Newton refers to "…a part of space which a body takes up, and is according to the space, either absolute or relative."[119] These "places," however, have no properties in and of themselves and are simply tools to determine motion. To these concepts, Newton offers the example of a ship. Absolute motion is calculated by combining the relative motion of a particular object with the absolute motion of the earth moving through absolute space. Hence, the absolute motion of the ship may be calculated by combining the relative motion of the ship across the surface of the ocean with the movement of the earth through space.

From the above example, it may be deduced that while absolute time, space, and motion may not be observable, absolute motion can be inferred by certain properties of relative motion.

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[117] Ibid, 13.
[118] E.A. Burrt, *The Metaphysical Foundations…,* 248.
[119] Isaac Newton, *Principia,* 14.

Furthermore, Newton reasons that if absolute motion can be demonstrated then its existence alone implies the existence of absolute time and space. Newton gives two arguments to justify his proposition: "…for we have some arguments to guide us, partly from the apparent motions, which are the differences of the true motions; partly from the forces, which are the causes and effects of true motions."[120]

The first argument that Newton gives, and perhaps the most obscure for the contemporary reader, is that absolute motion is produced by the application of "force." Throughout the *Principia,* Newton assumes that forces "exist" insofar as one can observe the effects that forces produce in physical objects, such as the movement of a planet through space. In hindsight, part of the genius of Newton is that, throughout his *Principia,* forces are assumed due to their quantifiable effects. Consequently, there is no need to discuss the ontology of force.[121] However, in Newton's first argument he states that the "…causes by which true and relative motions are distinguished one from the other, are the forces impressed upon bodies to generate motion."[122] Absolute motion is caused, in this instance, by forces acting upon an object. By adopting such a perspective, Newton must admit that the discussion of ontology can no longer be avoided. Newton explicitly states that force determines absolute motion. While Newton makes no conjecture as to what this force is, he assumes its existence because it is measurable, and thereby the existence of absolute motion as well.

The second argument Newton gives for the existence of absolute motion proceeds, not from the cause of motion as the first argument demonstrated, but rather from the effects that force produces, namely centrifugal force. Centrifugal force is demonstrated in Newton's writing by his pail experiment. The experiment can be replicated by attaching a pail filled with water to a

[120] Ibid, 18.
[121] Andrew Janiak, *Newton as Philosopher,* 82.
[122] Isaac Newton, *Principia, 17.*

long rope, and attaching the rope to a supporting structure so that the pail is suspended. The pail is then twisted tightly. When one releases the pail, it will begin to spin rapidly. The surface of the water will, at first, remain calm, but after a few moments the water within the pail will begin to revolve. The water will revolve ever so slightly from the center to the sides of the pail, forming a vortex in the water. This will continue, as Newton observed, even after the pail has stopped spinning. Newton states that the "…ascent of the water shows its endeavor to recede from the axis of its motion; and the true and absolute circular motion of the water, which is here directly contrary to the relative, discovers itself, and may be measured by this endeavor."[123] In this simple experiment, Newton believes that he has shown a way to measure absolute motion. Newton assumes that the quantifiability of absolute motion is sufficient justification for assenting to its existence.

Newton argues that both absolute and relative motion is proven by the pail experiment. The experiment may be divided into three stages. In the first stage of the experiment, the pail is spinning and the water is at rest. In the second stage, the pail and the water spin, consequently forming a vortex in the water. In the third and final stage, the pail ceases to spin but the water continues. In the first and the third stage, the pail and the water are moving similarly and relative to each other. The motion of the pail in stage one gradually causes the water in the pail to form a vortex, through the use of force. The centrifugal force which causes the vortex in stage two of the experiment is measurable due to the curvature of the surface of the water away from the center point. As a result, "…we have certain motions as the cause of certain forces, the latter expressing themselves in measurable phenomena."[124] The phenomenon that occurs in stage two is completely distinct from what occurs in the first and third stages, where each object moves

[123] Isaac Newton, *Principia,* 17.
[124] E.A. Burtt, *The Metaphysical Foundation…,* 254.

relative to the other. Newton reasons that if all motion were relative, then the experiment would not have progressed beyond the initial conditions of the first stage, but this is not what occurs. To the contrary, as the pail spins the water begins to spin. As a consequence, "since the surface of the water contained in the pail is level in the first case and paraboloidal in the second, rotation, thus concludes Newton, must be absolute"[125]. The relative motion between two objects assumes that the two objects must be in similar physical states. But this is clearly not the case in the second stage. Newton believes that this experiment justifies his use of absolute motion and thereby absolute time and space.

Clarke accepted the fact that Newton had succeeded in demonstrating the existence of absolute time and space. From this it follows that Clarke's second premise is true, that the notions of infinity and eternity cannot be removed from the universe without evoking a contradiction. Absolute space implies infinite space and likewise absolute time implies eternity. Given that the second premise is justified by Newtonian natural philosophy, the controversial premise seems to be the third one, for with it Clarke concludes that space and time are attributes or modes of God. Regarding this point, Clarke is careful to separate himself from pantheistic thinkers by saying that "All other substances are *in* space and *penetrated* by it, but the self-existent substance is *not in space nor penetrated* by it, but is itself the *substratum* of space, the ground of the existence of space and duration itself."[126] Since space is infinite in extension and time is eternal in duration, then it becomes necessary for Clarke to make them both attributes of God. Both space and time are not God in and of themselves, but exist because God exists. In other words, if God did not exist, then neither would space and time.

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[125] Max Jammer, *Concepts of Space,* 108.
[126] Samuel Clarke, *A Demonstration…, 105.*

Hume and Clarke on the Argument A Priori

In one form or another, the cosmological argument has existed since Plato's writings and has ever since been championed or scrutinized by some of history's greatest philosophers. The cosmological argument's greatest critics include the likes of Immanuel Kant and Bertrand Russell, but many have claimed that it was David Hume who dealt the death blow to the argument. While Clarke's argument received wide spread support and criticism during his lifetime, the Scottish philosopher David Hume, who was born shortly before Clarke's death, presented what was to become the argument's most famous and devastating critique. Hume's arguments against the cosmological argument have, in the past century, often been highly praised by commentators such as H.D. Aiken and E.C. Mossner, to name only two. Regarding Hume's objections to the argument *a priori*, presented by Demea, Mossner comments that "…the *a priori* proof of the being of a God is refuted by an unimpeachable demonstration."[127]

Despite being religious at an early age, Hume began to question his faith while attending the university of Edinburgh. Ironically, Hume is reported to have claimed later in life that "…he never had entertained any belief in religion since he began to read Locke and Clarke."[128] Hume's attack on Clarke's argument appeared in his *Dialogues Concerning Natural Religion*, which were published post humorously in 1779. Hume's objection to Clarke, which appears primarily in part IX of the *Dialogues*, will be examined and compared to Clarke's argument. In light of this examination, it will become evident that while certain parts of Hume's criticism are legitimate; contrary to popular opinion, Clarke's argument, as a whole, is still tenable.

Hume's *Dialogues* center around the conversations of three major characters, Philo, Cleanthes, and Demea, as well as the minor character Pamphilus, who operates as a narrator.

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[127] D.C. Strove, "Part IX of Hume's Dialogues," The Philosophical Quarterly, 28 (1978) 303.
[128] David O'Conner, *Hume on Religion* (New York: Routledge, 2001) 2.

Each of the characters have traditionally been viewed as representing three distinct schools of philosophical thought. Cleanthes is said to represent the empirical theist, or the scientific theist, whose beliefs about God's nature and existence is based on empirical evidence. One figure that Hume undoubtedly had in mind when drafting Cleanthes argument is Isaac Newton. As examined above, Newton essentially redrafted the design argument into modern scientific terms. By the time Hume began work on the *Dialogues,* the argument from design was widely accepted amongst scientists and theologians, thanks in large part to the writings of Newton. A majority of the *Dialogues* is devoted to an examination of the design argument presented by Cleanthes. While all three characters claim to believe in God, Philo represents the skeptic of the group, and often pushes the dialogues forward through his questioning and critiques. Demea is often said to represent the "orthodox Christian," and at one point in the *Dialogues*, he offers an a priori proof for the existence of God. Demea's proof, found in part IX of the dialogues, exhibits a strong correlation with the argument that Clarke presents in *Demonstration.* Given the resemblance between the structure and content of the argument, as well as Hume's familiarly with the works of Clarke and an explicit reference made to Clarke in this section of the *Dialogues,*[129] one may conjecture that part IX of the *Dialogues* represents a critique of Clarke's cosmological argument.

As a result of being unsatisfied with the previous a posteriori argument offered by Cleanthes, Demea begins part IX of Hume's *Dialogues* with what he refers to as "…that simple and sublime argument *a priori…*"[130] Here, Hume is borrowing Clarke's terminology when Demea refers to what is essentially an *a posteriori* argument as an *a priori* argument. Clarke considered his own argument "a priori" insofar as it concluded with the existence of a necessary

[129] David Hume, *Dialogues Concerning Natural Religion,* edited by Richard H. Popkin, second edition (Indianapolis: Hackett Publishing Company, 1998) 56.
[130] Ibid, 54.

being, and Demea does the same. David O'Conner notes that there are two distinct aspects of part IX of the *Dialogues* that separate it from the rest of the work. The first distinctive aspect is that Demea's argument concerns itself with the issue of logical necessity, and also the argument itself is intended to be deductive. Demea's argument stands in contrast with the argument from design, presented previously by Cleanthes, that reaches its conclusion by inductive reasoning. O'Conner also notes that the second distinctive aspect of part IX is that the "…subject of scepticism does not come up in it at all"[131]. Demea's argument can be most accurately formulated as follows:

1. It is impossible for anything to be self-created, or to be the cause of its own existence.

    1A. Thus, whatever exists must have a cause for its existence.

2. It is obvious that something now exists (implicit premises).
3. Either there has been an infinite succession of events, without a cause, or there is one ultimate cause that is necessarily existent.

    3A. In a chain of events, each effect is determined or produced by its preceding cause.

    3B. An infinite secession of events does not have a cause or reason for its existence.

C1. It is not possible that there has been an infinite secession of events.

C2. There must be a "… recourse to a necessarily existing Being who carries the reason for his existence in himself; and who cannot be supposed not to exist…"[132]

In order to draw a comparison between Demea and Clarke's argument, the first stage of Clarke's argument was presented in the first chapter as follows:

1. Something has existed from all eternity, as is evident from the fact that something now exists.

[131] David O'Conner, *Hume on Religion, 148.*
[132] David Hume, *Dialogues…,* 55.

2. Whatever exists has a reason, or cause, for its existence.
3. A thing exists, either out of the necessity of its own nature or its existence is caused by some other entity.

    3A. Either there must exist some necessary being who exists necessarily by its own nature, or there has existed an endless secession of contingent beings with no cause at all.

    3B. It is impossible that there is an endless secession of contingent beings, for this would mean that their existence was uncaused (which is a contradiction).

4. Therefore, there must exist some necessary being who is the cause of its own nature.

At first glance, with the exception of the arrangement of the premises and the arbitrary difference in words, Demea's argument seems to be a fair representation of Clarke's cosmological argument. There are, however, some notable exceptions. First, Demea does not begin with the premise that "something has existed from all eternity," or even with the premise that "something now exists." Rather, the premise that "something now exists" must be inferred from Demea's argument, such as from his comment "In mounting up, therefore, from effects to causes…"[133] In other words, Demea is beginning with observable effects, which obviously exist. Yet, the omission of the premise from Demea's argument is ultimately inconsequential to the argument as a whole. The reasoning behind Clarkes explicate statement of his first premise is primarily due to scientific rather than logical concerns. The second notable difference between Demea and Clarke's argument is Demea's omission of the second half of Clarke's cosmological argument, which has often been called Clarke's "ontological argument." Nevertheless, in the opening paragraph of part IX, Demea alludes to such an argument when he claims, "By this argument, too, we may prove the *Infinity* of the Divine Attributes, which, I am afraid, can never be ascertained with certainty from any other topic."[134] While Demea does not lay out the actual argument, he does suggest that such an argument is possible. As Edward Khamara states, "This

[133] David Hume, *Diagolues…,* 54.
[134] Ibid, 54.

suggests that the argument which he summarizes later *can be* extended by *further* steps to deduce both the uniqueness of God and such 'infinite attributes'…"[135]

Demea's argument, like Clarke's, hinges upon the idea of the PSR, "Whatever exists has a cause or reason of its existence, it being absolutely impossible for anything to produce itself or be the cause of its own existence."[136] Demea uses a strong form of the PSR, similar to the one found in Clarke's argument when he claims that "whatever exists" has a cause for its existence. It is important to note that Demea believes that *all* beings have a cause for their being, not only contingent beings. Hence, even the necessary being that Demea purports to demonstrate the existence of, must have a cause. Demea notes that this being "…carries the reason for his existence in himself…"[137] The fact that even a necessary being must have a cause for its existence, and that this cause may be found within the nature of the necessary being, is also a premise that is explicitly stated in Clarke's argument. However, there is one essential difference between Demea and Clarke's use of the PSR, namely, Demea's statement "…does not merely assert the causal principle as a premise, but incorporates a proof of it which is not in Clarke."[138]

On closer examination, Demea's statement represents an abbreviated form of an argument in support of the PSR that is presented and then heavily criticized by Hume in his *A Treatise of Human Nature.* In his *Treatise*, Hume claims that "Clarke and others" have presented the following argument in favor of the PSR: "Everything, it is said, must have a cause; for if anything wanted a cause, it would produce itself, that is, exist before it existed, which is impossible."[139] When comparing Hume's *Dialogue* with his *Treatise*, one may begin to see that

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[135] Edward Khamara, "Hume Versus Clarke on the Cosmological Argument," The Philosophical Quarterly, 42 (1992) 45.
[136] David Hume, *Dialogues…,* 54.
[137] Idid, 55.
[138] Khamara, "Hume Versus Clarke…," 46.
[139] David Hume, *A Treatise of Human Nature,* 126

the proof offered in the *Treatise* is also present in Hume's *Dialogues.* Demea begins his argument by stating that whatever begins to exist must have a cause for its existence, because it is "…absolutely impossible for anything to produce itself or be the cause of its own existence."[140] Hume's presentation of the PSR is problematic, as he himself observes, because if it were true it would be *necessarily* true. The denial of the PSR in Hume's *Treatise* expresses a contradiction. It is unclear, however, why Hume attributes this proof for the PSR to Clarke. Clarke, as mentioned in chapter two, accepts the PSR *prima facie,* and as such offers no proof for the principle.

While there may be some discrepancies, the connection between Demea and Clarke's argument is undeniable. As such, the criticisms leveled against Demea's argument by Cleanthes and Philo may also be interpreted as criticisms against the version of the cosmological argument presented by Clarke.

Hume raises five objections to Demea's argument. The first objection, and perhaps the most important of the five, is raised by Cleanthes: "I shall begin with observing that there is an evident absurdity in pretending to demonstrate a matter of fact, or to prove it by any argument *a priori."*[141] As discussed in the second chapter, Hume divided all propositions into two categories; namely, relations of ideas and matters of fact. Relations of ideas are those propositions whose truth value are determined *a priori,* that is, propositions which are true by definition or analytically. Hume calls the second category matters of fact, and these are propositions whose truth-value depend upon experience. The statement, "the cat is on the mat" is one such example of a matter of fact. One's idea of what a cat is does not necessarily include the

[140] David Hume, *Dialogues…,* 54.
[141] Ibid, 55.

notion that the cat must be on the mat, that is, one can easily imagine that the cat not be on the mat. Hence, in order to verify the proposition one must experience it.

There are two aspects to Hume's first objection. The first aspect revolves around Hume's notion of a "demonstrable argument." According to D.C. Strove, Hume holds demonstrable arguments to be "…valid arguments from necessarily true premises."[142] A conclusion is said to be demonstrable if its content can be deduced from necessarily true premises. Demea, based on his view of the PSR as a necessary truth, is attempting to construct such an argument. Yet, Cleanthes objects that "Nothing is demonstrable unless the contrary implies a contradiction. Nothing that is distinctly conceivable implies a contradiction. There is no being, therefore, whose non-existence implies a contradiction."[143] The second aspect, as seen in Cleanthes' objection is that "matters of facts" are propositions whose truth-values are *contingent.* By definition, matters of fact deal with propositions that concern themselves with contingent entities. Any being that may be described in a matter of fact proposition may also be described as not existing; this does not provoke a contradiction. Thus, Cleanthes concludes it is impossible to demonstrate the existence of a necessary being. A demonstrable argument concerns itself with necessary truths, but the existence of any being is not necessary; rather, it is a matter of fact. Any proposition that is a matter of fact is contingent. Any being whose existence can be conceived is also a being whose nonexistence can also be conceived. It follows, therefore, that not only is it impossible to demonstrate the existence of a necessary being, but Cleanthes makes the even stronger claim that the very idea of a necessary being is fundamentally unintelligible. Any being may be thought to

[142] D.C. Strove, "Part IX of Hume's Dialogues," 303.
[143] David Hume, *Dialogues…,* 55.

not exist, even a so-called "necessary" being. Cleanthes considers this argument eminent, and states that he is "…willing to rest the whole controversy upon it."[144]

Hume's second objection, as presented by Cleanthes, states that it is plausible to assume that the universe itself is necessary, and that the universe may not need a cause for its existence. Cleanthes raises the following question: "…why may not the material universe be the necessary existent Being, according to this pretended explication of necessity?"[145] If the universe has always existed then the universe itself may be a necessary being insofar as it may need no causal explanation for its existence. Cleanthes notes that the only objection to this position is the argument given by Clarke in his *Demonstration,* under proposition III. As outlined in chapter four, Clarke defends the Newtonian position that vacuums do exists, and as a result Clarke is committed to the position that matter is contingent. While Clarke holds that space and time have always existed, matter has not, and therefore the physical universe cannot be conceived of as a necessarily existing being. Cleanthes suggests that the position ostensibly held by Clarke is not thorough in its reasoning and is holding his own notion of a necessary being to a double standard. Cleanthes reasons that the "…same argument extends equally to the Deity, so far as we have any conception of him; and that the mind can at least imagine him to be non-existent…"[146] According to Cleanthes, the same argument that Clarke uses to show that matter is not necessary may be used to show that God is not necessary. While Clarke may object that God's nonexistence is inconceivable due to some unknown property within God, Cleanthes notes that a similar argument may be made with regard to matter.

The third objection, presented by Cleanthes, focuses on a shift in Demea and Clarke's argument when moving from particular contingent beings, to the whole of what is. Demea claims

[144] Ibid, 55.
[145] David Hume, *Dialogues…,* 56.
[146] Ibid, 56.

that every being requires a cause or reason for its existence. Furthermore, contingent beings are beings who depend upon other beings for their existence. Demea reasons that if the universe consists of nothing but contingent beings then there must also be a reason for the *whole* of contingent beings. Cleanthes objects that "…the uniting of these parts into a whole, like the uniting of several distinct countries into one kingdom, or several distinct members into one body, is performed merely by an arbitrary act of the mind, and has no influence on the nature of things."[147] Cleanthes' objection is a subtle, yet powerful one. Both Demea and Clarke claim that either the universe is an infinite chain of contingent beings or that the universe is the result of a necessary being; and, nothing that is contingent can exist unless caused. If the whole of what is consists in nothing but contingent beings, then the whole must be caused by something. Cleanthes' objection is that "…if a changing universe has always existed and what exists at any given time is caused by what previously existed, then it is a mistake to ask for a cause of the existence of the whole enduring process which extends infinitely into the past…"[148] The mistake occurs, according to Cleanthes, when one demands a cause outside the whole of what is. Take, for example, the concept of a "nation." A nation consists of several individual states. Now suppose one were to ask how a particular nation came to be. If one were to explain the cause and origin of each individual state, most people would consider this a satisfactory answer. Cleanthes' point is that it would certainly be strange, or even unreasonable, if after having heard the explanation the individual turned around and asked for the origin of the nation as a whole. In other words, one may sufficiently explain a "set" by explaining the members of a "set." The term "set" is a linguistic construct arbitrarily applied to individual things and as such requires no explanation for its existence. Likewise, an infinite series of contingent beings "…is sufficiently

[147] David Hume, *Dialogues…, 56.*
[148] James Cain, "The Hume-Edwards Principle," *Religious Studies* Vol. 31 No.3 (1995) 223.

explained in explaining the cause of the parts."[149] One need not give a reason for the contingent "whole," for the act of designating that a group of individual beings represents a "whole" is in and of itself an arbitrary act. The "whole" that one is designating has no real existence outside of the individual parts.

The last objection to Demea's argument is raised by Philo. Philo's fourth objection is similar to the second objection raised by Cleanthes. Philo claims that the universe may exhibit its features out of its own necessity. In order to explain his point Philo uses the notion of a product from mathematics. A product is the number that is obtained by multiplying numbers together. Philo observes that if the characters of a product of 9 are added together they always equal 9 or another product of 9. An example of a product of 9 would include 18 (1+8=9), 45 (4+5=9), or even 486 (4+8+6=18, 8+1=9). The fact that the products of 9 exhibit such order is recognized by an algebraist to "…be the work of necessity, and demonstrate that it must forever result from the nature of the numbers"[150]. Philo's objection is that the universe may be the result of some similar necessity, perhaps arising out of some unobservable aspect of matter that science has not discovered yet.

Before continuing to examine Clarke's possible responses, it will first be necessary to examine what appears to be an inconsistency in Cleanthes and Philo's objections. The first objection raised by Cleanthes, and the one which he claims he is "…willing to rest the whole controversy upon,"[151] states that the words "necessary existence" have "…no meaning; or, which is the same thing, none that is consistent."[152] If the first objection raised by Cleanthes were the only one, there would not be a problem. However, the second objection raised by Cleanthes, and

[149] David Hume, *Dialogues…, 56.*
[150] David Hume, *Dialogues…,* 57.
[151] Ibid, 55.
[152] Ibid, 56.

Philo's objection, both make use of the concept of a necessarily existing being. Cleanthes' second objection states that if there is anything that is actually necessarily existing, then there is no reason not to believe that it could be the material universe. Here, Cleanthes seems to be maintaining the "conditional thesis: that if 'necessary existence' is meaningful and consistent, then it is possible the material universe exists necessarily."[153] This interpretation of Cleanthes is supported by his adopting of the "…pretended explication of necessity."[154] Accordingly, Cleanthes seems to adopt a hypothetical understanding of necessary existence in order to demonstrate the fact that, based on Demea's argument, there would be no way to distinguish exactly what it means to necessarily exist. In making such an argument, O'Conner notes that "…Cleanthes does not in fact think that the material universe exists necessarily."[155] This interpretation of Cleanthes' argument is, nonetheless, complicated by Cleanthes' closing remarks of his second objection.

In responding to Clarke's argument that matter is contingent, Cleanthes claims that, since it is possible to think of God as nonexistent, there must be some special quality within God that makes such a thought impossible. Yet, if one maintains this position, as Cleanthes believes that Clarke's argument must, then what is to prevent one from holding the same belief about matter. Cleanthes reasons "…no reason can be assigned why these qualities may not belong to matter."[156] Cleanthes is essentially asking Demea, Clarke, and the reader, to consider the possibility that matter contains some hitherto unknown property that makes its existence necessary. Cleanthes' claim that matter may possess some unknown quality that makes its existence necessary is hard to reconcile with the objection in his first argument, that necessary

[153] D.C. Strove, "Part IX…," 305.
[154] David Hume, *Dialogues…, 56.*
[155] David O'Conner, *Hume on Religion, 156.*
[156] David Hume, *Dialogues…, 56.*

existence is a meaningless concept. Nevertheless, the last section of the second objection may still be regarded as part of Cleanthes' beginning thought experiment, even if it does involve taking the fact that the material universe may be a necessarily existing thing seriously.

While the inconsistency in Cleanthes' argument may be pardoned due to the hypothetical nature of the objection, it is even more difficult to reconcile Cleanthes' first objection with Philo's position. Philo takes a slightly different approach, and argues that just as a form of necessity exists in mathematical equations, it is possible "…that the whole economy of the universe is conducted by a like necessity…"[157] In other words, it is possible that instead of being the result of cause or chance the universe may exhibit its properties due to some sort of necessity. The necessity that Philo is suggesting seems to be the result of the some internal property of physical objects or the natural laws that govern nature. Philo is suggesting that "…the basic laws of physics reflect the way things have to be, given certain initial conditions…"[158] Moreover, this is not the only instance that Philo mentions such a possibility. For example, in section VII, Philo presents a cosmology in which the continuous motion of matter "…must produce this economy or order, when once established, supports itself for many ages if not to eternity."[159] It is conceivable or even probable then, according to Philo, that the universe must necessarily be the way that it is due to some physical process. Kemp Smith has suggested that Philo's conception of the necessary existence of the material world is something which his arguments throughout the *Dialogues* are intended to support, and is something which is of "…central importance…in Philo's teaching."[160] Given that this is the case, it is hard to imagine why Hume has Philo agree with, or at the very least acknowledge as correct, Cleanthes' first objection. Philo states that,

[157] David Hume, *Dialogues…, 57.*
[158] David O'Conner, *Hume on Religion, 162.*
[159] David Hume, *Dialogues…,* 50.
[160] D.C. Strove, "Part IX…," 307.

"Through the reasoning which you have urged, *Cleanthes,* may well excuse me, said *Philo,* from stating any further difficulties…"[161] This seems to suggest that Philo accepted Cleanthes' objections.

Even with the difficulties surrounding the second and fourth objections, many scholars have held that the problems raised by Cleanthes and Philo present insurmountable objections to Clarke's argument. D.C. Strove's interpretation of the first objection, as mentioned above, maintains that Cleanthes is objecting to the fact that "…there can be no valid argument from necessarily true premises to a contingent conclusion."[162] While this objection may be applicable to Demea's version of the argument, it does not pertain to Clarke's argument. His argument begins with the premise that "…something has existed from all eternity" which is evident from the fact that "…something now is…"[163] While a similar premise may be implied from Demea's argument, it is not explicitly stated. Clarke's first premise is, however, explicitly stated and undeniably contingent. Cleanthes' first objection must therefore center on his conclusion concerning the existence of a necessary being, namely, "…that there can be no such being, and that therefore Demea's (or Clarke's) conclusion must be rejected" [164] Cleanthes' rejects the notion of a necessary being due to the fact that any being can be thought not to exist. If Clarke is asserting the existence of a *logically* necessary being, then Cleanthes' objection presents a problem. However, as shown in chapter three, Clarke was not positing the sort of logical necessity that is evident in the ontological argument. It is not evident based on an examination of the conclusion of Clarke's first argument that the necessary being must exist. In other words, the claim that God is a necessary being is not immediately self-evident. Clarke must prove that God

[161] David Hume, *Dialogues…,* 59.
[162] D.C. Strove, "Part IX…," 303.
[163] Samuel Clarke, *A Demonstration…,* 8.
[164] Edward Khamara, "Hume Verses Clarke…," 49.

is self-evident by demonstrating that the other possibilities, such as the infinite existence of contingent beings is invalid, and consequently show why God must be necessary. Clarke believes that he has accomplished this in his first two propositions, and it is only after this demonstration that he posits the existence of a necessary being. Hence, Clarke's notion of a necessary being is dependent upon his previous arguments and represents a "conditional" necessity.

If God has been established as the ultimate cause of the universe, then it may be said that it is "impossible" to think that God does not exist. Yet, even if one grants Cleanthes' first objection, if the argument presented by Clarke is sound, then Cleanthes' objection holds no ground. What is needed in order to debunk the argument is a direct challenge to one of the premises that the argument holds to be true, and this comes in the form of Cleanthes' third objection. Cleanthes' objection is that "…if a changing universe has always existed and what exists at any given time is caused by what previously existed, then it is a mistake to ask for a cause of the existence of the whole enduring process which extends infinitely into the past…"[165] This objection, when applied to Clarke's argument, rests on a misinterpretation of his understanding of the PSR. Clarke states "Whatever exists has a cause, a reason, a ground of its existence…"[166] Accordingly, every being both contingent and necessary must have a reason for its existence. Due to Clarke's acceptance of a strong version of the PSR, it would be appropriate to ask for the cause of an infinite secession of contingent beings; for every contingent being in the whole of what is must have a cause.

Cleanthes' response claims that one may give an explanation for each individual member in a set of contingent individuals, and that this explanation is sufficient in and of itself. Even if

[165] James Cain, "The Hume-Edwards…," 323.
[166] Samuel Clarke, *A Demonstration…, 8.*

the set of contingent individuals is infinite, this does not somehow imply that there is no sufficient explanation for some member of the set. Due to the fact that we know that each member of the set is contingent, it must be the case that it is possible to offer some explanation for each member. The basic idea of Cleanthes' criticism is that "If the existence of every member of a set is explained the existence of that set is thereby explained."[167] So, if one wishes to explain why something is the way it is, it will suffice for one to give an account of each member of a set. Clarke rejects such an explanation, not when applied to finite sets, but when applied to infinite sets of contingent beings. Clarke defines a contingent being as one which owes its existence to "…the will of some other being…"[168] The problem occurs when one posits the existence of an infinite set of contingent beings and then asks: "Why does this particular set have the members that it has rather than not having an members at all?" As discussed in chapter two, Clarke raises a similar question when he cites the example of the chain composed of an infinite series of links. If one comes across a chain hanging from the sky and asks "What is supporting this chain?" It would not be a sufficient answer to explain that the chain is dependent upon the previous link *ad infinitum.* As Rowe notes, "…from the fact that the existence of each member of a collection is explained it does not follow that the existence of the collection is thereby explained."[169] While one may be able to give an account of each contingent being, one has not therefore explained why a set consists of the particular contingent beings that it contains.

Cleanthes' and Philo's second objection seem inapplicable to Clarke's argument due to his devotedness to Newtonian natural philosophy. Clarke believed, along with Newton, that matter is fundamentally inert. Clarke affirms the complete passivity of matter, and argues for the existence of a void. Newton claimed that matter was inert and that motion was the result of

[167] William Rowe, *The Cosmological Argument,"* 456.
[168] Samuel Clarke, *A Demonstration…,* 8.
[169] William Rowe, *The Cosmological Argument,* 457.

different forces acting upon a body which subsequently cause it to move. In his *Principia,* Newton focuses on the mathematical treatment of force that is measurable due to its effects on other objects. What is clear, however, is that is that a force is not an inherent quality of matter, but rather something which acts upon matter. Since matter is inert and since it is possible that matter could not exist, as is evident from the existence of voids, then it is not possible that the universe be a necessarily existing thing. Clarke's reason for rejecting the necessary existence of the material universe is based primarily on scientific grounds, a point which neither Cleanthes nor Philo address. Thus, one could argue that Hume's objections are not entirely fatal challenges to Clarke's argument.

VI
Conclusion

The scientific revolution produced various effects in society and culture as a whole. Inevitably, such a radical change in methodology led to a new conception of rationality. This new measure of rationality was not only applied to the emerging sciences, but also to theological and philosophical argumentation. Clarke's argument, as presented in his *Demonstration*, represents a systematic incorporation of Newtonian natural philosophy and traditional arguments for the existence of God. Past cosmological arguments, like the ones presented by Thomas Aquinas and Duns Scotus, were primarily justified through purely logical considerations. Aquinas, in his *Summa Theologica,* presents the following argument for God's existence:

1. Some objects in the world are in a process of change.
2. Any object that is changing, is changed by something else.

    2a. Anything that changes exhibits the potential to be X, and in its current state as a changing thing, lacks the perfection to become X.

2b. "For to cause change is to bring into being what was previously only able to be, and this can only be done by something that already is…"[170]

2c. Therefore, an object that is in the process of change cannot be the cause of its own change, but must be acted upon by another object in order to change.

3. An infinite series of changing objects, in which each object is acted upon and changed by another, is impossible.

4. Therefore, there must exist some object that is not in the series of changing objects, and that is itself unchanged.

Aquinas' argument bears a resemblance to Clarke's in its basic logical format. It begins with a presumably self evident statement about physical reality, which in Aquinas' argument is represented in the first premise. Additionally, while it is not explicitly stated or clearly endorsed by Aquinas, the second premise depends upon some form of the PSR. Rowe notes that "…some from of [the PSR] lies behind the claim that the causal activity resulting in [an objects] being conserved in existence must have an explanation"[171]. Like Clarke, Aquinas assumes that there must be some form of explanation for cause and effect, that is, a reason for the observable change in objects. It is because of this fact that Aquinas rejects the idea of the possibility of an infinite secession of changing objects in premise three. Structurally speaking, Clarke's argument greatly resembles the one posited by Aquinas. While there is no argument in Aquinas' "five ways" that resembles the second part of Clarke's argument, Aquinas does proceed in the *Summa Theologica* to demonstrate how an unchanged being must posses the qualities that one would typically attribute to a theistic God.

While the arguments presented by Aquinas and Clarke are structurally similar, there are aspects of Clarke's argument that are unique. One need only to examine Clarke's first premise, that something now exists, and that something has always existed. While Clarke is setting the

[170] Thomas Aquinas, *On Faith and Reason, Edit. Stephen Brown* (Indianapolis: Hackett Publishing Company, 1999) *126.*
[171] William Rowe, *The Cosmological Argument,* 37.

stage for the introduction of a "necessary being," he is also affirming what he believes to be a scientific statement about the composition of the universe. While matter has not always existed, time and space have, due to the fact that both are indistinguishable from the conceptions of God's eternal existence and omnipresence, an idea that Clarke adopts from Newton. Tied in with Clarke's first premise is the notion that whatever exists has a cause for its existence. In contrast to Aquinas' argument, Clarke's contains an explicit statement of the PSR: "Whatever exists has a cause, a reason, a ground of its existence, a foundation upon which its existence relies, a ground or reason why it does exist rather than not exist…"[172] Clarke recognized that this principle is foundational to the argument as a whole, and in particular uses the principle to set up his distinction between necessary and contingent beings.

After positing the PSR, Clarke continues to explain that there are two types of beings: those who depend upon others for their existence, and those whose existence originates within itself. Since it has already been demonstrated that something now exists and has existed from all eternity, then there can only be one of two explanations for why this is the case. The first option is that there has existed from eternity some one unchangeable and independent being from whom all other beings derive their existence. Like Aquinas, Clarke states that the whole of what is cannot possibly consist solely of the first type of beings, that is, contingent beings. Therefore, Clarke concludes that there must exist some necessary being, whose cause for existence lies within itself. At this point, Clarke's argument makes another distinctive turn when he begins to deduce certain characteristics from the existence of this necessary being. Clarke concludes that this necessary being must, among other things, be eternal, one, unalterable, infinite, and omnipresent. As a result of positing such an argument, Clarke's opponents claimed that he was essentially restating the ontological argument. Clarke would have undoubtedly denied such a

[172] Samuel Clarke, *A Demonstration…,* 8.

claim, for he himself rejected the ontological argument. Nevertheless, the second part of Clarke's argument does have a distinctly ontological flavor. While the second part of Clarke's argument is "ontological," insofar as it concerns itself with what may be derived from the existence of a necessary being, Clarke did not intend for it to be a standalone argument. Hence, one may distinguish Anselm's ontological argument from Clarke's ontological argument. Clarke's "ontological" argument is logically dependent upon the validity of the first half of the argument, the argument for the existence of a necessary being.

Clarke's distinct Newtonianism presents itself when Clarke elaborates on his conception of divine "eternity" and divine "presence." Since time is eternal and space is infinite, Clarke claims that space and time are attributes or modes of God. Regarding this point, Clarke states that "All other substances are *in* space and *penetrated* by it, but the self-existent substance is *not in space nor penetrated* by it, but is itself the *substratum* of space, the ground of the existence of space and duration itself."[173] Since space is infinite in extension and time is eternal in duration, it becomes necessary for Clarke to make both attributes of God. Yet, both space and time are not God in and of themselves, but exist because God exists. In other words, if God did not exist, then neither would space or time. When discussing this point, Clarke formulates what can be viewed as a distinct argument for the existence of God based on the necessary existence of space and time, although Clarke himself did not claim this was a distinct argument. Clarke claims that it is impossible to remove the concept of space from the existent universe, and that when one imagines the universe he or she always has some conception of space. From this point, Clarke concludes that space and time are a necessary aspect of the universe. Clarke then proceeds to claim that both space and time are merely attributes of something, and later identifies that something as God. As Clarke himself was aware, this argument is dependent upon a Newtonian

[173] Samuel Clarke, *A Demonstration…, 105.*

understanding of the universe, particularly on the Newtonian interpretation of absolute time and absolute space.

Chapter five examined Clarke's argument in light of the criticisms leveled against it by David Hume. In the past, Hume's criticisms have traditionally been thought to be decisive. However, this position was shown to be ill-informed on two levels. First, it is unclear, and perhaps unknowable, how Hume himself viewed these objections. The objections themselves represent a small portion of the *Dialogues* and of Hume's writing as a whole. Furthermore, in section IX of the *Dialogues*, it is unclear which character represents Hume's actual position. Cleanthes, who typically represents a scientifically minded theist in the *Dialogues*, is the one who presents arguments that are found elsewhere in Hume's writings, while Philo, the philosophical skeptic and the one usually associated with Hume himself, presents a view that stands in contrast with the arguments of Cleanthes. Secondly, when the objections given by Cleanthes and Philo are examined it becomes evident that they do not present a serious challenge to Clarke's argument. Cleanthes' famous statement, that the notion of a necessary being is nonsensical, does not present a direct challenge to a formally structured argument like Clarke's. In support of this claim, Cleanthes attacks Clarke's claim that it is impossible that there exists an infinite chain of contingent beings. Yet, this argument ultimately fails due to its misappropriation of Clarke's use of the PSR.

In sum, Clarke made a unique and substantial contribution to the formulation of the cosmological argument. Clarke, in his own time, was able to successfully translate the cosmological argument into the modern area through his keen logical insight and detailed knowledge of then contemporary natural philosophy. Unfortunately, the argument went largely unnoticed and Clarke himself is often an overlooked figure of early modern philosophy. Yet,

Clarke's argument has, in recent years, been "rediscovered" and its implications for contemporary metaphysics, philosophy of religion, and natural theology are once again entering into scholarly discussion.

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