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Divine Omnipotence In Descartes' Philosophy

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DIVINE OMNIPOTENCE IN DESCARTES' PHILOSOPHY

BY

ALFREDO RODRIGUEZ

A master's thesis submitted to the Graduate Faculty in Liberal Studies in partial fulfillment of the requirements for the degree of Master of Arts, The City University of New York

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Abstract

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by

Alfredo Rodriguez

Adviser: Professor Douglas Lackey

The present thesis explores various aspects of Rene Descartes' doctrine of divine omnipotence within the context of his overall philosophy and with reference to his medieval heritage. This thesis shows that, contrary to his multiple and explicit statements that God's power cannot be limited in any way, Descartes took a more nuanced position on divine omnipotence that incorporated aspects of the widely accepted medieval position that God's goodness is a constraint on his power. Furthermore, Descartes used the medieval concept of universals as he experimented with the use of modes to explain how a thing's actual existence is possible by virtue of its ability to be clearly conceived.

Dedication

To Damaris, Elijah, and Sophia

Acknowledgements

Lord, thank you for your Providence. I am deeply grateful to my wife for her unwavering love and encouragement throughout the completion of this thesis. I extend my sincerest gratitude to my thesis advisor, Professor Douglas Lackey, for his patience, insightful commentary, and open-mindedness.

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Introduction

At the inception of the modern period a radical perspective on divine omnipotence was introduced by René Descartes. In a series of letters to his Jesuit confidante, Marin Mersenne, Descartes declared that God has creative power over eternal truths, among which are included the laws of mathematics and logic. While the crux of the controversy concerning created truths is in many ways an extension of the medieval debate concerning the priority of God's intellect over his will, nonetheless even at the dawn of the modern age Descartes' assertions were considered bold by his advocates and insolent by his detractors. This reaction is as characteristic of contemporary Descartes scholarship as it was of his immediate critics. Due to his application of mathematics to the physical world, Descartes is seen by historians of science as one of the key figures to have ushered in the scientific revolution. It is not unreasonable to expect a thinker with such high devotion to the power of mathematics to embrace it as an autonomous enterprise, yet we find that with Descartes mathematics is dependent upon God's will. It is worthwhile, then, to investigate to what extent divine omnipotence factors into Descartes' philosophy. Was the doctrine of created truths an aberration in his philosophy? If not, how does this doctrine complement or contradict elements of his overall philosophy?

The present thesis seeks to answer these questions by analyzing Descartes' thought in light of his medieval heritage. Special attention will be given to those medieval philosophers frequently associated with a high view of God's omnipotence with the intention of putting into perspective the extent of the novelty in Descartes' treatment of God's power. The discussion will begin with a review of the *Meditations on First Philosophy*. Other works by Descartes referenced in this thesis are more explicit with respect to divine omnipotence, however the *Meditations* represents the most comprehensive, organized, and mature exposition of his overall

philosophy as it relates to divine omnipotence. The issues brought up in the *Meditations* will be elaborated upon throughout the remainder of the thesis and will be developed in light of the medieval background that set the terms of the discussion in which Descartes participated. That background will be limited to an exposition of some medieval assessments of essences and universals as the metaphysical background against which various positions were taken with respect to what is possible and necessary, and which ultimately informed Descartes' position concerning God's power.

1 Survey of Divine Omnipotence in *The Meditations on First Philosophy*

Descartes is acknowledged as having set philosophy on its course to modernity with his unconventional assessment of the nature and acquisition of knowledge. Rationalism, or the theory that affirms knowledge is acquired a priori through reason rather than sense experience, is said to have first gotten a systematic treatment in Descartes' philosophy. His method of doubt was intended to clear away all dubious truths, i.e. all ideas that are not clear and distinct, and to establish a new and certain foundation for knowledge. In the *Meditations on First Philosophy*, Descartes concludes that the primary indubitable truths are that we exist if we think, and that God exists. From those two conclusions an entire edifice of knowledge is built, including truths concerning the material and mathematical bases of reality. Descartes arrives at these conclusions, first by doubting the existence of specific material objects (e.g., me holding this piece of paper), then by doubting types of things (e.g., hands and feet in general), then by doubting simple and universal concepts (e.g., corporeal nature, including shape, size, extension, number, etc.). This last category, unlike material bodies or general types, appears to be sure and certain because it concerns the essence of things rather than things as they actually exist, and

because they are presented to the mind in a regular and predictable way without any effort on our part. As Descartes puts it, “whether I am awake or asleep, two and three added together are five, and a square has no more than four sides”.¹ But this certainty is specious for two reasons. First, as we shall see Descartes believes God is the creator, not only of the existence of things, but of their essence as well. At the moment let us focus on the second reason this certainty is short-lived: that our belief that a powerful God exists threatens the judgments we make about mathematical truths. At this point Descartes vacillates between the idea that God is the author of deception and the idea that not he, but an evil demon is the true deceiver. In theory, a powerful God is capable of deceiving us about anything we conceptualize. But, since that would run contrary to the belief that God is supremely good and that he is incapable of deceit, Descartes concedes (one wonders if for the sake of argument) that God is not powerful enough to deceive us this way. Instead, he introduces the evil demon to act in the capacity of the deceiver. However, in the third meditation Descartes admits that he can’t help but fear that, not the evil demon, but God is in fact deceiving him.² Ultimately he concludes that since the truths of mathematics appear so clear and distinct to him, and since he believes there is no reason to suppose a God powerful enough to deceive him, he resolves to eliminate such a thought by first proving that God exists, and second, that God is not capable of deception. The former he bases on the fact that we, as finite beings, could not have arrived at the idea of an infinite being unless the idea was placed in our minds by an infinite being. The latter he bases on the fact that God, if he exists in the manner we conceive him, i.e., good, infinite, eternal, immutable, independent, omniscient, and omnipotent, is therefore perfect. Since deception is a kind of imperfection, it is not possible for God to be a deceiver. For example, in the sixth meditation Descartes tells us why God’s goodness does not prevent our own bodies from deceiving us when we are sick. He

reasons that although the body deceives us sometimes, most of the time it does not because God in his goodness created us so that more often than not all our senses work together to produce the appropriate response to a stimuli. But, because we are mind-body composites there is bound to be confusion from time to time in how the two components of our being communicate.³

Effectively, what Descartes believes is that a precondition for the validity of any clear and distinct ideas, including, one would imagine, those involving mathematical truths, is proof of God's existence and essence. This is not yet tantamount to saying mathematical truths depend on God to be real. Although Descartes does believe eternal truths are dependent on God for their essence and existence, his argument here is more subtle, focused primarily on what we can know and when we can know it. We can only know that mathematical truths are certain once we establish that God exists and that he is good. Whether and how eternal truths are related to God are questions Descartes addresses at various points in his career. As we will see later, as early as 1630 Descartes addressed directly the metaphysical dimensions of mathematical truths and their relationship to God. Presently, we should take note that Descartes' approach in the *Meditations* is distinctly epistemological. It is important to keep this in perspective because it has implications with respect to Descartes' overall beliefs concerning God's power over eternal laws.

Despite the existence of an evil demon capable of deceiving him, Descartes discovers one thing he cannot be deceived about: that he exists. Of course, this is the basis for Descartes' famous words "I am. I exist". But, immediately preceding that declaration Descartes states that "*let him [the evil demon] deceive me as much as he can, he will never bring it about that I am nothing so long as I think that I am something.*"⁴ [Emphasis mine] There is at least one thing the evil demon cannot do so long as we think, namely, cause us to cease from existing. In the third meditation, where the existence of God is demonstrated, Descartes expands upon the list of

things the evil demon cannot do, for example to bring it about that “I am nothing, so long as I continue to think I am something; or make it true at some future time that I have never existed, since it is now true that I exist; or bring it about that two and three added together are more or less than five, or anything of this kind in which I see a manifest contradiction.”⁵ Again, it is impossible even for a powerful evil demon to deceive us about our own existence. But notice that with respect to the evil demon deceit is not possible, not because it would be contrary to its nature to do so, but because it would result in a contradiction. Given the evil demon is a surrogate god, could this same impossibility apply to the real God? One wonders whether Descartes’ provocative tone in the statement above is really directed at God himself.

Consequently, according to Descartes there are two ways one can speak of impossibility. Something is impossible to be other than what it is because it is not within its nature to be otherwise, as when Descartes argued earlier that though we may be deceived even about things that seem evidently clear to us, it is impossible for God to be the agent of deception because that would be repugnant to his essential goodness, i.e. impossible per se. Alternatively, something is impossible to be other than what it is due to logical considerations, as when Descartes suggests it would be a contradiction for one to assert that he exists and that he does not exist, not just because two opposing statements are being asserted at the same time, but because an assertion of any kind presupposes the existence of the one making the assertion; it would be an absurdity to accept a claim can be made by someone who does not exist. Given this distinction does Descartes believe either one of them applies to God? To what extent did Descartes agree with his Scholastic predecessors’ firmly held belief that God cannot do what is logically impossible because that would be opposed to his nature? In other words, are the laws

of logic a standard of possibility by which even God must adhere to? If so, how would we explain Descartes' unequivocal contention that the laws of logic are created by God?

2 God's Goodness and Power

Having given a brief synopsis of the key arguments used by Descartes in the *Meditations*, let us consider Descartes' focus on God's goodness as our first order of concern in our pursuit to understand his position on divine omnipotence. In the analysis below I will show how Descartes relates God's goodness to his power, digressing at times to provide the historical context Descartes would have been familiar with that would have influenced how he relates God's goodness and power; reason and will.

By taking God's goodness as his starting point in the *Meditations* Descartes sacrifices God's omnipotence, and by so arguing he joins the long-standing medieval debate about whether God's will is limited by his essence. By stating as he did to Mersenne in 1641 and elsewhere that God cannot lie there is more to the story that depicts Descartes as insincere or misguided in maintaining that God can do the logically impossible.⁶ The reason the evil demon is introduced is because Descartes recognizes God's goodness is a limit on his power. Unlike the true God, the evil demon is not only willing, but capable of misleading us about things we actually consider to be certain. Does this imply the evil demon is more powerful than God? According to Descartes it does not; he is clear the evil demon is less powerful than God. We need to understand, therefore, how a God that is not capable of doing something is supremely powerful. The key to such an understanding lies in the belief that by relegating the ability to deceive to a less powerful God Descartes assumes such ability is not a demonstration of his power, but rather a diminishment thereof, a belief that would be consistent with that held by Scholastics in the

tradition of St. Thomas Aquinas. It is reminiscent of St. Anselm's argument in the *Proslogium* that God is not capable of doing anything that renders him less than omnipotent.⁷ According to Anselm there are a number of things God cannot do. For example, God cannot be corrupted, he cannot lie, and he cannot make what is false true by changing the past, because doing such things would be to do what is not good for him and what should not be done. Anselm was simply following a dogma of Christian theology that had always taught that goodness is of the essence of God. On the surface Anselm appears to restrict God's power through an external norm or standard, but a closer look at his position indicates otherwise. First, Anselm believes, like Augustine before him, that language often betrays the real meaning of certain concepts because it is an imperfect tool with which we communicate. When we say, for example, that God cannot lie, but that man can lie, we are attributing an imperfection to man that we are not attributing to God. Second, Anselm says that by lying God would be subjecting himself to the power of adversity and perversity, which would render him impotent. Therefore, in saying that by lying God would be doing what he ought not to do Anselm cannot mean that God is subject to another standard of goodness because that would undermine his belief that being subject to something else renders God impotent. Consequently, one must ask what possible standard could there be, other than God himself, which could both constrain God's power and keep him from being subject to impotence? Anselm would likely provide the status quo response: there is no other standard; God is limited only by his own nature.⁸ It appears Descartes too is making use of this standard medieval theological doctrine concerning God's nature when he says God does not have the power to deceive us about our own existence. Descartes being eager to defend God's power would have appreciated the spirit of Anselm's argument, particularly the belief that deception on God's behalf would cause his power to be diminished. In fact, his introduction of the evil demon

is a clever way of utilizing the argument for it allows him to avoid the need to even suggest God cannot do something.

There is an important subtlety that must be appreciated with what has just been observed. It is one thing to say God cannot deceive because of his essential goodness; it is another to say God will not deceive because of his will. God will not deceive, either because he cannot or because he chooses not to deceive. Consideration of Descartes' other writings reveals that he is ambivalent about the ultimate reason God does not deceive. On the one hand, he follows Anselm in arguing God's nature is such that deception would be repugnant to him. God always acts without injustice because, though he is not necessarily constrained by an external standard of morality, acting so is internally consistent with his essence; whereas deceit is internally inconsistent with God's nature. On the other hand, Descartes believes God alone determines what deception is; morality is based on God's decrees alone. In his reply to the sixth set of objections to the *Meditations* Descartes reiterates there can't be anything at all that doesn't depend on God, including all order and every law, because otherwise God would not be totally indifferent about what he creates.⁹ Order and law are spoken of here within the context of a moral framework rather than the regularities that occur in nature, although those laws are implied as well. If there was a reason for something being good apart from God's decree, then that reason would have determined God's creation of it, because he always does what is best. Instead God acts indifferently toward any standard that may exist apart from him because he is his own standard. God's indifference is an indication of his omnipotence and good and evil are determined by God's will alone. God doesn't determine, in the sense of drawing a conclusion based on an investigation, what is right or wrong, but he does determine, in the sense of ordaining, decreeing, or commanding, what is right or wrong. But, if God has power over

eternal truths and if moral truths are included among eternal truths why does Descartes insist God cannot be a deceiver? How would it count against God if he is a deceiver? Who would hold him accountable?

In order to explain how God can be constrained by a moral order he created, medieval theologians, especially those of a nominalist bent, resorted to using the *potentia abosoluta/ordinata* distinction, which set the bounds of possibility for God by distinguishing between those things God has chosen to do, and those things he has chosen not to do but has the ability to do.¹⁰ According to Armand A. Maurer, the controversy that led to the distinction between God's *potentia absoluta* and *potentia ordinata*, began in the twelfth century between Peter Abelard and Peter Lombard and continued to develop up to the sixteenth century.¹¹ Theories that distinguished between God's ordained and absolute powers were entrenched in Scholastic theology by the end of the late medieval period and were frequently used to resolve difficult theological problems. One could place the various assessments of the extent of God's power on a continuum, from the more restrictive to the more permissive. Abelard contended God can only do what he has already done, while Lombard held the opposite view.¹² Later Aquinas said what God does by his will and intellect falls under the purview of his ordained power, but other things which he can do but has not so willed are within his absolute power.¹³ Nothing except what implies a contradiction is impossible for God. Once he chooses to act he does so by his ordained power.¹⁴ For Duns Scotus God's ordained power means what is done according to right law (*de jure*); his absolute power what is done irrespective of it (*de facto*). God acts either according to his laws or against them. On the far end of the permissive wing were voluntarist theories that attributed to God's absolute power the ability to do things we would consider unimaginable. For example, many staunch defenders of divine omnipotence

developed highly sophisticated philosophical arguments and made reference to numerous biblical examples of divine deception to support the view that God is under no constraint to abide even by his own moral law.

A supremely powerful God such as was argued for by the nominalists signified that since man is utterly dependent on God, he is obligated to will what God orders him, and not to will what God forbids him. According to William of Ockham “Evil is nothing else than to do something when one is under an obligation to do the opposite. Obligation does not fall on God, since He is not under any obligation to do anything”.¹⁵ Ockham goes beyond his predecessors in saying none of the commandments are necessary other than because God decrees it. Since there is not a fixed natural law of morality, which many theologians in the Augustinian tradition took for granted, there is nothing intrinsically evil which God is compelled to agree is evil. Goodness is defined solely by God’s will, therefore there will never be a time when God does not act morally, because he always acts justly simply by willing something over another. In reference to man, morality is expressed as obedience to God’s decrees, whatever those decrees happen to be at any point in time.

Ockham believed God is not limited by anything with respect to what he can do except by that which involves a contradiction.¹⁶ Therefore, by his absolute power God can even produce hatred of himself for He is under no obligation to anybody or anything.¹⁷ Later in his career Ockham concedes there is a logical problem with the claim God can command us to hate him.¹⁸ Ockham himself sees the contradiction in the *Quodlibetal Questions*.¹⁹ If hatred of God is a moral requirement a person who obeys God out of love for God would have to hate him at the same time he loves him. This is a clear contradiction which Ockham would otherwise have not allowed. Ockham certainly sees the difficulty with maintaining this position, which is

perhaps why he refrains from asserting that a human being could actually accomplish such a command, for hating God in order to love him would involve a contradiction.²⁰ What is interesting about Ockham's answer is that he does not back away from the claim that God can command an act of hatred. What he repudiates is the claim that one could fulfill such a command. Even in his repudiation, he still allows for some form of compliance with the command. Why doesn't he back away? Some authors claim Ockham is technically correct if we keep in mind that God is accountable to nobody, therefore whatever he commands is right. If so it is not, strictly speaking, a contradiction to say he can order hatred of himself.²¹ The significance of this passage for our discussion lies in the fact that even Ockham, one of the supposed arch-nominalists and defenders of God's omnipotence, is forced to concede, albeit reluctantly, a point he felt strongly about. He wants to preserve God's omnipotence above all, but he realizes in order to do so he has to admit there is at least one act of goodness man is unable to fulfill. As untenable as Ockham's position might seem, he and the Scholastics seldom, if ever, allowed that God could do something involving a logical contradiction. For the most part, medieval theories making use of one form or another of the dialectic worked within the bounds of logic.

One of Ockham's followers, Gabriel Biel, also used the *potentia absoluta/ordinata* distinction to maintain that God acts according to laws he freely established and can do that which he has not yet chosen to do as long as it does not imply a contradiction.²² Like other nominalists before him Biel contended God does not will something because it is good, rather things are good because they are accepted by God.²³ Biel agrees with Scotus and Gregory of Rimini that the second table of the law is not strictly necessary; God could change it, although he has chosen not to. But he disagrees with Ockham that the first table of the law can be altered,

thus he disagrees with Ockham that God could command hatred of himself.²⁴ The second table is practically immutable; however, because it is not a direct extension of natural law, there are special cases when God has dispensed with certain parts of the second table.²⁵ Nevertheless the current moral order is not arbitrary but reliable, for by his ordained power God has established it before the foundation of time. Biel holds that sin is contrary to right reason rather than to eternal law or divine reason because even if per impossible God should cease to exist, or if divine reason should err, we would still sin if we acted against right reason. This would be the case even if there were no right reason at all. By making sin something that would result independent of God, it appears Biel is holding to a standard of morality that is likewise independent of God. But, the reason Biel affirms this is because of his absolute trust in the permanence and reliability of God's order established by his ordained power. The moral order - natural law - is reliable because it is based on the eternal law of God. The eternal law is dependable because it is not subject to God's supposed arbitrary will or reason, but to his ordinations.

Based on the previously described medieval framework, Descartes could argue as follows. God binds himself to adhere to the laws he created. He does this at a theoretical point in eternity past when there were an infinite number of moral orders open to him. By his absolute power he could have determined that deception is praiseworthy, but by his ordained power he has in fact chosen to make deception evil in our present world. This and other situations may turn out to be good candidates for an argument based on the powers distinction, but Descartes did not so argue, or at least his use of the dialectic is not apparent from his published work. The closest one may come to finding an argument in Descartes along those lines is his statement that God cannot now command us to hate him, although he could have.²⁶ Instead, Descartes takes exception to those supposed examples of divine deceit found in the Bible that were

sometimes used by nominalists. We have already mentioned his opposition to the belief that God can lie. In the second set of objections to the *Meditations*, Mersenne makes mention of some scholastic proponents of divine deception, specifically Gabriel Biel and Gregory of Rimini.²⁷ Their examples include the promised, but unfulfilled destruction of Nineveh, the hardening and deception of Pharaoh, the false prophecies of the Old Testament prophets, and others in which God may have acted as a doctor who sometimes uses deception with wisdom to treat a child's well-being. Descartes prefaces his response to this objection by declaring that he and all past and future metaphysicians and theologians agree God is not a deceiver.²⁸ Any supposed biblical examples of divine deception are really a function of the anthropomorphic style of writing found in it, which typically assigns human emotions and qualities to God. Descartes has chosen to speak more philosophically in the *Meditations*, so that when he says God cannot lie he is using that term in a strict and formal sense, meaning that God cannot deceive us with malice or ill-intent. To the examples used by Biel and Rimini Descartes replies by not considering them examples at all. God did not lie to the Ninevites, he merely warned them. God did not harden Pharaoh's heart in a positive sense, he withheld his Grace to prevent a change of heart from occurring. And in the case of the false prophets, God sometimes uses secondary means to carry out his purposes for the well-being of his people, and in this way he is kept free from the charge of lying. Descartes emphasizes both God's goodness and God's power with little need to reconcile the two attributes. There is, then, evidence to support the view that Descartes is as concerned about preserving God's goodness as he is about preserving God's omnipotence. Unlike his nominalist predecessors, Descartes is not willing to accept a moral framework based on God's command alone, for that would require compromising God's essential goodness.

One may be justified in arguing that according to Descartes God's goodness demands that he limit his power by acting according to reason. To see this more clearly let us take as an example Descartes' position that our sense of order in and about our world must be true, for otherwise God is a cosmic deceiver. In this case "our sense of order" is a euphemism for the laws of logic, so that what is really meant is that God subjects himself to the laws of logic for our sake because he created us as rational creatures. Not so acting would render even the simplest thought utterly unintelligible. Now, we humans find the proposition that a perfect God can have an imperfection like deception incomprehensible. Given that God's goodness demands that he act according to reason, such incomprehensibility is itself an indication that God cannot have any imperfections, including that of deception, so that God's goodness attests to itself. Consider again Descartes' introduction of the evil demon to act in the capacity of the deceiver. Descartes surely must have understood the implications of taking this approach, for although it gives the impression that something is gained by preserving God's goodness, it also implies that God's power is limited to what we can conceive. As another example, Descartes says God can bring about whatever we can clearly understand, for the only things that are impossible for God are those that involve a conceptual contradiction.²⁹ This approach gives God great latitude in what is within the bounds of possibility for him, yet while Descartes' intention is to extol divine omnipotence, he unwittingly asserts that our minds limit, or at least indicate the limits of possibility for God. Again, if Descartes is correct that God is not powerful enough to deceive us that intimates that our clear ideas are powerful enough to prevent God from deceiving us. Therefore, the unintended consequence of Descartes' argument that God can do anything that is not a conceptual contradiction is that it actually limits God to doing only what is conceivable to

us. Descartes' desire to shield God from accusations of acting contrary to the laws of logic in order to preserve God's omnipotence actually serves to undermine divine omnipotence.

Yet, we must consider the evidence further before we draw this sort of conclusion, for historically Descartes has been interpreted as fundamentally believing God cannot be limited in any sense. Curiously, Descartes is not as accommodating to the medieval position on the subordination of the laws of logic to God's goodness as he is to that of the subordination of God's power to his goodness. It is imperative to understand that the role logic plays is ministerial, that is, it assists the mind in making determinations about what is true or false, possible or impossible, coherent or incoherent in our present order. But Descartes does not depict logic either as an independent feature of the world, or as an essential feature of God himself; in fact the laws of logic are ultimately dependent upon God, not the other way around. To understand this crucial feature of Descartes philosophy we must appreciate the fact that whereas the medieval theologians, including those stalwart defenders of divine omnipotence, took it for granted that God cannot do the logically impossible, Descartes' opts to shift the locus of impossibility to the human mind. When confronted with examples of things God could possibly not do because of its apparent logical impossibility Descartes prefers to say those things are conceptual contradictions, i.e. contradictions that take place in our mind because of our epistemological makeup, rather than logical contradictions that would limit God. But he goes further by saying the very fact our minds are finite precludes us from suggesting God is limited to doing what we can conceive. Toward the end of his career Descartes tells Henry More that out of humility we ought not to say something is impossible for God just because we cannot conceive it.³⁰ In fact, throughout his career Descartes frequently asserted God's power and goodness are infinite and we shouldn't presume that our imagination or anything can limit him.³¹

2.1 Mountains without Valleys

One of the most vigorously discussed statements along these lines is Descartes' assertion that God can make mountains without valleys. In the historiographical literature some have interpreted this assertion and others like it as aberrations in Descartes' philosophy. Yet, while certainly not representative of modern, or even medieval, philosophical thinking, it is consistent with the rest of Descartes' philosophy.

The earliest instance of the idea of a mountain without a valley is found in the fifth meditation where Descartes attempts to prove the existence of God by drawing a parallel between God's existence and essence and a mountain and a valley.³² It is inconceivable that in either of the two examples one can imagine the former attribute without the latter attribute, just as it is inconceivable that the essence of a triangle does not include the idea that its angles are equal to two right angles. In the first objection to the *Meditations*, published together with Descartes' reply to the objections in the first edition of the *Meditations*, Johannes Caterus, a Dutch priest and theologian writes that the analogy of the mountain without a valley is the "lynchpin" of the entire structure of Descartes' argument for the existence of God.³³ But he takes exception to its implications, for in the same way that from the idea that a mountain cannot exist without a valley we do not prove that mountains and valleys exist, from the idea that existence is part of God's essence we do not prove that God exists. All we can say is that *if* mountains exist, they are such that a valley always exists with it as well, just as all we can say about God is that *if* he exists, he is such that existence is part of his essence. Caterus bases his argument on St. Thomas' reply to an objection he proposed against his own argument that the proposition "God exists" is not self-evident.³⁴ The objection echoes St. Anselm's ontological argument, which concludes the existence of God from the fact that God is a being than which

none greater can be conceived, for only the greatest being will have existence in the mind as well as in reality. In his reply to the objection St. Thomas replies that one can only draw this conclusion if it is first accepted that there is a being than which none greater can be conceived. Since that premise is not accepted by atheists, all the argument proves is that if there is such a being, then that being is God. Caterus identifies Descartes position with that of the objector's, and he identifies his own with St. Thomas'. In response, Descartes first distinguishes his own argument from St. Thomas' objection by asserting that his, and not Thomas', is valid because the conclusion that God exists is drawn from the premise that we clearly and distinctly perceive the essence of God, which itself is based on a prior premise that what we clearly and distinctly perceive is true.³⁵ Second, Descartes distinguishes between possible and necessary existence. Possible existence belongs to everything we can conceive, but necessary existence belongs only to God. Therefore, although a mountain without a valley only exists in our mind, God exists in reality because his existence is necessary. Descartes believes it is a contradiction to say we understand the concept of God then deny that existence is part of the essence of God because God's essence and existence are indistinguishable.

Another early manifestation of this idea is captured in a letter to Guillaume Gibieuf where Descartes discusses his certainty that knowledge of things outside us results only by means of our ideas about them.³⁶ Put another way, the content of our ideas is by necessity in the things themselves. He then goes on to apply this principle to ideas which we can distinguish in our minds, but which in reality appear together. For example, the soul and the body are a unit which cannot be separated except conceptually. Yet, as long as we can make that mental distinction between body and mind it must be possible in reality because if we can think it God can make it so. Based on this principle Descartes declares "we have no reason to affirm that

there is no mountain without a valley, except that we see that the ideas of these things cannot be complete when we consider them apart; though of course by abstraction we can obtain the idea of a mountain, or of an upward slope, without considering that the same slope can be travelled downhill.”³⁷ The correspondence between our ability to conceive the separation of a mountain and a valley and their ability to be separated in reality is guaranteed by the fact that “otherwise God would be a deceiver and we would have no rule to make us certain of the truth”.³⁸ This is an interesting statement for a number of reasons, one of which is that it reveals Descartes’ psychological need for order and desire to depict God as good rather than capricious or malevolent in any way. Again, God’s goodness is axiomatic for any thinking to be possible at all. It is an atypical example of divine omnipotence because it suggests God must be able to do certain things that seem impossible in order to preserve his goodness, contrary to other theologians’ use of this example to depict God’s omnipotence as a threat to his goodness. More significantly, in this iteration of the analogy, Descartes alters the example from the way he first used it in the *Meditations* by focusing on God’s omnipotence rather than on God’s existence. Whereas in the *Meditations* the proposition of a mountain without a valley is inconceivable without qualification, in the letter to Gibieuf Descartes says we can abstract one from the other. It is not entirely clear what Descartes here means by abstraction, but he says, for example, that “when I consider a shape without thinking of the substance or the extension whose shape it is, I make a mental abstraction.”³⁹ It involves ideas that are derived from other ideas “to which it is joined in such a way that although one can think of the one without paying attention to the other, it is impossible to deny one of the other when one thinks of both together”.⁴⁰ The suggestion is that an abstraction is an inferior or incomplete thought because it is merely a consideration of various aspects of a complete or “richer” idea. Yet, it appears Descartes believes these inferior

ideas can be given the perfection of existence, since he has just claimed that God can bring it about that a mountain and a valley can exist independently of one another.

Another way of understanding Descartes' position on abstraction is to consider that he is responding to an objection which made several references to St. Thomas. It is not unreasonable to assume he takes abstraction in a Thomistic way, or is at least familiar with St. Thomas' understanding of it. St. Thomas defines abstraction as an act of the intellect that occurs either when a universal is considered apart from the particular or when a form is considered apart from matter.⁴¹ In the first way the particular does not remain in the intellect after the abstraction, but in the second way both the form and the matter remain in the intellect. Further, abstraction takes place either by understanding one thing separate from another, or by understanding something in isolation.⁴² Notice, however, that in a passage where Descartes comes close to providing a definition of abstraction, he says abstraction means to "separate a substance from its accidents...i.e. [to] consider it all on its own without thinking of the accidents.", as opposed to distinguishing, which involves considering both a substance and its accidents.⁴³ So, whereas Aquinas posited two ways of abstracting, Descartes considered those two ways to be two separate intellectual activities altogether, one distinguishing, the other abstracting. And, he equates what is abstracted: substance from accidents with form from matter. Further Descartes suggests distinguishing produces a better understanding of the substance than does abstracting. In addition, an abstraction makes it possible even for ideas with true and immutable natures to be split up in the mind, but only a clear and distinct understanding of an idea with a true and immutable nature will show us that it cannot be so split up in reality.⁴⁴ Put another way, abstraction allows for errors to be made concerning true and immutable natures, which is why some may understand existence is part of God's essence, yet deny that as a result God must

really exist. The takeaway is that Descartes believes that while the idea of necessary existence cannot be applied to a body, such an idea can be applied to a supremely powerful being who possesses all perfections, including existence itself. A supremely powerful being by its very nature possesses the power to bring about its own existence, even if we cannot at first see that all its perfections are by necessity bound to each other. The attribution of necessary existence is true of this being, not as a result of our intellect, but because it must be so by its very nature.

Several years later Descartes returns to the example of mountains without valleys in a correspondence with Antoine Arnauld, who by Descartes' own admission seven years earlier offered the best objections to his *Meditations* and understood Descartes' position the most.⁴⁵ In the letter to Arnauld Descartes says we sometimes think a vacuum is possible, even though such a possibility is difficult to recognize, first, because we forget that nothing can exist without any properties, and second because we refer to God's infinite power without considering that some things we attribute to God involve a conceptual contradiction, i.e. they are inconceivable.⁴⁶ However, it wouldn't be proper to say God cannot bring something about, not even that he cannot make a mountain without a valley, or that $1+2 \neq 3$. The most we should say is that such things involve a conceptual contradiction, i.e., they are inconceivable. Again, Descartes believes that ordinarily conceptual contradictions are an indication of the impossible, but they are not indications of what God is necessarily bound by. Though inconceivable, we simply cannot say they are impossible for God.

One of the most striking features of Descartes approach to divine omnipotence is the belief that our entire framework of conceivability is determined by God in the first place. Descartes believes God can freely choose to make it untrue that the three angles of a triangle equal two right angles, and make it the case that contradictories can be true at the same time,

because although our minds are finite God's power has no limits.⁴⁷ The key to understanding Descartes' rationale for believing God is not bound by what we can conceive lies in this, that we have been created to conceive possible what is ordained by God to be possible, and impossible what is ordained by God to be impossible. God is not compelled by necessity to make contradictories not to be true at the same time, so that even if some truths have been willed by God to be necessary, it is not necessary that he so will them as such. In the end, there are no logical impossibilities for God, even though logical rules are embedded in our conceptual apparatus. God can make a mountain without a valley, not only because, as he told Mesland, ideas which are distinguishable in the mind can be separated by God's power in reality, but because even if we had not been able to conceive it, that would only have been a feature of our epistemological makeup, not an indication of divine limitation. Even something that is not even remotely distinguishable in our minds, such as the proposition that $1+2\neq 3$, is possible for God because any impossibility occurs only in our mind; the logical contradiction occurs in our mind, not in reality. To use the familiar medieval refrain, our reasoning corresponds to the currently ordained order, but by his absolute power God could have ordained an entirely different order. In that possible world our minds would reflect its order, e.g. that $1+2\neq 3$ is true. Regardless of the established order, there is a correspondence between what we conceive about the world, and how the world is in reality. But reality is not necessitated other than in the sense that if God ordained it so it must be so. It turns out the law of non-contradiction is a function of our mind that has been designed so by God. That is why Descartes believes something can seem to be logically impossible for us, but possible for God. Descartes' claim is that our limited reasoning abilities should not preclude us from ruling out entirely what seem to be logical impossibilities to us. Our categories of thought and reason are created by God for our sake and are a function of

our epistemological makeup. One might ask how we can make that determination without invoking logic. The answer is we cannot. Any statement at all requires adherence to logic in some form or another. However, in our reasoning process we don't normally search for the source of the logical rules we employ; we take those rules for granted. Descartes is saying those rules are not autonomous because they originate from God. Perhaps God has given us an initial amount of reasoning abilities, sufficient to allow us to make basic assumptions, connections, and arguments. But we should not attribute more to that than we ought; our logical rules do not have priority over God's abilities.

It appears, therefore, the statement "God is good and God is a deceiver" should not be taken as a contradiction from God's perspective because God is not bound by the laws of logic. We are certainly bound by the laws of logic, so the statement may be a contradiction for us, but it is not a contradiction for God. Nevertheless, there is little evidence Descartes desires to defend the position that God can be good and not good at the same time in order to assert God's power; he is not willing to sacrifice God's goodness for God's power. He prefers to take God's goodness in an unqualified sense, but his power in a qualified sense, i.e. he is intractable in his conviction that God is good, but he takes a nuanced approach to God's power that indicates flexibility in how he interprets divine omnipotence. Perhaps Descartes refrains from arguing God can be good and a deceiver because he is not convinced such an idea is possible even for God. We have learned so far that contrary to Descartes' intended effect, conceptual contradictions can actually limit what God is able to do. But since conceivability is determined by God in the first place we cannot allow conceptual contradictions to determine what is possible for God. But we also know Descartes takes God's goodness to be axiomatic. It is plausible, then, that Descartes believes the contradiction that arises from affirming "God is good and God

is a deceiver” only occurs because not even God can make it the case that he can remain good while deceiving us. The question we must ask is whether Descartes himself ever admits there are absolute impossibilities for God. One might be surprised to learn there are indications he would have answered that question affirmatively.

2.2 Absolute Impossibilities

Several examples may be offered that suggest Descartes accepts limits to God’s power, albeit reluctantly. First, according to Descartes it is impossible for God to be able to diminish himself in any way, whether his omnipotence, goodness, or his existence. On one occasion Descartes corrects an anonymous correspondent’s phrasing of his thoughts concerning God’s power by telling him that instead of saying “God does not have the faculty of taking away from himself his own existence”, the correspondent should say “It is a contradiction that God should take away from himself his own existence; or be able to lose it in some other way”, because otherwise it would indicate an imperfection in God.⁴⁸ The rephrasing is an obvious rhetorical tactic that fails to conceal the glaring incoherence of maintaining a position that attributes absolute and utter power to God. Yet, there is a subtext in this passage. This would have been a good opportunity for Descartes to issue his standard caveat that God is not limited by contradictions, but he does not in fact do so. The omission is likely a further indication he recognizes there are indeed some things outside of God’s power. In this case it includes anything that implies a diminishment of God’s very existence. This, once again, is Anselm’s argument that God cannot do anything that reduces his power in the very act of doing it. Certainly, taking away one’s existence reduces one’s power.

Second, in the Letter to Mesland referenced above, Descartes concedes some things are so evidently contradictory that we cannot imagine them being otherwise. The example he uses asks whether God can make a creature independent of him. If God could make a creature independent of him, that creature would never have been made, which is a contradiction. Or if God could make such a creature, that creature would not be subject to God's sovereignty, in which case God would not be completely sovereign – he would not be God. God's sovereignty is intimately tied to his omnipotence, for only an omnipotent God can truly rule over all creatures. While Descartes declines to conclude from this example that God is not omnipotent the flaws in his argument are apparent. If, as Descartes insists, we have to accept the possibility that God is so powerful that he can make an independent creature then he would be omnipotent and not omnipotent at the same time. Descartes does not offer a way out of this contradiction, perhaps because he could not or because he does not wholeheartedly believe the premise is true.

Third, in a letter to More, Descartes discusses three examples of divine omnipotence, the first and third of which seem to indicate limits to God's power.⁴⁹ The first example has to do with whether God can take away the contents of a container without its sides meeting. More wants to defend God's omnipotence by saying such an act is possible for God. Descartes does not want to say something is impossible for God, but he knows what More is saying cannot be true, i.e., it is not possible even for God to allow the existence of a vacuum. Descartes says he has enough humility to recognize his mind is finite compared to God's infinite power, which prevents him from saying God cannot do something that is inconceivable. He only goes as far as saying such things involve a contradiction. In the second example, Descartes says atoms can be infinitely divisible by God because although we cannot picture the parts of such an atom, it wouldn't be a contradiction for it to be so divided. In his final example Descartes says some

things that have been done cannot be perceived to be undone because they are “altogether” impossible, even for God. Apparently God cannot make the past never to have been because that would be a contradiction. The use of the phrase “altogether” impossible is a strong choice of words that leaves little room for interpretation. Some things cannot be done by God in any way, shape, or form.

Finally, based on various condemnations of Descartes’ work by political figures, universities and several religious orders, we can deduce Descartes accepted some limits to God’s power. For example, in 1662 The Faculty of Theology at Louvain condemned Descartes’ proposition, supposedly from the *Principles of Philosophy*, that there cannot be a plurality of worlds.⁵⁰ In 1678 the Jesuits themselves issued a list of prohibited Cartesian propositions, the last two of which stated against Descartes 1) “That there is no repugnance in God’s creating several worlds at the same time”, and 2) “That the void is not impossible”.⁵¹ The Jesuits again in 1706 officially condemned Descartes’ view that “No substance, whether spiritual or corporeal, can be annihilated by God”.⁵² In general, we must be cautious in how much weight we give to criticisms from hostile sources, especially when the target is no longer alive to defend his position. However, the fact these negative criticisms are similar in content yet originate from diverse sources lends them a measure of credibility.

Having considered the above evidence which suggests Descartes accepts some things are impossible for God, how do we reconcile these findings with what we learned earlier, namely that when we say a proposition is a contradiction, we should not go beyond that point and conclude that God cannot do what we cannot conceive? Descartes appears to want to hold both that God is omnipotent and that his power is limited in certain ways. First of all, Descartes believes that even in the above-mentioned examples we should be careful not to say God lacks

power, because in the non-performance God actually preserves his power and insulates himself from the charge that an imperfection can be attributed to him. These examples do not indicate a defect in God's power because we would only attribute a defect to God if he could not do something we distinctly perceive to be possible, not if he could not do something that we perceive to be impossible. But, Descartes cannot fall back entirely on this defense because he has already stated earlier that our categories of perception are determined by God in the first place. God has stacked the deck to prevent us from ever being in a position to imagine something possible that might in reality be impossible for God. Neither can Descartes say he does not count the law of non-contradiction among eternal truths, using as a basis the claim that if eternal truths are created by God he would be limited by what he creates. Such a defense is not open to him because he has committed himself to including "all order and every law" among those truths. In order to cure the inconsistency Descartes does not need to decide between either giving up on the idea that God is able to determine our conceptual limitations through his will alone, or qualifying his assertion that certain things are altogether impossible for God. He could avail himself of a medieval defense to the problem of the independent status of eternal law which says that some things are impossible for God, not necessarily because he does not have the ability to will such things, but because doing them is contrary to his very nature, which is the source of eternal truths in the first place. Eternal truths are not external to God because they are reflections of God's very nature, and as such they can never be considered to be external to God. We will look at this argument in more detail in the next section.

If our goal is to insulate Descartes from the charge of inconsistency rather than to insist that God is not subject to the law of non-contradiction then we might consider an alternative approach which retains as much of God's power as possible. Descartes may argue

that in order to cure the inconsistency God would need to be acknowledged as being subject to the law of non-contradiction, but a clarification would need to be made regarding when the law actually applies. To that end a distinction needs to be made between a conceptual contradiction and a contradiction simpliciter, thereby maximizing the things that are within God's power to do by including only a few things in the latter category. As regards absolute contradictions, not only can we not conceive certain things being possible, they cannot be brought about in reality even by God. The reason they are impossible is because they involve logical contradictions, which are ultimately reduced to the law of non-contradiction. In contrast to logical contradictions, Descartes believes conceptual contradictions are functional impossibilities, i.e., they represent propositions that seem impossible only because our limited minds render them inconceivable, but they are not impossible for God. For example, the law of non-contradiction would be violated when we say the past can be undone, because that would mean that something existed then even though now it is the case that it did not exist then. By contrast, Descartes would have to believe the law of non-contradiction is not violated when we say $1+1 \neq 2$, since he has already committed to saying such an occurrence is possible. Nor would it be violated when we say there can be a mountain without a valley, because earlier he suggested that although such an occurrence is inconceivable, it does not violate any logical laws. Admittedly, this way of arguing is perilous to navigate, first, because one could argue the laws of mathematics are reducible to logic, as is the idea of mountains without valleys, which is really a geometrical problem. More importantly, Descartes seems to make no distinction between the type of contradiction inherent in a vacuum and that found in a mountain without a valley. Again, to be consistent with his overall statements concerning impossibility, I have suggested Descartes could be interpreted as making a distinction between functional and logical contradictions. That being

the case, Descartes would have to assert that a vacuum would be a logical contradiction because that is akin to saying something exists – a vacuum – which is not a thing at all, meaning that a nothing exists. In fact, Descartes states explicitly that the existence of a vacuum involves a contradiction because we have the same idea of matter as of space.⁵³ Since the idea of matter and space represents a real thing to us, it would involve a contradiction to say that something real (matter) is not real (space). Now, in the 18th point in *Principles of Philosophy*, Descartes poses the difficulty of explaining “How to correct our preconceived opinion regarding an absolute vacuum”, which opinion is expressed when we say God can preserve a vessel without a body to fill it. To such a misconception he offers the corrective that

Although there is no connection between a vessel and this or that particular body contained in it, there is a very strong and wholly necessary connection between the concave shape of the vessel and the extension, taken in its general sense, which must be contained in the concave shape. Indeed, it is no less contradictory for us to conceive of a mountain without a valley than it is for us to think of the concavity apart from the extension contained within it, or the extension apart from the substance which is extended; for, as I have often said, nothingness cannot possess any extension.⁵⁴

By focusing on the fact that vacuums cannot have extension – since only things can have extension – Descartes draws a connection between a vacuum and a mountain and a valley; the mountain is the extended thing and the valley is the concave shape that is formed by it. Both, then, are logical contradictions that represent absolute impossibilities. Thus, even the less ambitious goal of simply preserving consistency in Descartes’ views on divine omnipotence is difficult to overcome.

3 Eternal Truths

A consideration of Descartes' early writings will provide the requisite background to understand his thoughts concerning the nature of the laws of logic and mathematics, or what he would describe as the eternal truths. In 1630 René Descartes responded to a series of correspondences initiated by Marin Mersenne concerning the nature of God's power and its relation to eternal truths. Marin Mersenne was by far Descartes' chief correspondent so we have to assume the two men had a fair amount of influence on each other. In the letters written in 1630 we see the extent to which Descartes believes God's power reaches. In fact, few documents in medieval philosophical literature reveal a bolder declaration of the unlimited nature of God's power. Descartes' letters to Mersenne were written about ten years prior to the *Meditations* so they obviously do not reflect his most mature thinking on the subject. Yet, as is evident from his middle and later writings, he remained steadfast throughout his life in his insistence that eternal truths are produced by God. Based on Descartes' responses we can assume a measure of hesitation on Mersenne's behalf with respect to Descartes' assertion that God created eternal truths. Since only Descartes' responses remain extant we need to make inferences about Mersenne's motivations for focusing on this topic in the first place. A survey of Mersenne, and of course Descartes', intellectual background will provide clues, not only to his reaction to Descartes' letter, but to Descartes' reasons for taking such a bold stance on divine omnipotence. As we shall see, a principle feature of the two men's intellectual framework is controversy concerning long-held metaphysical assumptions concerning essences, universals and by extension, to natural law.

Although Mersenne was not a Jesuit by conviction he attended the Jesuit college of La Flèche contemporaneously with Descartes. At La Flèche both young men would have

received a thorough humanist education, concentrating on poetics, rhetoric, and the classics in the first two years, and ethics, logic, mathematics, and physics in the last three years.⁵⁵

Mersenne lived in Paris and wrote several devotional religious works and also wrote on such topics as natural philosophy, mathematics, music, and theology. He was particularly interested in establishing mathematics as a true science and used it as a tool to bolster many of his arguments.⁵⁶ While his works are acknowledged as important intellectual contributions in their own right, Mersenne's principal contribution to 16th and 17th century scholarship was his role as a disseminator of the latest scientific and philosophic ideas. Significantly, he was pivotal in the publication of Descartes' *Meditations on First Philosophy* and was a proselytizer and advocate of the works of other luminaries such as Galileo.

Mersenne had a high view of mathematics, according it the status of a true science at a time when the scientific status of mathematics was in question. For centuries dating back to Aristotle, science (*scientia*) had been defined as any field of study whose conclusions were demonstrable via syllogisms that proved their certainty. More specifically, a demonstration is a type of syllogism that produces knowledge because its premises are necessary and related in such a way that the conclusion is necessarily true.⁵⁷ According to Aristotle the basis for the necessity of a premise is that something belongs to the subject in every case, in its own right, and universally, i.e. insofar as it is itself. For example, "two right angles belong to a triangle insofar as it is a triangle, since a triangle is equal in its own right to two right angles".⁵⁸ In the *Metaphysics* Aristotle succinctly identifies what belongs to the subject in its own right as its essence.⁵⁹ Therefore, what determines the necessity of a premise is the essence of its subject. Aristotelian essentialism became entrenched in Christian and medieval thinking until the beginning of the 14th century when Ockham and the nominalists challenged the long-held

assumptions about essences. Nominalism did not make the same inroads into Jesuit theology and philosophy as it did in other theological circles, but after two centuries of nominalist propaganda, there were few places across Europe where it had not made its mark. Mersenne, who was a thinker on the cusp of modernity, gradually came to reject the essentialism of medieval thinking. He concluded that since we cannot know divine ideas directly, we cannot know the essence of things directly either. Consequently, Aristotelian natural philosophy seemed untenable to him.⁶⁰

Mersenne and his contemporaries' insistence on our inability to know essential natures was a primary reason for employing a probabilistic account of knowledge and nature. Yet, while Mersenne adopted what has been called "mitigated skepticism" concerning the true nature of things, this does not mean he believed certain knowledge was unattainable; he merely wished to avoid being dogmatic about claims to knowing the true nature of things.⁶¹ In *The Truth of the Sciences*, Mersenne's Christian philosopher accepts the division of the sciences according to how their objects are apprehended by our senses, which is a sort of perspectivism. Nevertheless, metaphysics, which teaches that everything "that is and has an essence is one, true and good", is less prone to interpretation because its objects are taken in an absolute sense. The axioms of metaphysics and logic are "so true that it cannot be doubted". Even physics, the most doubtful of the sciences, has known objects, including body, motion, and quantity, which cannot be denied.⁶² Mersenne followed a current in medieval thinking that proposed an alternative – Augustinian – road towards the attainment of certain knowledge. In *Contra Academicos* Augustine mentions three sources of knowledge that provide certainty and by themselves guarantee the success of a demonstration: the senses (under normal circumstances), mathematics and logical axioms, and the syllogism itself.⁶³ The Protestant theologian and intellectual, Philip

Melanchthon, as well as the Jesuit Luis Fonseca, agreed to these three sources of certainty, along with the claim that many things can only be known probabilistically.⁶⁴ Of the three sources of certain knowledge mentioned Mersenne placed the greatest emphasis on mathematics, both due to its superior role in demonstrations and to its practical utility.⁶⁵ Consequently, in contrast to Aristotelian physics, mathematics was a true science because it had indisputable demonstrative qualities. Mersenne was modest in his claims to certain knowledge; he emphasized the probabilistic aspects of nature, but he did not succumb to the extreme skeptical philosophies prevalent in his time. On the contrary, Mersenne fought vigorously against academic skepticism by adducing the scientific status of mathematics as his chief intellectual weapon. He also defended his position against his fellow Jesuit critics who questioned how mathematics could be considered a science if its objects did not have objective reality. Put another way, if mathematical referents do not have an essence what is the basis for including them as parts of essential propositions? Mathematics, protested these Jesuit metaphysicians, referred to non-real entities, which were no entities at all. They perhaps took their cue from St. Thomas who states that mathematical entities are only logical entities, not real entities.⁶⁶ Curiously, St. Thomas seems to suggest mathematics can retain its status as a science even if its subject concerns logical entities rather than real entities. But the Jesuits insisted non-real things cannot be defined, and if they cannot be defined they ought not to be part of a demonstration. This was a serious attack on the validity of mathematics and its ability to provide certain knowledge, to which Mersenne and others such as Christopher Clavius and Josephus Blancanus responded by saying that the referents of mathematical objects were individual things.⁶⁷ Just as shapes in nature exist as imperfect copies of their perfect ideal, numbers are displayed in objects of nature

as instantiations of their ideal numerical counterparts. In other words, numbers are not just abstract concepts invented by mathematicians because they exist in numbered things.

Mersenne employed another argument to support the idea that mathematics had an objective reality. Not only do mathematical entities exist in sensible things, they exist in the intellect as well. Mersenne often compared God to a unity, and by doing so he adopted the traditional medieval view that God is a simple being. This traditional understanding of God brought with it the problem of explaining how a simple God could bring about a multiplicity of effects displayed in everything that is created. The medieval theologians typically followed Augustine, who adopted platonic Forms as a prototype for what he would identify as the divine ideas. Divine ideas, he claimed, are patterns in God's mind that serve as the foundation for all creation.⁶⁸ These seed-like patterns, or principles, when they correspond to created things, are known as the *rationes seminales*.⁶⁹ The medieval theologians and philosophers after Augustine reasoned God has one all-encompassing idea of multiple ideas as they are seen in his creation. Divine ideas exist not as entities separate and distinct from God, but rather as individual reflections of God himself, because God knows all created things in one eternal vision, not as individual things.⁷⁰ The *rationes seminales*, in turn, yield the *rationes aeternae*, which according to Augustine are the bases for eternal truths, which include number and mathematics, and are recognized as such when we judge degrees of perfection in things. Thus, when we say something is more beautiful than something else we acknowledge a standard or idea of beauty by which we compare one thing's beauty to another. The acknowledgment of such a standard is facilitated by divine illumination, which is a God-given awareness of the truth of things. While divine illumination allows one to see truths as eternal, it does not allow one to see eternal truths

or ideas in themselves. Eternal truths are reflections of God's own nature from which they derive their immutable character.

Augustine's teaching on divine ideas remained a dogma of Christian theology for centuries until it waned during the high medieval period. Despite the fact that Aquinas modified it by substituting divine illumination for abstraction and by denying *rationes seminales* and focusing on a hylemorphic, i.e., Aristotelian form/matter, interpretation of substance as the basis for the multiplicity of created things, he adhered to the basic understanding that creation is based upon God as its ultimate exemplar.⁷¹ Augustinian philosophy experienced a renaissance in France during the 17th century.⁷² Mersenne himself used Augustinian arguments in his own philosophy, particularly in his understanding of mathematics and natural philosophy, and he accepted divine illumination as well as the claim that we do not have the ability to know the essence of things.⁷³

Now, Mersenne believed that the multiplicity and unity of number is analogous to the diversity that results from God's simplicity. Not only is number and unity an idea in God's mind, number itself is reflected in an infinite number of ways. But the reflection is possible only when an intellect conjures up a new combination of unities, e.g. one unity combined with another unity to produce the number two. Numbers, then, are infinite because God, as the supreme intellect, can combine unities in infinite ways. Consequently, numbers and divine ideas are inextricably related, for there are as many numbers as there are ideas in God's mind. Numbers are also identified with numbered things because God can potentially create an infinite amount of things. Thus, not only are numbers real with respect to existing things, they are real with respect to potentially existing things, because their existence is a possibility in God's intellect.

3.1 Descartes on Universals and Modes

The above summary on divine ideas and the multiplicity of numbers has a clear connection to the medieval discussion on essences and universals. We turn now to Descartes' understanding with respect to the same by examining how it relates to his theory of modes. In the *Principles of Philosophy* Descartes tells us that in order to avoid error in our judgment we must only assent to perceptions that are clear and distinct.⁷⁴ This hallmark of Descartes' philosophy should be further analyzed. Clarity means being "present and accessible to the attentive mind", and distinctness means that "it is so sharply separated from all other perceptions that it contains within itself only what is clear".⁷⁵ According to Descartes there are three objects of perception: things, affections of things (e.g., a thing's quality or mode), or eternal truths which he says can only exist in our mind. There are two classes of things, intellectual and material things, which correspond to thinking and extended substance, respectively. Both classes of things include substance, duration, order, and number. Perception and volition are modes of perceiving that also correspond to thinking substance, whereas length, breadth, depth, shape, motion, position, divisibility, etc. correspond to extended substance. There is a third possible class of things which is really a combination of the first two, which includes appetites, passions, and sensations. Substance itself is "nothing other than a thing which exists in such a way as to depend on no other thing for its existence".⁷⁶ Here, Descartes points out that this definition can only be properly attributed to God, who alone is uncreated; all other substances exist by God's concurrence. Substances cannot be known without qualities or attributes and qualities cannot exist without substances. To be precise, substances are not dependent on qualities for their existence, but we can only know a substance through its qualities, whereas qualities depend on substances for their existence. Further, every substance has an attribute that constitutes its

essence. For corporeal substance its essential attribute is extension and for thinking substance its essential attribute is thought. Now, as was mentioned above, duration, number, and order are modes of thinking about substances, but they are not substances themselves. Modes are equivalent to qualities and attributes of substances, with the main distinction being that attributes refer to an affection of a substance which is unmodified, such as God and the existence of a created thing. Some modes inhere in the things they are modes of and are present in the mind, while others are present only in our mind. Descartes considers number and all other types of universals to be modes of thinking. He says “In the same way, number when it is considered simply in the abstract or in general, and not in any created things, is merely a mode of thinking; and the same applies to all other universals, as we call them”.⁷⁷ It is worth quoting the passage immediately following in its entirety because it is one of the few instances where Descartes speaks explicitly about universals

These universals arise solely from the fact that we make use of one and the same idea for thinking of all individual items which resemble each other; we apply one and the same term to all the things which are represented by the idea in question, and this is the universal term. When we see two stones, for example, and direct our attention not to their nature but merely to the fact that there are two of them, we form the idea of the number which we call ‘two’; and when we later see two birds or two trees, and consider not their nature but merely the fact that there are two of them, we go back to the same ideas as before. This, then, is the universal idea; and we always designate the number in question by the same universal term ‘two’.⁷⁸

Several observations may be made about the above passage. First, Descartes distinguishes between a universal idea and a universal term. Notice that the universal idea does not just

impose itself on us as passive recipients, it is actively sought by the mind when we “make use of” it to identify the similarity in things, and when we consider the multiplicity of stones to “form the idea of the number”. The universal term is deliberately applied and designated when we form the idea. The universals themselves, i.e. the modes of thought we identify as universals result from the actively formed ideas and terms.

With respect to number as a particular type of universal Descartes believes it is concerned, not with the nature or essence of things, but only with “the fact that there are two of them”, i.e. with their multiple manifestations. So, when something exists many times it gives rise to an idea which reflects its multiple instantiations. It is not the repeated idea of the essence attached to the thing that constitutes the mode of number, but the repetition itself. The repetition itself produces a meta-idea that gives rise to the idea of number. Number is thus a universal and foundational to all other universals because one must have an idea of number in order to know that one essence is present in two or more things. There is a difficulty here for it would seem one would have to give attention to a thing’s essence in order to know that it is the same thing that is being repeated.

When Descartes tells us to consider number generally in order to categorize it as a mode of thinking, he is not saying that number not so taken is no longer a mode. Rather, the next section where he points out that “number, in things themselves, arises from the distinction between them”, emphasizes his earlier assertion that some modes are both in the mind and in things.⁷⁹ Since qualities cannot exist apart from substances, and since modes are synonymous with qualities and universals with modes, it follows that universals must inhere in a substance or in the mind. Here, we can see the similarity between Descartes and Mersenne’s respective positions with respect to mathematical entities. Both held that number exists in the mind and in

things. But what does it mean for number to be in things? Recall that for Mersenne numbers are either instantiated by things or they exist potentially because they are reflected in an infinite number of ways by God. In order to clarify himself, Descartes lists three types of distinctions, real, modal, and conceptual. A real distinction occurs between multiple substances that are each clearly and distinctly understood apart from each other. A modal distinction occurs between a mode and the substance of which it is a mode, or between two or more modes of the same substance. A modal distinction in the first sense occurs between shape and the substance it is a shape of; a modal distinction in the second sense occurs between shape and size, which are both modes of a substance. A conceptual distinction occurs between a substance and any attribute of that substance without which the substance cannot be conceived, or a distinction between two such attributes of the same substance. For example, being is only conceptually distinct from a substance because substance cannot be conceived without also thinking about being. The same applies to modes of thought, for they are only conceptually distinct from the things they are modes of. Descartes believes there is no real difference between quantity and substance for the difference is only conceptual. The same can be said for number and what is numbered. It is possible to think of a number without considering this particular substance, although number is unintelligible without considering any extended substance whatsoever.⁸⁰ Number considered in things generally means there is a real distinction between two or more substances because they can clearly and distinctly be thought of independently from one another, and because they can exist apart from one another they can be enumerated. The link between something being clearly conceived and that thing's actual existence is possible because God has the power to bring about anything that we can clearly and distinctly perceive. The same is true between potentially and actually existing substances. If we have an idea about something via our knowledge of its

essence, then we can also understand its existence, regardless of whether or not it actually exists. Descartes continues the passage quoted above by saying we form an idea of a triangle, for example, and later use it as a universal idea when we see other triangles. Once again, one can form an idea about a substance based on its essence without necessarily designating the idea a universal; however once we observe the same idea in multiple substances the universal idea will be called upon. As stated above, at the point where multiplicity is conceived a universal will invariably arise.

Descartes' view of universals may be summarized as involving a term that describes multiple things, but the common essence of multiple things that gives rise to the universal idea and is signified by the universal term is nothing other than a mode of thinking. Because Descartes depicts universals as terms and modes of thought he can possibly be called a nominalist, but the fact that he says universals have actual existence in either the mind or in things is evidence of his realist leanings with respect to universals.

3.2 Letter to Mersenne-1630

Having considered Descartes' position on universals and essences we are now in a position to discuss in greater depth the series of correspondences between Descartes and Marin Mersenne, the first of which was mentioned earlier in this thesis. In that letter Descartes makes reference to Mersenne's prior mention of eternal truths of mathematics. The declaration is made in his letter to Mersenne, 15 April 1630, the relevant sections of which read as follows:

The mathematical truths which you call eternal have been laid down by God and depend on him entirely no less than the rest of his creatures...Please do not hesitate to assert and proclaim everywhere that it is God who has laid down these laws in nature

just as a king lays down laws in his kingdom... They are all inborn in our minds just as a king would implant his laws on the hearts of all his subjects if he had enough power to do so. It will be said that if God had established these truths he could change them as a king changes his laws. To this the answer is: Yes he can, if his will can change. ‘But I understand them to be eternal and unchangeable.’ – I make the same judgment about God. ‘But his will is free.’ – Yes, but his power is beyond our grasp.”⁸¹

Our first task in order to unpack this passage is to understand what Descartes is referring to when he talks about eternal truths. First of all, this response was written before he published any of his most famous works and during the time he was working on *The World*. Descartes considers the subject of eternal truths to fall under the heading of metaphysics, a topic he had planned to elaborate upon in a treatise on physics that would form part of *The World*. There is an immediate recognition that metaphysics is closely related to the physical world, which will have implications for Descartes’ proposal of laws of nature. It is not immediately clear what Descartes means by eternal truths, but we know that since he is responding to Mersenne he must be referring to Mersenne’s interpretation of eternal truths. Therefore, we can assume, at least provisionally, that Descartes accepted Mersenne’s definition of eternal truths since he does not object to it, but focuses instead on how God is related to such truths. According to Mersenne eternal truths include mathematical truths, which as was mentioned above, he considers to be the source of certain knowledge – *scientia* – with objective reality. Recall that the reputation of mathematics as a science depended on whether or not it had an essence that could serve as the basis for a definition in a demonstration. We know from his other writings that Descartes believes eternal truths include such propositions as “It is impossible for the same thing to be and

not to be at the same time; What is done cannot be undone; He who thinks cannot but exist while he thinks; and countless others.”⁸² In general, eternal truths include any “common notions or axioms” that would be easily recognized as such if sufficient attention is paid to them, of which logic and mathematical truths are examples. They closely resemble what we would characterize as self-evident propositions for they do not stand in need of being proven or demonstrated. Such truths, he says, are all able to be grasped by human reason because they are inborn in our minds and “the knowledge of these truths is so natural to our souls that we cannot but judge them infallible when we conceive them distinctly.”⁸³

Descartes continues his correspondence with Mersenne by anticipating, or perhaps seeking to assuage, Mersenne’s own hesitation concerning, the criticism that if God created the eternal truths he would be able to change these laws. Some, including Mersenne, might have been concerned that by attributing the creation of eternal truths to God it would make God arbitrary and our world utterly contingent and unpredictable. Descartes does not deny, but in fact affirms that God can change the laws of mathematics, but only if his will can change. When the hypothetical objector says the laws are eternal and unchangeable Descartes says God is eternal and unchangeable as well, which means his will does *not* change. The hypothetical objector then retorts that God’s will can change because God’s will is free. Descartes does not develop an argument to address the difficulty that arises in maintaining that God is eternal and unchangeable, and that his will is free. He falls back on what we have learned to be his constant refrain, i.e., that although God’s power is beyond our grasp our cognitive faculties cannot be a limit on God’s power, for God can do everything within and beyond our grasp.⁸⁴ But, elsewhere, particularly in the *World*, we learn that in fact the laws of nature are really the consistent effects of God’s unchanging acts and preserving work. For example, change in motion consists of

subsequent variations of God's unchanging effects, so that the laws that govern motion do not themselves change.⁸⁵

Not a month after he responded to Mersenne on the eternal truths, Descartes wrote another letter to Mersenne wherein he adds more detail to his prior assertions. Apparently, Mersenne immediately had some follow-up questions for Descartes about his earlier response. If Mersenne believed Descartes spoke loosely in his prior correspondence, in this letter Descartes was determined to make his position as unambiguous as possible, for in it he reaffirms his conviction that eternal truths are dependent for their existence on God's knowledge of them, i.e. his understanding produces them because nothing can be true prior to God's knowing and willing it.⁸⁶

Clearly, Descartes' doctrine of created truths made Mersenne uncomfortable because in yet another follow-up letter written a few weeks after his 6 May letter, Descartes tells Mersenne eternal truths are created by God as their efficient and total cause, just like any other created thing.⁸⁷ In fact, precisely eight years later Descartes reaffirms his belief that eternal truths, such as the logical axiom that "the whole is greater than its parts", were established by God.⁸⁸ God is the author, not only of the existence, but of the essence of all created things, which he says are the eternal truths themselves. Although he is their author, essences do not emanate from God as sun rays, a statement perhaps directed generally at medieval expositors of neo-platonic interpretations of divine ideas, or ironically at Mersenne himself, who at one point described essences in such terms. Perhaps Mersenne's discomfort with Descartes' claims concerning God's creation of eternal truths arises because in the traditional medieval understanding eternal truths are not creations of God but aspects of God's essence, indeed God himself. Descartes raises the stakes in this letter by saying it is not just mathematical truths that

are created by God, an assertion that would have made Mersenne uncomfortable enough, but essences in general. Recall that although Mersenne rejected the claim that we can know the essential nature of things, he did not thereby say there are no essences at all. In fact, the entire basis for the objective reality of numbers was the existence of ideas in God's mind, an assumption Descartes may have agreed with his nominalist forebears compromised God's freedom. Obviously if essences are created they are not eternal and independent, which implies that all things, including possible and conceivable things, are dependent on God. We ought to consider that taken to its logical conclusion, if created essences are not eternal they are not necessary either. But if essences are not necessary how can they serve as the basis for certain knowledge?

A number of passages seem to indicate we have good reason to believe Descartes takes the position eternal truths are not necessary. But let us examine those passages further before drawing any hard conclusions, for we should keep in mind that in these very passages Descartes affirms some things are indeed necessary by virtue of the fact that God decreed them from eternity to be so. Consider that in his letter to Mersenne in 27 May 1630 he writes

You ask also what necessitated God to create these truths; and I reply that he was free to make it not true that all the radii of a circle are equal – just as free as he was not to create the world. And it is certain that these truths are no more necessarily attached to his essence than are other created things. You ask what God did in order to produce them. I reply that from all eternity he willed them and understood them to be, and by that very fact he created them. Or, if you reserve the word created for the existence of things, then he established and made them. In God, willing, understanding, and creating are all the same thing without one being prior to the other even conceptually.⁸⁹

In the letter just quoted Descartes seems to be denying the necessity of eternal truths, but in fact he is merely denying they emanate from God in Platonic fashion, while at the same time denying their independence. But this shows that the question he is implicitly trying to answer is how eternal truths can be necessary if they do not proceed from God. How can eternal truths be necessary if they are created? Descartes' answer is evident from his other main point, namely the idea of God's simplicity; that with God willing, understanding, and doing are one and the same thing. In this passage Descartes is simply expanding upon his prior letter to Mersenne, wherein he states that

In God willing and knowing are a single thing in such a way that by the very fact of willing he knows it and it is only for this reason that such a thing is true. So we must not say that if God did not exist nevertheless these truths would be true; for the existence of God is the first and the most eternal of all possible truths and the one from which alone all others proceed.⁹⁰

Again, what is being focused upon here is the dependence of eternal truths on God. Yes, they were created and are dependent on God, but because God is eternal, his willing and knowing are eternal as well, which means that the eternal truths were created from eternity past, and are therefore necessary. Descartes again, in his Letter to Mesland writes,

But if we would know the immensity of his power we should not put these thoughts [that God might have made creatures independent of him] before our minds nor should we conceive any precedence or priority between his intellect and his will; for the idea which we have of God teaches us that there is in him only a single activity, entirely simple and entirely pure.⁹¹

And almost 20 year after his 1630 correspondences with Mersenne, in his conversation with Frans Burman, Descartes is recorded as having addressed a comment he made in the *Principles of Philosophy*, namely that “There is always a single identical and perfectly simple act by means of which god simultaneously understands, wills and accomplishes everything.”⁹² He clarifies his comment by saying that whatever is in God is identical with him, which means that even his decrees cannot be separated from God, “for although God is completely indifferent with respect to all things, he necessarily made the decrees he did, since he did what was best, even though it was of his own will that he did what was best...although his actions were completely indifferent, they were also completely necessary.”⁹³ Here we have a clear indication that some things are necessary on account of their having been decreed by God’s unchanging will, yet their necessity is in some way contingent, because it could have been the case that God never willed their existence.

Descartes’ argument from God’s simplicity is best understood as a tacit response to the perennial medieval question of how God’s reason, which had been seen to be constrained to create eternal truths in some way, is related to God’s will, which had been understood to be completely free. Both camps had offered as solution God’s simplicity, and Descartes takes the same approach throughout his career, albeit with some refinements of his own.⁹⁴ For example, as we have seen Descartes believes that any distinction between God’s decrees and God’s reason is not a real distinction, but a mental distinction, which as mentioned earlier is a distinction between an attribute of a substance that cannot be clearly conceived without the substance it is an attribute of. His approach to the necessity of eternal truths lies in his belief that God’s will, while it is absolutely free and able to change as he pleases, will actually not change because it is inextricably linked to his intellect, which has no possibility of every changing. Therefore, we

should understand Descartes as arguing, not that eternal truths are not necessary, but that God did not create them out of necessity. God could have made different mathematical laws than the current ones, e.g. that the radii of a circle are not all equal, despite the fact these laws will never change. It is possible to maintain that eternal truths are necessary yet created because God willed them from all eternity in the same way that he understood them to be from all eternity. God's eternal reason works simultaneously with his eternal will to bring eternal truths about, so that willing, understanding, and creating are coextensive in God.

Descartes warning against believing eternal laws could exist even if God did not reveals his opposition to the metaphysical framework of some of his medieval predecessors.⁹⁵ The debate concerning the independent status of eternal laws bears a close resemblance to the realist/nominalist debate on the independent status of universals mentioned earlier. Whereas Ockham rejected outright the existence of universals apart from the mind, Descartes accepts eternal truths are real in some way; however whatever their nature is, it is certain they are produced by God despite their necessity. Descartes' reasoning for so saying is based in part on epistemological considerations. We know from our prior discussion that according to Descartes if we can conceive something, God can do it. Now, Descartes takes it for granted that the necessity of the eternal truths is an idea that does not exceed our understanding, perhaps on the grounds that eternal truths include self-evident propositions that stand in no need of being proven; therefore they are under God's power, because if God's power extends even beyond man's understanding, i.e., beyond what we can conceive, then it can certainly cover what we are able to grasp.

Upon a close reading of Descartes' 27 May 1630 letter we learn that although mathematical and logical truths are created things they are not automatically existing things.⁹⁶ I

base this on the fact that when Descartes says God is the author of the essence and the existence of things, he does not also give priority to the creation of one over the other. In addition, he makes the curious distinction between creating and establishing, the former reserved for things that exist, and the latter reserved, one would suppose, for things that do not exist. In fact, Descartes seldom speaks of eternal truths as having been created, but instead as having been “laid down”, “inborn”, “established”, or “produced”. To be clear, we are not dealing here with the question whether God knows the essence of a potentially existing thing, but with the ontological status of an eternal truth that resides in the mind but has no existence in reality. We know Descartes believes that although eternal truths are perceived, they have no existence outside our mind, in which case they “exist” purely as an essence.⁹⁷ But he also believes that a triangle, even if it does not exist or never has existed outside our mind, has a “determinate nature or essence or form of the triangle which is immutable and eternal and not invented by me or dependent on my mind...for its properties can be demonstrated.”⁹⁸ In other words, there is a sense in which essences can be real extra-mentally yet not have actual existence. The possibility of essences that have existence apart from the mind is of interest because as we learned earlier Descartes equates eternal truths with essences. Descartes’ proposal of such an essence is not an entirely radical idea, for Francisco Suarez makes a distinction between essences and real essences and suggests essences may exist in the mind but not in reality, for only real essences exist in reality, and only when things exist.⁹⁹ Prior to a thing’s existence its essence is a being in potency only – in fact it is not a thing at all, but simply God’s act – but, because God knows it, it is said to have an “essence” prior to its coming about.¹⁰⁰ If a thing’s existence is logically possible, then it has the capacity to have a real essence, otherwise it is a being of reason only.¹⁰¹ Some entities (beings) of reason, such as privations only have being objectively in the mind, but

others have potential existence.¹⁰² Once a thing comes to be, there is only a distinction of reason between its essence and existence. By Suarez's account then, eternal truths are essences, but they are not real essences; they only exist if they relate to existing things, suggesting that eternal truths are contingent.

4 The Laws of Nature, God's Providence, and Concurrence

We learned earlier that Descartes believes God established eternal truths and compares them to how a king lays down laws and would implant them in our hearts if he could. In comparing eternal truths to implanted laws Descartes makes a conceptual shift from truth to law which highlights an important aspect of his understanding of divine power. In the passage mentioned above the language Descartes uses to describe God explicitly as legislator and sovereign over his creation opens the way for discussion on Descartes' use of the concept of the laws of nature. A great deal has been written over the past few decades in relation to the origins of the laws of nature discourse. As the literature on this topic has grown general trends have coalesced from the many theories and opinions that have been offered. While an evaluation of each of these positions is not within the scope of the present work it is helpful to have a basic familiarity with the historical interpretations of Descartes use of the divine legislation metaphor. One group of scholars argues that although the language of the laws of nature was present in antiquity and was scattered throughout the middle ages that concept was different from the modern scientific concept. For them the scientific concept of the laws of nature begins unequivocally in the modern period. In Edgar Zilsel's view, unlike the ancient and classical concept of natural law, the modern concept of laws of nature carries with it an explanatory and causal connection.¹⁰³ This concept of the laws of nature didn't make its appearance in history

until the 17th century in the thought of René Descartes. He says that “Like Galileo, he [Descartes] took over the basic idea of physical regularities and quantitative rules of operation from the superior artisans of his period. And from the Bible he took the idea of God’s legislation. By combining both he created the modern concept of natural law.” Joseph Needham generally agrees with Zilsel’s theory that a new way of seeing laws of nature can be traced to Descartes, but he asks why the idea of divine legislation did not exist in the highly developed, imperial and absolutist China.¹⁰⁴ Another group argues the modern concept of laws of nature actually begins in the middle ages, but within this camp there is division as to the character of those laws.¹⁰⁵ One version of the medieval origins of the laws of nature holds that there is a strong theological basis for the laws of nature¹⁰⁶ Francis Oakley believes the concept of the laws of nature was present as early as the medieval period in the works of theologians concerned about divine providence. Oakley’s three principal arguments are that 1) in the medieval period there were varieties of interpretations of natural law, 2) the biggest shift in natural law thinking occurred between the 14th – 15th centuries when an understanding of the nature of nature and the essence of law changed, resulting in two general views of natural law, and 3) what led to this shift was largely the insistence on God’s omnipotence. The other version of the argument agrees much talk of laws of nature during the 13th through 16th centuries referred to physical laws, but they deny those laws have any association with divine legislation.¹⁰⁷ Jane Ruby takes the position that providence did not play a role in the use of laws of nature in 17th century natural philosophers because she sees this terminology already in use by natural philosophers such as Roger Bacon (1214-1294) and Regiomontanus and argues these men used the term “law” in a modern sense, i.e. detached from divine legislation and closer to what today we understand by regularity. She concludes that by 1540 “all the familiar modern scientific uses of "law" were in

place” even though it took René Descartes and Isaac Newton to popularize the terminology and make it palatable to the rest of modern Europe. The preceding theories constitute the three principal historiographical positions. A fourth group, represented by John Henry’s work, tries to harmonize aspects of each of the preceding views by acknowledging a strong medieval influence for the modern founding of the laws of nature, but denying a direct causal link between the two periods.¹⁰⁸ Henry believes the idea that laws of nature were explanatory in science was an innovative idea. The medieval tradition served as the background for this idea but did not produce the idea. Rather, the modern concept of the laws of nature originates in René Descartes. Descartes borrowed from the mathematical tradition but found no way to legitimate those laws without God as legislator. He believes this argument allows him to combine the best of the three prior theories discussed. Descartes, not earlier natural philosophers (as Ruby would have it), developed the modern sense of laws of nature by invoking mathematical laws to explain physical phenomena (as per Zilsel), but by doing so he saw the need to provide a metaphysical basis for the mathematical laws, which he found in God’s providence (as per Oakley).

If Descartes is to be properly recognized as a pioneer in the use of the laws of nature framework it would be well for us to determine how he arrives at that understanding. The passage quoted above is crucial to that end because it allows Descartes to make a connection between eternal truths and the laws of nature. The first critical turn towards that end is Descartes’ acceptance of mathematical truths as eternal. It is true Descartes seems to distance himself from associating mathematical truths with eternity when he says “which you call eternal”; nevertheless in later passages he seems to take the association for granted. The next turn occurs when Descartes describes eternal mathematical truths as laws. Mathematical truths

are also mathematical laws and they serve as the link between eternal truths and the laws of nature in general. The discussion to follow seeks to elaborate upon this second critical turn.

Although Descartes does not specifically use the term eternal laws he does not hesitate to equate eternal truths with laws. Historically, eternal law was associated with divine law and coincided with God's providence and government of the world through reason. It was typically distinguished from natural law, which represents the application of eternal law to human affairs. Eternal law and natural law were further distinguished from human positive law, which were ultimately grounded in divine law via natural law. Eternal law represented the principle by which God directs all things to their end and does all things according to divine reason, and as such represented God himself. Augustine says of the "eternal and immutable laws of God" that they reside in God's wisdom.¹⁰⁹ In addressing the question "Whether the eternal law is a sovereign type existing in God?", Thomas Aquinas presents the following objection: "Further, Augustine says (*De Vera Relig.* xxx): 'We see a law above our minds, which is called truth.' But the law which is above our minds is the eternal law. Therefore truth is the eternal law. But the idea of truth is not the same as the idea of a type. Therefore the eternal law is not the same as the sovereign type", to which St. Thomas does not deny the identity of eternal law and truth, but answers that the "Divine intellect is true in itself; and its type is truth itself", using the authority of Augustine's own words when he says that "the eternal law is the sovereign type, to which we must always conform."¹¹⁰ Further, Aquinas, in answering the question "Whether necessary and eternal things are subject to the eternal law?" says that "Accordingly all that is in things created by God, whether it be contingent or necessary, is subject to the eternal law: while things pertaining to the Divine Nature or Essence [e.g. his will and intellect] are not subject to the eternal law, *but are the eternal law itself.*"¹¹¹ [Emphasis mine]. Even more explicit is

Thomas' remark that "If no intellect were eternal, no truth would be eternal. But because the divine intellect is eternal, truth has eternity in it alone. Nor does it follow from this that anything other than God is eternal; because truth in the divine intellect is God himself."¹¹² In Descartes' own time Francisco Suarez identified eternal law as the essential principle of divine providence that exists in God and is identical to it and refers to St. Thomas, Cajetan, Alexander of Hales, Augustine, Cicero, Boethius, Isidore, and other authorities to support his view.¹¹³ Eternal law is in God's mind when it is given by his absolute decree and fixed will.¹¹⁴ In summary, if truth itself is identical to the divine intellect and the divine intellect is God himself, it follows that truth itself is God himself. But eternal law is also said to be God himself, therefore truth and law are the same.

It is interesting how comfortably Descartes transitions from the language of truth to the language of law. As just discussed there had already been a medieval basis for such an association because truth and law were both related to God's reason. However, the question may still be asked whether Descartes was justified in applying the concept of law to nature. Again, we would do well to refer to Aquinas, since he is explicit in his application of eternal law to nature when he says

Now just as man, by such pronouncement, impresses a kind of inward principle of action on the man that is subject to him, so God imprints on the whole of nature the principles of its proper actions. And so, in this way, God is said to command the whole of nature, according to Ps. 148:6: "He hath made a decree, and it shall not pass away." And thus all actions and movements of the whole of nature are subject to the eternal law.

Consequently irrational creatures are subject to the eternal law, through being moved by

Divine providence; but not, as rational creatures are, through understanding the Divine commandment.¹¹⁵

Later, Suarez agrees that eternal law applies to inanimate creatures, but it only does so in a loose and metaphoric sense, because strictly speaking eternal law applies to rational creatures.¹¹⁶

There is, therefore, precedent for a connection between eternal truths and the laws of nature, if as suggested earlier, eternal truths and eternal laws are taken synonymously. Yet, it must be kept in mind again that for the medieval theologians God's eternal law and truth are synonymous primarily because they are both expressions of God's reason. If so, Descartes' idea that God created eternal truths is somewhat misconstrued for it leads to the absurd conclusion that God created himself. But, this is surely not the message Descartes would have wanted to convey to Mersenne. We should therefore interpret Descartes as having departed from a strict interpretation of the medieval understanding of eternal law and its identification with eternal truth. Descartes is best understood as associating eternal law and eternal truth with God's will rather than with God's reason. God is not subject to act in accordance even with his own reason, for his will is primary.

Given the preponderance of terminology Descartes and other natural philosophers of the scientific revolution inherited to describe nature's regularities, why did they settle on "law"? Why was the concept of law used to describe the regularities of nature when prior to the modern period "law" was used almost exclusively in ethical and juristic contexts? In fact socio-political laws are variable and imperfect, whereas the laws of nature are supposed to be immutable and certain. In addition, the dominant view during the scientific revolution was that the universe was a vast machine, fixed and determined in its operation, in contradistinction to what in some traditions had been an animistic view of the world as a living entity. An inanimate mechanical

world is an unlikely candidate to have laws set upon it.¹¹⁷ Even taken animistically, the world had not been seen as obeying external laws, but as moving according to immanent principles. Even Aquinas' quote above can be interpreted as nature moving according to immanent principles. Yet, according to Descartes eternal truths are externally given rather than immanent in nature.

Scholars have examined the historical and philological use of natural law terminology in the process of explaining what natural philosophers had in mind during the early stages of the scientific revolution when they engaged in natural law discourse.¹¹⁸ Ian Mclean, for example, explains that 'regula', which would seem to indicate regularity, was used instead in Renaissance legal contexts to indicate rule, and in theology and logic its equivalent terms were 'summae' and 'thesis', respectively.¹¹⁹ Maclean also suggests that when "lex" was used within the context of nature there was a combination of the prescriptive and descriptive, which is precisely what the early modern theologians did when they described laws of nature legislated by God.¹²⁰ A law of nature was both what always occurs in nature and what is ordained to occur. Similarly, 'regula' was used frequently by natural philosophers in relation to the laws of nature – Descartes himself uses 'regula' as rule, as indicated by his *Rules for the Direction of the Mind*, and equates rule with law.¹²¹

It is, however, Descartes' treatise titled *The World* which is the principle source for an examination of his philosophy of nature in general, and his view on the laws of nature, in particular. We should remember that his ambition for the work was to deal with "everything I thought I knew about the nature of material things"¹²², focusing on one aspect of nature, light. While Descartes' told Mersenne in his letter of 15 April 1630 that he had been working on this treatise to address several metaphysical questions, the treatise is not intended to be a

metaphysical project, but an elaboration of his views of the natural world. The plan of *The World* was to imagine what *would* occur if “God now created, somewhere in imaginary spaces enough matter to compose such a world...and that He then did nothing but lend his regular concurrence to nature, leaving it to act according to the laws he established.”¹²³ One thing is clear about this work, namely that by “laws of nature” Descartes is not referring to natural law, in the sense of a set of moral laws obtained through reason that was commonly referred to prior to the 17th century, but rather to laws that operate in and direct the physical world. It is also clear that Descartes wished to distance himself from a pagan view of nature, which saw the world operating according to its own principles. Descartes introduces these laws by means of a thought experiment in which an alternative universe is proposed whose operation is governed by them. He declares “the rules by which these changes [in matter] take place I call the ‘laws of nature’”.¹²⁴ The matter that God creates at creation he causes to move in different directions and to continue doing so according to the “ordinary laws of nature”. The fixed and constant character of these laws is evident by the fact that Descartes believes they are created by God in such a marvelous fashion that even if he established them amidst a chaos of matter, the laws would work themselves into the chaotic matter in such a way that they would nevertheless produce an orderly world much like ours all on their.¹²⁵ In fact, “If God had created many worlds they would be as true in each of them as in this one.”¹²⁶ The divinely legislated character of these laws is evident when Descartes states that “God has established these laws [of nature] in such a marvelous way”¹²⁷, that the laws are “imposed” by God¹²⁸, and he says nature can “obey the rule”.¹²⁹ Descartes held this opinion for some time, for a number of years later he repeats to Mersenne that nature acts in accordance with the laws of mechanics, which laws are imposed by God.¹³⁰ According to Descartes the laws of nature are sufficient to affect every type of motion

and physical change that eventually produces the myriad objects found in the universe. Consistent with his mechanical philosophy, in a later correspondence he says even the body is like a machine that operates according to its own universal laws.¹³¹ In *The World* Descartes selects three laws which he believes are basic to the universe's operation and suggests more laws could be derived from eternal truths in the same manner that mathematicians derive their proofs. In fact, through the eternal truths God teaches us that the world is arranged by "number, weight and measure".¹³²

Descartes struggles with the concept of the laws of nature, for through them he wants to preserve God's immutability by invoking their self-guided quality, yet he emphasizes God's continuous preserving work in nature's operation.¹³³ Descartes answers the charge of positing a God detached from his creation by reaffirming that nothing can exist without God's concurrence. God wouldn't be showing "the immensity of his power" if he created something that could continue in existence without his concurrence. For example, when God created matter, he moved its parts in different ways to cause the variety of objects found in the world, but even today he continues to move them and preserves the same amount of movement.¹³⁴ His concurrence extends to every aspect of existence. For example, the being of bodies must be upheld by God's power; else they would not continue existing.¹³⁵ On the other end of the spectrum things are only destroyed when God removes his concurrence.¹³⁶

Closely related to God's concurrence is God's providence, which is God's arrangement of all things for the care of his creation.¹³⁷ According to Descartes nothing falls outside the providence of God, not even our will. Therefore, the independence we feel should not limit God, nor should it prevent us from thinking our actions are less praiseworthy or blameworthy, nor that they are incompatible with the fact that all things are subject to God.¹³⁸

God is so powerful that even our actions are preordained by him. But our free will remains intact despite the difficulty in comprehending how it can remain so.¹³⁹ God's exercise of his providence in our particular circumstances does not involve a change in God's decrees occasioned by the actions which are dependent on our free will. For example, prayer is not a request for God to change anything in the order established from all eternity by his Providence. Prayer is just for God to do what he has willed from all eternity to occur by our prayers. Answers to prayer do not constitute a change in his will, but rather a fulfillment thereof. Since God's decrees are unalterable, answers to prayers have been decreed as well. Although God is indifferent with respect to all things, he decreed all things by his will and they cannot be separated from him.¹⁴⁰ The necessity of God's will should not be separated from his indifference; although his actions were completely indifferent, they are completely necessary because he is the total cause of everything; nothing happens without his will.¹⁴¹ God is not prior to or distinct from his decrees, so they cannot really be separated from him except in our minds.

The evidence indicates Descartes was indeed an advocate of the use of the divine legislation metaphor. It would not be unreasonable to suggest he did so because none of the terms used at the time captured the precise meaning he had in mind when referring to God's power over nature. God is not passive over nature and its regularities: he is sovereign over it. His power extends even over those fundamental elements of nature that for classical and medieval natural philosophers seemed to originate from eternity past. The term "law" conveys two ideas that are centerpieces of Descartes' understanding of God's power, permanence and authority. As we have learned, according to Descartes God's power is supreme over all things and extends above and beyond everything whatsoever; nothing escapes his jurisdiction. We have also learned that God's power cannot be diminished or altered in any way because it is absolutely

unchangeable. While human laws are indeed subject to change, they normally span across many generations and even across centuries. Laws are associated with the propagation of power, and there are few other institutions that historically have carried the weight of authority across centuries, other than the Church itself. But it would not make sense for Descartes to use the Church as a metaphor for God because in one sense the Church is God already; the Church is identified in Scripture as the body of Christ, who is God incarnate. So, when Descartes refers to the laws of nature he is saying the regularities in nature are such that they have the mark of God's authority and permanence such that these laws extend to all jurisdictions of the physical world and will continue in operation in perpetuity.

Notes

¹ Rene Descartes, “Meditations on First Philosophy 1,” trans. John Cottingham, Robert Stoothoff, and Dugald Murdoch, *The Philosophical Writings of Descartes*, 2 vols. (Cambridge: Cambridge University Press, 1985) 2:20. Hereafter, this collection will be abbreviated CSM.

² *Meditations* 3; CSM, 2:25

³ *Meditations* 6; CSM, 2:61

⁴ *Meditations* 2; CSM, 2:16

⁵ *Meditations* 3; CSM, 2:25

⁶ Letter to Mersenne, 21 April 1641 in *The Philosophical Writings of Descartes: The Correspondence*, trans. John Cottingham, Robert Stoothoff, Dugald Murdoch, and Anthony Kenny (Cambridge: Cambridge University Press, 1991), 179. Hereafter, this installment will be abbreviated CSMK.

⁷ “But how art thou omnipotent, if thou art not capable of all things? Or, if thou canst not be corrupted, and canst not lie, nor make what is true, false—as, for example, if thou shouldst make what has been done not to have been done, and the like.—how art thou capable of all things? Or else to be capable of these things is not power, but impotence. For, he who is capable of these things is capable of what is not for his good, and of what he ought not to do; and the more capable of them he is, the more power have adversity and perversity against him; and the less has he himself against these.” St. Anselm, *Proslogium* Chapter XII.

⁸ The standard medieval opinion can be seen, for example, in St. Thomas Aquinas when he says that “God is bound to nobody but Himself. Hence, when it is said that God can only do what He ought, nothing else is meant by this than that... ‘God cannot do anything except that which, if

He did it, would be suitable and just.” *Summa Theologiae* I, Q25, art 5. Hereafter, the *Summa Theologiae* will be abbreviated *ST*.

⁹ Sixth Set of Replies 8; CSM, 2:294

¹⁰ For a helpful summary of the powers distinction see Courtenay, 1984

¹¹ Maurer, 1999, 254

¹² Maurer 254

¹³ Aquinas, *ST* I, Q25, art 5

¹⁴ “Therefore, everything that does not imply a contradiction in terms, is numbered amongst those possible things, in respect of which God is called omnipotent: whereas whatever implies contradiction does not come within the scope of divine omnipotence, because it cannot have the aspect of possibility. Hence it is better to say that such things cannot be done, than that God cannot do them.” *ST* I, Q25, art 5

¹⁵ See *In Libros Sententiarum* [hereafter *Sent.*] 2.5, H in Copleston, 1953, 103

¹⁶ “I say that God is able to do some things by his ordained power and some things by his absolute power...It is to be understood that his power to do something is sometimes to be accepted according to the laws which he has ordained and instituted; and in this way God is said to be able to act by his ordained power. Alternatively his power means his ability to do everything which does not include a contradiction, whether God has ordained that it should be done or not, because God can do many things which he does not will to do, according to the Master of the Sentences [Peter Lombard], book one, distinction forty-three; and this is called his power by his absolute power”, from William of Ockham, *Quodlibeta Septem*, Strasbourg, 1491. (Reprinted Louvain, 1962), VI, q. 1, Translated by Linwood Urban in Urban and Walton, 1978.

¹⁷ Ockham, *Quodlibeta Septem*. 3.13 [hereafter *Quod*] in Boehner, 1967, 146-7

¹⁸ For a discussion on this point see McGrade in Spade, 1999, 279-80.

¹⁹ Ockham, *Quod.* 3.13 in Boehner, 146-7. Ockham arrived at the above conclusion later in his career. The quote above is from Boehner's translation of the 1491 edition. It was written after his *Commentary on the Sentences*, in which Ockham was most adamant about divine omnipotence.

²⁰ "I answer: If God could command this [that we hate him]– and it seems that He can do it without contradiction – then I maintain that the will in this situation cannot perform such an act, because merely by performing such an act the will would love God above all and consequently would fulfill the divine precept. For, to love God above all means to love whatever God wills to be loved. But by the mere fact of loving God in this way one would not (according to our assumption) fulfill the divine command. Consequently by loving god in this manner one would love God and not love God; one would fulfill the precept of God and not fulfill it. However, one could have an act of a simple and natural love, which is not the same as the love of God above all; just as, if someone did not believe in God, he could not love Him, since nothing can be loved unless it exists or can exist.", Ockham, *Quod.* 3.13 in Boehner, 146-7

²¹ For example, see Spade, 1999, 280. Also, according to Philotheus Boehner Ockham believes God can command us to hate him, since man himself can command another to hate God, and whatever man can do as a secondary cause, God can do as a primary cause. But carrying out this command would "thoroughly perplex" man for by obeying God in hating God, he would be loving God. Thus the command is logically possible, but not psychologically possible. For God to command is not a logical contradiction, only the execution is a contradiction, Boehner, 92-3.

²² Oberman, 1983, 37

²³ Ibid, 96

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- 24 Ibid, 94-5
- 25 Ibid, 100-1
- 26 Conversation with Burman, 16 April 1648; CSMK, 343
- 27 Second Set of Objections; CSM, 2:89-90
- 28 Second Set of Replies; CSM, 2:101-2
- 29 Letter to Regius, June 1642; CSMK, 214
- 30 Letter to More, 5 February 1649; CSMK, 363
- 31 *Principles of Philosophy* 3; CSM, 1:248
- 32 *Meditations* 5; CSM, 2:70 “Since I have been accustomed to distinguish between existence and essence in everything else, I find it easy to persuade myself that existence can also be separated from the essence of God, and hence that God can be thought of as not existing. But when I concentrate more carefully, it is quite evident that existence can no more be separated from the essence of God than the fact that its three angles equal two right angles can be separated from the essence of a triangle, or than the idea of a mountain can be separated from the idea of a valley. Hence it is just as much of a contradiction to think of God (that is, a supremely perfect being) lacking existence (that is, lacking a perfection), as it is to think of a mountain without a valley”.
- 33 First Set of Objections; CSM, 2:70
- 34 Aquinas, *ST I*, Q2, art 1 In the reply to the second objection of this article Aquinas writes “Perhaps not everyone who hears this word ‘God’ understands it to signify something than which nothing greater can be thought, seeing that some have believed God to be a body. Yet, granted that everyone understands that by this word ‘God’ is signified something than which nothing greater can be thought, nevertheless, it does not therefore follow that he understands that what

the word signifies exists actually, but only that it exists mentally. Nor can it be argued that it actually exists, unless it be admitted that there actually exists something than which nothing greater can be thought; and this precisely is not admitted by those who hold that God does not exist”.

35 First Set of Replies; CSM, 2:83-5

36 Letter to Gibieuf, 19 January 1642; CSMK, 202

37 Letter to Gibieuf, 19 January 1642; CSMK, 202-3

38 Ibid, 203

39 Ibid, 202

40 Ibid

41 Aquinas, *ST* 1 Q40, art 3

42 Aquinas, *ST* 1 Q85, art 2

43 Following the thread of arguments here can be confusing. The passage is found in the Appendix to Fifth Objections and Replies; CSM, 2:217, which is a reply to Gassendi’s counter-objections (see CSM, 2:276f for a quote of the objection) to Descartes’ replies (Fifth Set of Replies; CSM, 2:248) to Gassendi’s original objections (Fifth Set of Objections; CSM, 2:189) to a passage in the second meditation (*Meditations* 2; CSM, 2:20-1).

44 The reply is made by Caterus concerning an argument raised in the Fifth Meditation

45 Letter to Mersenne, 4 March 1641; CSMK, 174-5

46 Letter to Arnauld, 29 July 1648; CSMK, 358-9

47 Letter to Mesland, 2 May 1644; CSMK, 234-5

48 Letter to ***, March 1642(?); CSMK, 212

49 Letter to More, 5 February 1649; CSMK, 362-3

⁵⁰ Charles Duplessis d'Argentré, *Collectio Judiocorum de novis erroribus tomus tertium* (1736), part 2, 303-4 in Ariew, Cottingham, and Sorell, eds., 1998, 255-6 [hereafter ACS]. The condemned proposition refers to *Principles of Philosophy 2*; CSM I, 232.

⁵¹ *Concordat entre les Jesuites et les Peres de l'Oratoire, Actes de la Sixieme Assemblée*, September 1678 in Pierre Bayle, *Recueil de quelques pieces curieuses concernant la philosophie de Monsieur Descartes*, 11-12, in ACS, 257

⁵² Camille de Rochemonteix, *Un college de Jesuites*, vol. 4, 89-93 in ACS, 258.

⁵³ *Principles of Philosophy 2*; CSM 1, 229-30

⁵⁴ *Principles of Philosophy 2*; CSM 1, 230-1

⁵⁵ Dear, 1988, 12-3

⁵⁶ *Ibid*, 5

⁵⁷ See Aristotle's *Posterior Analytics* in Reeves, 681

⁵⁸ *Posterior Analytics*, Reeves, 683-5

⁵⁹ See Aristotle's *Metaphysics* in Reeves, 780

⁶⁰ Dear, 40, 53

⁶¹ *Ibid*, 27-9

⁶² ACS, 160-2

⁶³ *Ibid*, 36

⁶⁴ *Ibid*, 30

⁶⁵ *Ibid*, 29

⁶⁶ Aquinas, *ST 1 Q5*, art3 "Objection 4: Further, the Philosopher notes (*Metaph. iii*) that "in mathematics goodness does not exist." But mathematics are entities; otherwise there would be no science of mathematics.

Therefore not every being is good.” and “Reply to Objection 4: Mathematical entities do not subsist as realities; because they would be in some sort good if they subsisted; but they have only logical existence, inasmuch as they are abstracted from motion and matter; thus they cannot have the aspect of an end, which itself has the aspect of moving another. Nor is it repugnant that there should be in some logical entity neither goodness nor form of goodness; since the idea of being is prior to the idea of goodness, as was said in the preceding article.”

⁶⁷ Christopher Clavius taught algebra at la Flèche and Descartes is known to have studied his textbook. He was a contributor to the reorganization of the Jesuit collegiate curriculum, and more importantly, he was a vociferous proponent of mathematics as a science. See an excerpt from his *The Promotion of Mathematics* (1586) in ACS, 24-8.

⁶⁸ St. Augustine, *On Free Will*, Book II Chapter 8

⁶⁹ Ibid.

⁷⁰ Copleston, 1950, 73

⁷¹ Ibid, 73

⁷² Dear, 80

⁷³ Mersenne observed early on the similarities between Augustine’s “Si fallor, sum” and Descartes’ “Cogito ergo sum”. For a discussion on this similarity see Matthews, 222-32

⁷⁴ *Principles of Philosophy* 1; CSM, 1:206

⁷⁵ *Principles of Philosophy* 1; CSM, 1:207

⁷⁶ *Principles of Philosophy* 1; CSM, 1:212

⁷⁷ Ibid

⁷⁸ Ibid

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- 79 *Principles of Philosophy* 1; CSM, 1:206
- 80 *Principles of Philosophy* 2; CSM, 1:225-6
- 81 Letter to Mersenne, 15 April 1630; CSMK, 23
- 82 *Principles of Philosophy* 1; CSM, 1:207
- 83 *The World* Ch. 7; CSM, 1:97
- 84 Letter to Mersenne, 15 April 1630; CSMK, 23
- 85 *The World* Ch. 7; CSM, 1:96-7
- 86 Letter to Mersenne, 6 May 1630; CSMK, 24
- 87 Letter to Mersenne, 27 May 1630; CSMK, 25
- 88 Letter to Mersenne, 27 May 1638; CSMK, 103
- 89 Letter to Mersenne, 27 May 1630; CSMK, 25-6
- 90 Letter to Mersenne, 6 May 1630; CSMK, 24
- 91 Letter to Mesland, 2 May 1644; CSMK, 235
- 92 *Principles of Philosophy* 1; CSM 1:200 quoted in Conversation with Burman, 16 April 1648; CSMK, 347
- 93 Conversation with Burman, 16 April 1648; CSMK, 348
- 94 Aquinas, *ST* I, Q25, art 5 “But in God, power and essence, will and intellect, wisdom and justice, are one and the same. Whence, there can be nothing in the divine power which cannot also be in His just will or in His wise intellect.”
- 95 Some commentators believe this is, perhaps, directed at Suarez. See for example, Curly, 1984, where he quotes Suarez as saying “[Eternal truths]. . . are not true because they are known by God, rather they are known because they are true, otherwise no reason could be given why God necessarily knows that they are true, for if their truth proceeded from God himself, that

would happen by means of God's will, so it would not proceed necessarily but voluntarily (p 295), from Disputation XXXI, Section xii, 38-47 in *Disputationes metaphysicae*, 2 vols. (Hildesheim: Georg Olms, 1965). Curly recognized, however, that others like Norman Wells in "Suarez on the Eternal Truths," *The Modern Schoolman* 58 (1981), 73-104, 159-174, argue Suarez may have been presenting this as an opposing view rather than his own.

⁹⁶ Letter to Mersenne, 27 May 1630; CSMK, 25-6

⁹⁷ *Principles of Philosophy* 1; CSM 1:207-8

⁹⁸ Conversation with Burman, 16 April 1648; CSMK, 343

⁹⁹ Francisco Suarez, *Disputationes metaphysicae*, Disputation XXX, Section xii, 38-47, 294-8. 585

¹⁰⁰ Suarez, *Disputationes metaphysicae*, Disputation 15, section II, §3-4 in ACS, 45, "In created things, existence and essence are distinguished either as entity in actuality as opposed to in potentiality, or, if both are taken in actuality, the distinction between them is merely a distinction of reason with some foundation in reality...Being in potentiality is in fact not being, but nothing, and with respect to a thing capable of being created implies merely the lack of contradiction, or logical possibility...We say therefore of a true actual entity that it is an entity of essence, or of existence"

¹⁰¹ Suarez defines a distinction of reason as one "that does not formally and actually obtain in the things that are called distinct in this way; it does not obtain in the things as they exist in themselves, but only as they subsist in our conceptions, and have some label applied to them from our conceptions" *Disputationes metaphysicae*, Disputation 7 section I, §4 in ACS, 41.

¹⁰² Suarez also distinguishes between formal and objective existence, the former being the act or word or formal term by which the mind conceives a thing, the latter being what is

represented by the formal concept. For example, the act of conceiving a man yields a formal concept, but the man thus known is the objective concept. See *Disputationes metaphysicae*, Disputation 2, section I, §I in ACS pp 33-4.

¹⁰³ See Zilsel, 1942

¹⁰⁴ See Needham, 1962

¹⁰⁵ Evidence for this stance is suggested, for example, in the opening paragraph of Galileo Galilei's (1564-1642) *Dialogue Concerning the Two Chief World Systems*. Salviati begins the dialogue by stating its purpose is to "discuss as clearly and in as much detail as possible the character and the efficacy of those laws of nature which up to the present have been put forth by the partisans of the Aristotelian and Ptolemaic position on the one hand, and by the followers of the Copernican system on the other" *Dialogue*, p 9. This suggests that a tradition of "laws of nature" discourse had already been established among natural philosophers prior to Copernicus' use of the same in his *De Revolutionibus*. However, the question scholars are concerned to answer is "what did natural philosophers understand by these earlier uses of "law of nature"?"

¹⁰⁶ See Oakley, 2005

¹⁰⁷ See Ruby, 1986

¹⁰⁸ See Henry, 2012

¹⁰⁹ *City of God* Book XIX, Ch 22

¹¹⁰ St. Augustine, *De Lib. Arb. i*, 6 quoted in *ST* II 1, Q 93 art 1

¹¹¹ *ST* II 1, Q 93 art 4

¹¹² *ST* I, Q 16, art 5

¹¹³ Suarez, *De Legibus*, Book II, Ch 1, ii

¹¹⁴ Suarez, *De Legibus*, Book II, Ch 1, v

115 *ST II 1, Q 93 art 5*

116 Suarez, *De Legibus*, Book II, Ch 1, xiii

117 For a review of the mechanical view of nature in the Enlightenment see Dampier, 1966; Hall, 1962; and Shapin, 1996

118 See for example, Ian Maclean in Daston, 2008, 31

119 Ibid, 32

120 Ibid, 43

121 In the French version of *The World*, Descartes uses “règles” to indicate rules.

122 *Discourse on Method 5*; CSM, 1:132

123 Ibid

124 *The World* Ch. 6; CSM, 1:93

125 Ibid, 91

126 *The World* Ch. 7; CSM, 1:97

127 *The World* Ch. 6; CSM, 1:91

128 *The World* Ch. 7; CSM, 1:92

129 Ibid, 95

130 Letter to Mersenne, 20 February 1639; CSMK, 134

131 Conversation with Burman, 16 April 1648; CSMK, 346

132 *The World* Ch. 7; CSM, 1:97 In saying that the world is arranged by number, weight, and measure Descartes is making reference to Augustine’s words in *The City of God* where he says that God is he “...from whom is every mode, every species, every order; from whom are measure, number, weight; from whom is everything which has an existence in nature, of whatever kind it be, and of whatever value; from whom are the seeds of forms and the forms of

seeds, and the motion of seeds and of forms... who has not left, not to speak of heaven and earth, angels and men, but not even the entrails of the smallest and most contemptible animal, or the feather of a bird, or the little flower of a plant, or the leaf of a tree, without an harmony, and, as it were, a mutual peace among all its parts..." *City of God* Book V, Ch. 11

¹³³ Robert Boyle criticizes Descartes' supposed extreme mechanical view because it limits God to putting the machine in operation, but not to its continual operation. Ironically, in his *A Free Inquiry into the Vulgarly Received Notion of Nature*. Eds. Edward B. Davis and Michael Hunter. Cambridge: Cambridge University Press, 1996, Boyle finds himself answering the objection that his proposed view of nature diminishes God's providence. He believes his theory affirms God's providence more than the Aristotelian/Scholastic theories because those theories treat nature as God's deputy; nature does God's work for him. Boyle believes his concept of nature does justice to God's providence because it allows God to infuse the laws of nature at the beginning of his creation and then let's them operate in perpetuity (Boyle, 9-18). He argues that God is active, especially given the occurrence of miracles, which is a special involvement of God in nature; regularities in nature are due to God's will. It is difficult at first to see how the two theories differ in effect, yet Boyle spends the rest of his treatise parsing out those subtleties. Like Descartes, Boyle is in a difficult position; he wants to assert God's providence on the one hand and affirm the primacy of the laws of nature on the other.

¹³⁴ Letter to The Marquess of Newcastle, October 1645; CSMK, 275

¹³⁵ *Discourse on Method* 4; CSM 1:129

¹³⁶ Letter to Hyperaspistes, August 1641; CSMK, 193-4

¹³⁷ Letter to Chanut, 1 February 1647; CSMK, 309-10

¹³⁸ Letter to Princess Elizabeth, 3 November 1645; CSMK, 207

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- 139 *Principles of Philosophy* 1; CSM 1:206
- 140 Conversation with Burman, 16 April 1648; CSMK, 348
- 141 Letter to Princess Elizabeth, 6 October 1645; CSMK, 272

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