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Publication Date

2014

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Descartes's Method and the Role of Eternal Truths

By

Zachary MacKay Bruce

A dissertation submitted in partial satisfaction of the

requirements for the degree of

Doctor of Philosophy

in

Philosophy

in the

Graduate Division

of the

University of California, Berkeley

Committee in charge:

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Professor Giovanni Ferrari

Spring 2014

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Abstract

Descartes's Method and the Role of Eternal Truths

by

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Doctor of Philosophy in Philosophy

University of California, Berkeley

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I contend that Descartes's infamous commitment to God's free creation of the eternal truths plays an integral role in Descartes's philosophical program. Descartes's primary philosophical goal is to establish a method capable of yielding firm and lasting scientific knowledge. It isn't widely agreed that Descartes has been successful: first, his response to the threat of skepticism appears circular; and second, his account of God's free creation of eternal truths (e.g., mathematical and logical truths) seems to lead to paradox. I argue that neither criticism of Descartes is insuperable. In so arguing, I offer a novel interpretation of Descartes's project that rejects two common refrains of Cartesian scholarship. First, I deny that Descartes is an out-and-out internalist about knowledge and, in so doing, demonstrate that Descartes's epistemic program is not guilty of circularity. Second, I contend that Descartes's commitment to God's creation of the eternal truths is neither an embarrassment for Descartes nor a stand-alone curiosity, but is central to Descartes's epistemic program, modal theory, and scientific method.

In the *Meditations*, Descartes uses a method of doubt to reveal unshakable foundations upon which one can build scientific knowledge. Descartes's anti-skeptical procedure is commonly thought to be vulnerable to the charge that it is viciously circular. Descartes is accused of relying on a general epistemic principle (viz., the "truth rule": whatever I clearly and distinctly perceive is true) in his argument for the existence of a non-deceptive God, who in turn secures this very principle. In the first section of my dissertation, I explain that Descartes avoids circularity since he is able to achieve

certainty and knowledge (*cognitio*) even before he becomes aware of the foundations of this knowledge. By attaining *cognitio* of God's existence and non-deceptive nature, Descartes can then make use of the "truth rule" and thereby ascend to perfect certainty and scientific understanding (*scientia*). In this way, Descartes can be seen to be an epistemic externalist. While Descartes's account thereby avoids circularity, it makes the epistemic advantage of the Cartesian scientist over the "atheist geometer" (an expert who does not believe in God but nonetheless achieves *cognitio* by using God-guaranteed clear and distinct perception) look quite thin. To fully appreciate the epistemic advantage of the Cartesian scientist – and thus the value of Descartes's epistemic program – one must recognize that God is not only the guarantor of one's cognitive faculties, but also the metaphysical foundation of scientific truths.

A second major objection to Descartes's anti-skeptical and scientific programs focuses on his infamous Creation Doctrine: the doctrine that God freely wills and creates the eternal truths. The Creation Doctrine seems to lead to a paradox: Descartes's claim that God freely wills necessary truths seems to entail that these truths are both necessary (since God willed them to be necessary) and non-necessary (since God could have refrained from willing them). I argue that the sense in which the eternal truths could have been otherwise in no way threatens our certainty and knowledge of that which we clearly and distinctly perceive to be necessarily true.

In the final section of the dissertation, I further examine Descartes's Creation Doctrine. Descartes's goal of *scientia* involves not merely recognizing what is true, which is sufficient for *cognitio*, but also having full understanding of the foundations of knowledge and the relationships between truths. Descartes's scientific method thus requires intuitive foundations from which we can deductively arrive at further knowledge. According to this method, by understanding the way in which eternal truths have their origin in God's will and creation, we gain an appreciation of the connections between various truths and arrive at a systematic understanding of the world. Descartes denies that truths in various domains can be fully understood independent of a background of knowledge of simple and evident natures. He hopes to attain a "universal wisdom" and be able to deduce effects from their causes. I provide a demonstration of this method by considering Descartes's deduction of the laws of nature (inertia, collision, and rectilinear motion) from our knowledge of God's nature as immutable, the nature of matter as extension, and the fact that God has created a physical world with variation in its parts.

Dedication

For my mom.

Acknowledgements

I thank my dissertation advisors Barry Stroud and Daniel Warren for their advice and guidance in composing this dissertation. In addition, I thank the professors who introduced me to the works of Descartes: John Carriero, Calvin Normore, Deborah Brown, Hannah Ginsborg, Marleen Rozemond, Lilli Alanen, and Timothy Crockett. I thank my graduate student colleagues at Berkeley, especially Markus Kohl and Jessica Gelber, for their support and encouragement. I thank David Kaplan for his generosity early in my philosophical career. I reserve the deepest thanks for my family for providing me with unending patience and support that enabled me to complete this dissertation.

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Chapter I

Descartes's Method and the Role of Eternal Truths

Introduction

Descartes has the audacious goal to set science on a new footing. He aims to provide a method by means of which we may suspend our unstable beliefs, arrive at indubitable bedrock and then, proceeding from this foundation, gain deductive certainty in the sciences. It isn't widely agreed that Descartes has been successful: first, his response to the threat of skepticism appears circular; and second, his account of God's free creation of eternal truths (e.g., necessary truths of mathematics and logic) seems to lead to paradox. In this dissertation, I argue that neither criticism of Descartes is insuperable. In so arguing, I offer a novel interpretation of Descartes's project that rejects two common refrains of Cartesian scholarship. First, I deny that Descartes is an out-and-out internalist about knowledge and, in so doing, demonstrate that Descartes's epistemic program is not guilty of circularity. Second, I contend that Descartes's commitment to God's creation of the eternal truths is neither an embarrassment for Descartes nor a stand-alone curiosity, but is central to Descartes's epistemic program, modal theory, and scientific method. Descartes believes that God provides the foundation for understanding everything within one's capacity. Descartes's scientific program is ultimately unsuccessful (despite his reports to the contrary), owing to its inability to make good on its promise of transparent deductions of complex physical truths. Descartes, however, is not guilty of circularity or paradox in providing metaphysical foundations for his scientific enterprise.

Overview of the Chapters

In his correspondence with Mersenne in the spring of 1630, Descartes unveils his view that God freely wills and creates the eternal truths. This is commonly referred to as his Creation Doctrine. Descartes hints that this metaphysical reasoning about God has led him to discover the foundations of his physics. While Descartes writes that he will discuss these commitments in his treatise on physics, Descartes never explicitly presents the doctrine in any of his major scientific or philosophical works. He discusses this topic solely in his correspondence as well as the Fifth and Sixth Replies to the objections

to his *Meditations*.¹ In this dissertation, I contend that this Creation Doctrine – as Descartes hints in his correspondence – plays an integral role in Descartes’s philosophical and scientific programs.

In order to appreciate the role that the Creation Doctrine plays in Descartes’s philosophical program, it is helpful to begin with Descartes’s search for first principles. In the *Meditations*, Descartes uses a method of doubt to reveal unshakable foundations upon which one can build scientific knowledge. Descartes’s anti-skeptical procedure is commonly thought to be vulnerable to the charge that it is viciously circular. Descartes is accused of relying on a general epistemic principle (viz., the “truth rule”: whatever I clearly and distinctly perceive is true) in his argument for the existence of a non-deceptive God, who in turn secures this very principle. The charge of circularity is unsatisfactory. Descartes is aware of the challenge and he denies that it applies to his program. In the second chapter of my dissertation, I explain that Descartes avoids circularity since he is able to achieve certainty and knowledge (*cognitio*) even before he becomes aware of the foundations of this knowledge. By attaining *cognitio* of God’s existence and non-deceptive nature, Descartes can then make use of the “truth rule” and thereby ascend to perfect certainty and scientific understanding (*scientia*). In this way, Descartes can be seen to be an epistemic externalist. While Descartes’s account thereby avoids circularity, it makes the epistemic advantage of the Cartesian scientist over the “atheist geometer” (an expert who does not believe in God but nonetheless achieves *cognitio* by using God-guaranteed clear and distinct perception) look quite thin. To fully appreciate the epistemic advantage of the Cartesian scientist – and thus the value of Descartes’s epistemic program – one must recognize that God is not only the guarantor of one’s cognitive faculties, but also the

¹ Letter to Mersenne, 15 April 1630 (AT I: 146, CSMK: 23); Letter to Mersenne, 6 May 1630 (AT I: 149–150, CSMK: 24–5); Letter to Mersenne, 27 May 1630 (AT I: 152, CSMK 25); Fifth Replies (AT VII: 380, CSM 2: 261); Sixth Objections (AT VII: 417–8, CSM 2: 281); Sixth Replies (AT VII: 431–2, CSM 2: 291); Sixth Replies (AT VII: 435–6, CSM 2: 293); Letter to Mesland, 2 May 1644 (AT IV: 118–9, CSMK: 235). See also: Sixth Meditation, (AT VII: 78, CSM 2: 54); Second Replies (AT VII: 150–2, CSM 2: 108); Second Replies (AT VII: 169, CSM 2: 119); Letter to Gibieuf, 19 January 1642, (AT III: 476, CSMK: 202); Letter to Arnauld, 29 July 1648 (AT V: 223–4, CSMK: 358–9); Letter to More, 5 February 1649 (AT V: 272–3, CSMK: 362–4). In this dissertation, the following standard abbreviations are used to refer to editions of Descartes’s works: AT: C. Adam and P. Tannery (eds), *Oeuvres de Descartes* (Paris: Léopold Cerf, 1897–1913); CSM: J. Cottingham, R. Stoothoff and D. Murdoch (trans./eds), *The Philosophical Writings of Descartes* (Cambridge: CUP, 1992); CSMK: Volume three of the preceding, by the same translators/editors and A. Kenny (Cambridge: CUP, 1991).

metaphysical foundation of scientific truths. I suggest that by taking seriously Descartes's Creation Doctrine, we can see that on Descartes's account the Cartesian scientist has knowledge that the atheist geometer lacks. According to Descartes, this knowledge, which has its basis in recognizing God's nature, enables him to deductively arrive at knowledge of the physical world.

A second major objection to Descartes's anti-skeptical and scientific programs focuses on his infamous Creation Doctrine: the doctrine that God freely wills and creates the eternal truths. The Creation Doctrine seems to lead to a paradox: Descartes's claim that God freely wills necessary truths seems to entail that these truths are both necessary (since God willed them to be necessary) and non-necessary (since God could have refrained from willing them). In the third chapter, I show that Descartes can survive the challenge that his view leads to paradox. I do this by considering a particular challenge of this sort put forth by Steven Nadler. I argue that, contrary to Nadler's contention, Descartes's anti-skeptical and scientific programs are not in tension with his Creation Doctrine. There is no inconsistency in Descartes's claim to proceed from absolutely certain metaphysical foundations to physical truths by means of a deductive method.

In the fourth chapter, I provide a more in-depth treatment of the Creation Doctrine. I consider the most common interpretive strategies regarding Descartes's Creation Doctrine and argue that each of them faces serious difficulties in making sense of Descartes's commitments. I subsequently argue for a distinction between two kinds of possibility and demonstrate that the sense in which the eternal truths could have been otherwise in no way threatens our certainty and knowledge of that which we clearly and distinctly perceive to be necessarily true.

In the fifth chapter of the dissertation, I further examine the relationship between Descartes's Creation Doctrine and Descartes's project to obtain a systematic understanding of the world. Descartes's goal of *scientia* involves not merely recognizing what is true, which is sufficient for *cognitio*, but also having full understanding of the foundations of knowledge and the relationships between truths. Descartes's scientific method thus requires intuitive foundations from which we can deductively arrive at further knowledge. According to this method, by understanding the way in which eternal truths have their origin in God's will and creation, we gain an appreciation of the connections between various truths and arrive at a systematic understanding of the world. Descartes is fighting the idea that truths in various domains can be fully understood independent of a

background of knowledge of simple and evident natures. He hopes to attain a “universal wisdom” and be able to deduce effects from their better-known causes. I provide as demonstration of this method Descartes’s deduction of the laws of motion (inertia, impact, and rectilinear motion) from our knowledge of God’s nature as immutable, the nature of matter as extension, and the fact that God has created a physical world with variation in its parts.

Finally, I review the way in which the Creation Doctrine plays a key role in Descartes’s philosophical program. With a proper understanding of this doctrine, one may decipher otherwise mysterious and puzzling aspects of Descartes’s work. Descartes proves God’s existence and holds him to be the total cause of the eternal truths specifically to ground his scientific enterprise.

Chapter II Descartes, the Circle, and Cartesian Epistemology

Introduction

In the *Meditations*, Descartes presents a series of skeptical challenges designed to enable him to discover whether there are firm and stable foundations upon which he can rely to discover truths that are subsequently impossible to doubt. The most radical skeptical challenge that Descartes considers involves the hypothesis that he has been created with a deceptive nature (or cognitive flaw) owing to a deceitful, imperfect or chance creation. This hypothesis suggests that even his clear and distinct perceptions do not present him with the truth. If Descartes is to refute this radical skeptical hypothesis by proving the existence of a non-deceptive God, it seems he must do so while in the midst of the doubt. According to the Cartesian circle objection, Descartes relies on clear and distinct perceptions to prove the existence of God, but knowledge of God's existence and non-deceptive nature is necessary to justify his reliance on those very clear and distinct perceptions. It seems that the tools necessary to avoid the clutches of the skeptical worry are in this way unavailable to Descartes.

Scholars have worked diligently to explain how Descartes's reasoning, despite appearances, is not in fact circular. In the first section of this paper, I will briefly discuss the most promising explanation: Descartes's response to the skeptical challenge is non-circular because he does not rely on a general epistemic principle (viz., "the truth rule": whatever I clearly and distinctly perceive is true) in his argument for the existence of a non-deceptive God, who secures this very principle. This response to the circularity objection leaves unexplained how Descartes can regard current clear and distinct perceptions to be reliable premises in his anti-skeptical arguments, especially in the face of the doubt that he has been created with a deceptive nature (or cognitive flaw). A number of recent and compelling interpretations have suggested a straightforward explanation: Descartes is an epistemic externalist. Epistemic externalism explains that Descartes is able to achieve certainty and knowledge (*cognitio*) even before he becomes aware of the foundations of this knowledge. By attaining *cognitio* of God's existence and non-deceptive nature, Descartes can then make use of the "truth rule" and thereby ascend to perfect certainty and scientific understanding (*scientia*). While Descartes can be seen to be an epistemic externalist and in this way avoid circularity, it makes the

epistemic advantage of the Cartesian scientist over the atheist geometer (someone who does not believe in God, but nevertheless has God-guaranteed *cognitio* of clear and distinct perceptions) look quite thin. To fully appreciate the epistemic advantage of the Cartesian scientist over the atheist geometer – and thus the value of Descartes’s epistemic program – one must recognize that God is not only the guarantor of properly exercised cognitive faculties, but also the metaphysical foundation of scientific truths.

The Circle and Its Solution

According to the Cartesian circle objection, first raised explicitly by Antoine Arnauld in the Fourth Objections to the *Meditations*, clear and distinct perceptions are used to prove the existence of (a non-deceptive) God, but God’s guarantee is required for one to be certain of the truth of clear and distinct perceptions.¹ Thus, Descartes seems to commit himself to a bit of circular reasoning by relying on clear and distinct perceptions to prove God’s existence and non-deceptive nature, which is itself necessary to justify his reliance on those very clear and distinct perceptions. It seems that the tools necessary to avoid the clutches of radical doubt are in this way unavailable to Descartes.

The circle can be expressed succinctly as follows:

- (1) I can know that (P) what I clearly and distinctly perceive is true only if I (already) know that (Q) God exists and is not a deceiver
- (2) I can know that (Q) God exists and is not a deceiver only if I (already) know that (P) what I clearly and distinctly perceive is true.

In Descartes’s dismissal of the circularity objection, he seems to deny the claim that we know the truth of clear and distinct perceptions only if we (already) know that God exists and is not a

¹ Arnauld writes: “I have one further scruple, about how the author avoids a circle when he says that we are sure that what we clearly and distinctly perceive is true only because God exists. But we can be sure that God exists only because we clearly and distinctly perceive this. Consequently, before we might be sure that God exists, we ought to be sure that whatever we clearly and evidently perceive is true” (Fourth Objections: AT VII: 214, CSM 2: 150). A related worry (that we cannot know anything else until we know that God exists) is raised in the Second Objections at AT VII: 124-5, CSM 2: 89.

deceiver. However, this is at least *prima facie* unsatisfying because he seems to make claims of this variety in the *Meditations*.² Thus, the main question that must be settled is whether Descartes thinks that we must (first) know that God exists and is not a deceiver in order to obtain certainty of the truth of our clear and distinct perceptions.

The most promising solutions to the Cartesian circle offer that, despite appearances to the contrary, Descartes does in fact have knowledge of clear and distinct perceptions prior to proving that God exists and is no deceiver. Descartes possesses *cognitio* (the kind of knowledge had by an atheist geometer), and on the basis of this knowledge of clear and distinct perceptions, proves God's existence and non-deceptive nature. This proof allows him to achieve *scientia* (reflective knowledge which carries with it the perfect certainty that comes with recognizing that God guarantees the truth of all clear and distinct perceptions). In his Second Replies, Descartes insists that he hasn't called into question "what we in fact perceive clearly", i.e., perceptions that are "so transparently clear and at the same time so simple that ... we can never doubt them".³ So long as we are currently having clear and distinct perceptions, we can use (our knowledge of) them to prove God's existence and non-deceptive nature. In this way, one can rely on (knowledge of) particular clear and distinct perceptions to establish the existence of a non-deceptive God and thereby the general "truth rule" (the epistemic principle that "whatever I clearly and distinctly perceive is true") without arguing in a circle.⁴

The Cartesian circle can thus be seen to originate from either of two ambiguities that are clarified by making the following requisite distinctions. First, Descartes is working with not one, but two kinds of

² For example, consider the following three passages: (1) "...if I do not know this [whether there is a God, and, if there is, whether he can be a deceiver], it seems that I can never be quite certain about anything else" (AT VII: 36, CSM 2: 25). (2) "...I see that the certainty of all other things depends on this [the fact that God exists], so that without it nothing can ever be perfectly known. ... And so other arguments can now occur to me which might easily undermine my opinion, if I were unaware of God: and I should thus never have true and certain knowledge [*scientia*] about anything, but only shifting and changeable opinions" (AT VII: 69, CSM 2: 48). (3) "Thus I see plainly that the certainty and truth of all knowledge [*scientia*] depends uniquely on my awareness [*cognitio*] of the true God, to such an extent that I was incapable of perfect knowledge [*perfecte scire*] about anything else until I became aware [*nossem*] of him." (AT VII: 71, CSM 2: 49, my emphasis)

³ Second Replies, AT VII: 145-6, CSM 2: 103-5.

⁴ See, for example, Doney, "The Cartesian Circle"; Kenny, "The Cartesian Circle and the Eternal Truths"; Van Cleve, "Foundationalism, Epistemic Principles, and the Cartesian Circle"; Carriero, "The Cartesian Circle and the Foundations of Knowledge"; Newman and Nelson, "Circumventing Cartesian Circles."

knowledge (*cognitio* and *scientia*) and their attendant kinds of certainty (certainty that is in some sense shakable by slight and metaphysical doubts⁵ and perfect certainty).⁶ Second, the phrase “what I clearly and distinctly perceive is true” is ambiguous between a claim about the truth of a particular clear and distinct perception (of which I can have *cognitio* prior to the proof of a non-deceptive God) and an expression of the “truth rule”, the epistemic principle that whatever I clearly and distinctly perceive is true (which I know only subsequent to proving the existence of a non-deceptive God). With these distinctions in hand, we can successfully describe Descartes’s non-circular ascent from lower-level knowledge and certainty (*cognitio*) to higher-level knowledge and perfect certainty (*scientia*). Descartes uses his knowledge (*cognitio*) of particular clearly and distinctly perceived truths, whose acquisition doesn’t require relying on a general epistemic principle (viz., the “truth rule”), to prove that God guarantees that everything I clearly and distinctly perceive is true.⁷

An Externalist Account of *Cognitio* and Descartes’s Epistemic Program

In the previous section, I explained that Descartes is unthreatened by the Cartesian circle because he is able to non-circularly ascend from *cognitio* of current clear and distinct perceptions (including the clear and distinct perception of the existence of a non-deceptive God that guarantees that his cognitive abilities, when used properly, deliver the truth) to *scientia* of clear and distinct perceptions. However, this response to the circularity objection leaves unexplained how Descartes can regard current clear and distinct perceptions to be reliable instances of *cognitio* that can serve as premises in his anti-skeptical arguments. Descartes must explain how he can attain any form of knowledge or certainty in the face of the radical doubt that he has been created with a deceptive

⁵ I will discuss in what sense certainty of clear and distinct perceptions is shakable by radical doubt in the following section.

⁶ For example, Ernest Sosa shows that Descartes’s claims that appear circular when expressed with the univocal term “knowledge”, no longer describe a circle when one makes use of the distinction between two types of knowledge (*cognitio* and *scientia*). Sosa, “How to Resolve the Pyrrhonian Problematic,” p. 239.

⁷ For example, Keith DeRose, Ernest Sosa, and John Carriero each offer a variation of this “two-level” strategy. DeRose, “Descartes, Epistemic Principles, Epistemic Circularity, and Scientia”; Sosa, “How to Resolve the Pyrrhonian Problematic”; Carriero, “The Cartesian Circle and the Foundations of Knowledge.”

nature (or cognitive flaw), which makes him go wrong even with respect to what he takes himself to perceive most clearly.

Among recent commentators, there have been two answers to this question. One answer is that we get “psychological certainty” from current clear and distinct perception; it is a psychological fact about us that we are compelled to assent to clear and distinct perceptions. The other answer is that we get “rational certainty” – we assent to things that are clearly and distinctly perceived because they are rationally compelling (i.e., we see that they must be the case). I will briefly introduce the psychological certainty interpretation and what I consider to be its fatal flaw. I will then consider the rational certainty interpretation, which will be the focus of the rest of this chapter.

According to the psychological certainty interpretation, it is a psychological fact that we cannot doubt current clear and distinct perceptions and are certain of these beliefs.⁸ The main problem for the psychological certainty interpretation is to account for the epistemic significance of this psychological fact. For example, Alan Gewirth holds that Descartes is psychologically certain of God’s existence and non-deceptive nature. This psychological fact about Descartes shows him to be unable to entertain the only skeptical hypothesis that provides him with a reason to doubt clear and distinct perception. In this way, according to Gewirth, Descartes is able to achieve “metaphysical certainty” which entails truth. However, as Van Cleve has successfully argued, Gewirth’s strategy only enables Descartes to achieve “psychological certainty not only of those [clearly and distinctly perceived] propositions themselves, but also of the falsehood of every reason for doubting them. Thus, we have not advanced to a new *kind* of certainty at all. We have merely extended the class of psychological certainties.”⁹ In this way, Descartes cannot non-circularly ascend from psychological certainty (which doesn’t entail truth) to perfect (‘metaphysical’) certainty and knowledge (which do entail truth).¹⁰

⁸ See, for example, Gewirth, “The Cartesian Circle”; Gewirth, “The Cartesian Circle Reconsidered”; Loeb, “The Cartesian Circle.”

⁹ Van Cleve, “Foundationalism, Epistemic Principles, and the Cartesian Circle,” pp. 60-1. See also Carriero, “The Cartesian Circle and the Foundations of Knowledge,” pp. 305-6 for additional complaints about psychological certainty interpretations.

¹⁰ Louis Loeb offers a psychological certainty interpretation that denies that “an adequate solution to the problem of the circle must be epistemic in character” (Loeb, “The Cartesian Circle,” p. 223). Loeb suggests that good evidence, perfect certainty, and *scientia* do not require a non-question-begging argument against the skeptical supposition (i.e., the supposition that one’s faculty of clear and distinct perception is defective). In this way, Loeb avoids the philosophical problem I levied

The other answer that explains why current clear and distinct perceptions are immune to direct doubt and compel our assent is that we achieve “rational certainty” from current clear and distinct perception. According to the rational certainty interpretation, clear and distinct perceptions are cases of seeing that something is the case such that one is rationally, as opposed to merely psychologically, compelled to assent.¹¹ Descartes’s conception is that if you are rationally compelled to assent, then what you assent to is true. Descartes can thus arrive at knowledge (*cognitio*) that entails truth without needing to be aware of the foundations of this knowledge (viz., that he has been created by a non-deceiving God who guarantees the truth of his clear and distinct perceptions).¹² In this way, Descartes can be seen to be subscribing to a form of epistemic externalism.¹³ According to externalist accounts of rational certainty and *cognitio*, Descartes can use his clear and distinct perceptions to arrive at knowledge (*cognitio*) of the fact that he has been created by a non-deceptive God (i.e., what Carriero calls “the metaphysical underpinnings of cognition”) which serves as the foundation for a more secure form of knowledge (*scientia*) and perfect certainty (that is safe from retrospective or indirect doubt).

In order to demonstrate how clear and distinct perceptions are rationally certain and thus immune to radical skeptical doubt, I will outline how externalism fits Descartes’s epistemic project in the

against psychological certainty interpretations of not being able to parlay mere psychological certainty into knowledge, which entails truth. Instead, Loeb interprets Descartes’s epistemology in terms of “psychologically defined objectives” such as permanence, unshakability, and stability of belief. This interpretation comes at the high cost of either ignoring or radically reinterpreting Descartes’s interest in truth (which he defines as correspondence of thoughts with their objects, (AT II: 597, CSMK: 139)) and acquiring knowledge of essences. I will not further argue against stability or coherence as the objectives of Descartes’s project, but will assume that Descartes is primarily interested in a correspondence theory of truth.

¹¹ John Carriero describes rational certainty as the experience of “seeing that something must be so” and being unable to doubt current clear and distinct perceptions. (Carriero, “The Cartesian Circle and the Foundations of Knowledge,” p. 304) Michael Della Rocca similarly describes the rational certainty of current clear and distinct perception as “simply a matter of seeing that *p* is true while attending to this claim (and to the demonstration of this claim, if it requires demonstration).” (Della Rocca, “Descartes, the Cartesian Circle, and Epistemology Without God,” p. 19)

¹² See for example Carriero, “The Cartesian Circle and the Foundations of Knowledge,” p. 306f. and Della Rocca, “Descartes, the Cartesian Circle, and Epistemology Without God,” p. 4.

¹³ Van Cleve and Sosa also provide externalist interpretations of Descartes. Van Cleve, “Foundationalism, Epistemic Principles, and the Cartesian Circle”; Sosa, “How to Resolve the Pyrrhonian Problematic.”

Meditations. Specifically, I will clarify how this anti-skeptical strategy fits with Descartes's presentation of radical skeptical doubt in the *Meditations*. I will explain how the meditator can take herself to be rationally certain of her current clear and distinct perceptions despite the radical doubt that she has been created with a deceptive nature (or cognitive flaw), which makes her go wrong even with respect to what she takes herself to perceive most clearly.

At first glance, adopting an externalist epistemology seems to be at odds with the explanatory burden that Descartes has set for himself with his method of doubt. In the *Meditations*, Descartes announces a first-personal project to discover what, if anything, he can know. As part of this project, Descartes introduces more and more powerful skeptical hypotheses, until he finally questions whether his cognitive faculties might be flawed (i.e., whether he possesses a deceptive nature) due to being created by a deceiving God, imperfect creator, fate or chance. On an externalist reading, one's *cognitio* and its attendant certainty are only fully explained (i.e., shown to be perfectly reliable) *ex post facto* by discovering that God is the creator and guarantor of our cognitive faculties (i.e., what Carriero has called "the metaphysical underpinnings of cognition"). However, one can discover these underpinnings only by relying on (accepting as true and certain) current clear and distinct perceptions. In other words, the externalist Descartes could not explain how it is that he can rely on clear and distinct perception without falling victim to methodological circularity (i.e., using a method of knowing, namely clear and distinct perception, to prove the reliability of that very method) and begging the question (i.e., taking the premises in the argument for God's existence to be known when the project at hand is to consider whether one can know anything). Thus, as Barry Stroud has skillfully pointed out, the externalist (and thus the imagined externalist Descartes) cannot supply a satisfactorily general account that explains how he knows the things that he in fact knows.¹⁴

¹⁴ Stroud, "Understanding Human Knowledge in General." Stroud describes the project of explaining knowledge in a certain domain without assuming any knowledge in that domain from the outset. Stroud finds that third-personal theories of knowledge allow us to explain how people know things in a certain domain (whether they know that they know or not). However, "when we try to explain how we ourselves know those things we find we can understand it only by assuming that we have got some knowledge in the domain in question." (p. 121) Similarly, Stroud writes: "As a third-person, observational study ... [externalism] would avoid the obstacles to human understanding apparently involved in the first-person Cartesian project. But the question is whether we can take up such an 'external' observer's position with respect to ourselves and our knowledge and still gain a satisfactorily general explanation of how we know the things we know. That is where I think the

Any attempt to provide a fully general account of the possibility of knowledge (i.e., an account that has no recourse to undoubted facts) is a fool's errand. Descartes was no fool. We can save Descartes from the appearance of foolishness by recognizing that the objective of his epistemic program is not to show how it is that he is able to know things in the face of the general worry that he might not be able to know anything at all. Rather, his objective is to explain how one can take clear and distinct perceptions about which one has a high level of certainty and show that they are immune to any ("slight and metaphysical") indirect, second-order, or retrospective doubts. If clear and distinct perceptions already have some high epistemic status prior to discovering the metaphysical underpinnings of cognition that bolster that epistemic status to the level of *scientia*, the methodological circularity of Descartes's epistemic program can be seen to be "virtuously circular" or self-verifying.¹⁵ According to this interpretation, the pre-theistic meditator or atheist geometer is justified in regarding her clear and distinct perceptions as true and certain prior to providing a demonstration of the existence of God (which makes her immune to the doubt that she has a deceptive nature or cognitive flaw). This view then credits Descartes (and other graduates of the *Meditations*) with arriving at the goal of increased epistemic status (i.e., *scientia*) for his clear and distinct perceptions by showing that indirect or retrospective doubts can be eliminated.¹⁶

Proponents of an externalist interpretation must provide evidence that this is indeed Descartes's program and also demonstrate why Descartes has been commonly misinterpreted (by

inevitable dissatisfaction comes in." (p. 120) See also Stroud, "Scepticism, 'Externalism', and the Goal of Epistemology."

¹⁵ For example, Keith DeRose writes that "an epistemically circular self-verification of the faculty" of clear and distinct perception is not "obviously worthless" and "may well be of some significant value." He explains: "It is when a faculty and its resulting beliefs are seen as *already* having something going for them prior to such self-verification that this process plausibly seems to bestow *further* epistemic virtue on them" (DeRose, "Descartes, Epistemic Principles, Epistemic Circularity, and Scientia," p. 231). For the same reasons, Ernest Sosa thinks Descartes's project is virtuously circular and explains the further epistemic virtue of reflective, enlightened *scientia* in terms of the heightened status of reflectively acquired knowledge and the advantage gained from "the support of a comprehensively coherent and explanatory world-view" (Sosa, "How to Resolve the Pyrrhonian Problematic," p. 243).

¹⁶ The thought is that one no longer finds one's beliefs undermined by doubts about the origin and trustworthiness of one's cognitive faculties because one has knowledge of the origin and trustworthiness of one's cognitive faculties. When one attempts to entertain such a radical doubt, one now immediately recognizes such hypotheses as not merely far-fetched and hyperbolic, but as patently false.

folks who are not fools themselves) to be engaged in supplying a fully general account of the possibility of knowledge. Descartes's project has appeared to many to be fully general owing to the fact that Descartes purports to withhold assent from all beliefs that have been cast into doubt and furthermore reports: "there is not one of my former beliefs about which a doubt may not properly be raised".¹⁷ In addition, Descartes's doubts suggest to him that he could go wrong "even in those matters which I think I see utterly clearly with my mind's eye" and that without ruling out these doubts "it seems that I can never be quite certain about anything else".¹⁸

Despite these suggestive claims, Descartes's response to radical skepticism relies on the "trustworthiness" of the faculty of clear and distinct perception (i.e., the natural light).¹⁹ Furthermore, in the Fifth Meditation and the Second Replies, Descartes explains that the radical doubt does not prevent clear and distinct perceptions from being reliably used as premises in his anti-skeptical argument.

So, Descartes seems to doubt all of his beliefs including those he arrives at by means of clear and distinct perception, but he clearly holds that (at least some) clear and distinct perceptions are nonetheless known with certainty. These two apparently opposed lines of thought can be resolved by recognizing that Descartes holds that we cannot *directly* doubt clear and distinct first-order cognition. In his Second Replies, Descartes insists that he hasn't called into question "what we in fact perceive clearly", i.e., perceptions that are "so transparently clear and at the same time so simple that ... we can never doubt them". Instead, we are caused to doubt only "what we remember having perceived clearly on a previous occasion", so the proof of God's existence and non-deceptive nature is needed only to guarantee knowledge when we no longer "attend to the arguments on which our knowledge depends..."²⁰ Recognizing Descartes's distinction between current clear and distinct perceptions and recollected judgments, numerous commentators have argued that for Descartes clear and distinct perceptions can only be doubted either retrospectively²¹ or indirectly in a second-order fashion.²² In this way,

¹⁷ AT VII: 21, CSM 2: 14-5.

¹⁸ AT VII: 36, CSM 2: 25.

¹⁹ AT VII: 38, CSM 2: 27.

²⁰ Second Replies, AT VII: 140-6, CSM 2: 100-5 esp. AT VII: 145-6, CSM 2: 103-5 (See also Fourth Replies, AT VII: 245-6, CSM 2: 171 and Fifth Meditation, AT VII: 69-71, CSM 2: 48-9).

²¹ For example, Harry Frankfurt argues that we doubt clear and distinct perceptions when we remember having arrived at them, but are not currently perceiving them. Frankfurt, "Memory and the Cartesian Circle." See also Loeb, "The Cartesian Circle."

current clear and distinct perceptions are taken to be rationally certain (rationally assent-compelling) and indubitable. The atheist geometer is capable of *cognitio* when he clearly and distinctly perceives the truths of mathematics. The atheist geometer, however, falls short of *scientia* owing (at least in part) to the fact that he can fall into subsequent indirect or second-order doubt about that which he previously clearly and distinctly perceived since he has not yet discovered the divine origins of his cognitive faculties. The meditator can use her rationally certain *cognitio* of current clear and distinct perceptions to prove the general epistemic principle (the “truth rule”) that God guarantees the truth of all clear and distinct perceptions and ascend to *scientia*.

The Metaphysical Move

A successful interpretation of Descartes’s epistemic program must be capable of fulfilling two criteria. First, it must show how Descartes can secure God’s guarantee of clear and distinct perceptions in a non-circular fashion. Second, it must make clear the epistemic advantage of the graduate of the *Meditations* or Cartesian scientist, who recognizes the existence of a non-deceptive God, over the naïve meditator or atheist geometer, who does not believe in God but nonetheless achieves knowledge (*cognitio*) by using clear and distinct perception in a world in which God as a matter of fact exists and is non-deceptive. Despite its success in helping Descartes to avoid circularity, the externalist interpretation on its own makes the epistemic advantage of the Cartesian scientist over the atheist geometer look quite thin. The epistemic advantage looks thin for two (related) reasons: (1) because the doubt is weak (i.e., slight and exaggerated), and (2) because *cognitio*, which involves the rational certainty of seeing that something must be so, is quite strong. I will suggest that to appreciate the epistemic advantage of the Cartesian scientist, one must see God not only as the guarantor of one’s cognitive faculties, but also the metaphysical foundation of all of science.

²²Many interpreters have suggested that the radical doubt never directly impugns the truth of particular clear and distinct perceptions, but instead assails the epistemic principle (or general rule) that “whatever I clearly and distinctly perceive is true”. Anthony Kenny writes that the meditator can doubt the general principle (for all *p*, if I clearly and distinctly perceive that *p*, then *p*) but not any particular *p* that I clearly and distinctly perceive to be true. Kenny, “The Cartesian Circle and the Eternal Truths,” pp. 685-700. See also: Doney, “The Cartesian Circle,” p. 334, and Van Cleve, “Foundationalism, Epistemic Principles, and the Cartesian Circle,” p. 71.

Realizing immunity to recurrent doubt is surely of epistemic significance.²³ However, even before providing an anti-skeptical response, Descartes holds that the radical doubt that he might possess a deceptive nature is weak. He writes that it is a “very slight and, so to speak, metaphysical” reason to doubt that he has “no cause” to believe in.²⁴ Furthermore, Descartes finds this reason for doubt to itself be “doubtful”²⁵ and “exaggerated”²⁶ and asks his readers “to conclude that it is quite irrational to cast doubt on the clear and distinct perceptions of the pure intellect ... because of mere hypotheses which contain an element of the unknown.”²⁷ If the doubt itself is admittedly weak and not to be taken seriously, the superiority of the epistemic position of the Cartesian scientist over the atheistic or pre-theistic meditator cannot be captured merely by insusceptibility to this kind of doubt.

Part of the reason why the doubt is so weak is that it cannot directly implicate current clear and distinct perceptions; *cognitio* involves rational certainty and seeing that something must be the case. For example, the atheist geometer sees that the angles of a triangle sum to 180 degrees. It is surely to his advantage to shed any recurrent (retrospective, indirect or second-order) doubt, but there is a further epistemic advantage to be gained by completing the *Meditations*. While *cognitio* involves rational certainty and getting to the truth, it doesn’t amount to full and systematic understanding that is consonant with *scientia*. To achieve this epistemic position, one must recognize God as the metaphysical foundation of scientific knowledge.

Beyond immunity to indirect or second-order doubt, in what way does the *scientia* of a Cartesian scientist surpass the *cognitio* of an atheist geometer with respect to geometrical truths? If we were to see disciplines such as geometry or arithmetic as stand-alone subjects, about which specialists gain knowledge without comprehending their ultimate origins or understanding their intimate connections to other fields of study, then recognition of God’s creation of eternal truths of mathematics would be of far less epistemic significance. Descartes, however, is seeking a comprehensive sort of knowledge that involves recognizing that the truths of mathematics are involved in

²³ In the Second Replies, Descartes explains the advantage of the Cartesian scientist over the atheist geometer in terms of insusceptibility to doubt. (AT VII: 141, CSM 2: 101)

²⁴ Third Meditation; AT VII: 36, CSM 2: 25

²⁵ Seventh Replies; AT VII: 474, CSM 2: 319

²⁶ Seventh Replies; AT VII: 460, CSM 2: 308

²⁷ Second Replies; AT VII: 164, CSM 2: 116

understanding various other disciplines (e.g., astronomy, biology, physics). According to Descartes, God has created the world so that innately-known mathematical truths provide the basis for understanding the empirically-discovered phenomena of the physical world. In this way, the Cartesian scientist surpasses the atheist geometer by possessing both a deeper appreciation of the ultimate source of the truths of mathematics as well as a deductive understanding of the physical world.

I have suggested that *cognitio* plus immunity to recurrent doubt does not adequately account for the epistemic advantage that comes with *scientia*. *Scientia* involves not only security against extreme or “exaggerated” indirect doubts, but also the possession of all-embracing understanding that involves recognizing God as the metaphysical foundation of scientific truths. Recognizing God not only as the guarantor of cognitive faculties but also as the perfect creator of the eternal truths and the physical world supplies one with both knowledge of the origin of foundational truths (viz., God created them as necessary and imprinted them in our minds) and knowledge of how our intuitions of these foundational truths can lead to deductive and systematic understanding of the complex physical world. In this way, a metaphysical move is necessary for attaining *scientia* and deductive certainty with respect to physical truths.

Descartes’s search for the metaphysical foundations of knowledge stems from his recognition that the method he prescribed in the *Regulae* cannot supply deductive certainty across all mathematical-scientific disciplines. Earlier in the *Regulae*, Descartes had attempted to establish a method by which one can come to gain “a true understanding of everything within one’s capacity.”²⁸ Descartes reveals two problems that get in the way of achieving this goal: (1) not finding a method capable of delivering such knowledge and (2) the error of rejecting truths owing to undue skepticism. While it is clear the role God plays in defusing the second problem (by guaranteeing the reliability of our cognitive faculties), it is harder to see the role God plays in Descartes’s method. In the *Regulae*, Descartes unveils a method of orderly reasoning that he believes will reveal not only what is the case, but also why it is so and how it is discovered. Descartes believes he can reduce complex questions about physical phenomena like sounds or stars to simple truths about measure and order and deduce solutions to these complex questions by building from these foundational truths. But Descartes abandons this reductionist method when he recognizes that there is no way to reduce complex empirical

²⁸ AT X: 372, CSM 1: 16

matters to intuitive, *a priori*, simple truths. Instead, Descartes realizes that in order to achieve deductive certainty with respect to complex empirical matters, he must first recognize why these simple truths hold and how they are discovered. This is explained by the fact that God has created them as necessary and imprinted them in our minds. This metaphysical move enables him to achieve absolute deductive certainty about those matters that follow from these foundational truths. For example, the laws of motion can be deduced from the nature of matter and from God's immutability, given God's creation of a world set in motion.²⁹

Descartes is commonly understood to be providing a path toward scientific understanding that moves away from unchecked reliance on the senses. I suggest that we should not see Descartes's reliance on intuition, deduction and innate truths merely as an alternative to misguided reliance on the senses and the skepticism that he thinks would result. Rather, by locating God as the metaphysical foundation for *scientia*, Descartes aims to provide a means for arriving at systematic and all-embracing knowledge that can yield deductive certainty of physical truths that otherwise could only be known in an inductive, probabilistic fashion.

²⁹ I explore the derivation of the laws of motion and Descartes's metaphysical move and its role in his scientific method in Chapter V "Descartes's Creation Doctrine and Deductive Certainty in the Sciences."

Chapter III
The Creation Doctrine, Anti-Skepticism, and Descartes's
Scientific Method:
A Response to Nadler's Dilemma

Introduction

Early in the *Meditations*, the meditator's obscure and confused understanding of God's nature (i.e., not realizing that it is incompatible with God's nature to create her with incorrigible cognitive flaws) can lead her to doubt even the simplest and most general things (e.g., basic propositions of arithmetic and geometry like '2+3=5' or 'squares have four sides'). Descartes's case against the skeptic involves the discovery of the existence of an all-perfect God who guarantees that what we clearly and distinctly perceive to be the case is in fact true.

In the previous chapter, I explained that Descartes's epistemic program in the *Meditations* survives the charge of circularity. Descartes's anti-skeptical program begins by subscribing to a form of epistemic externalism: one may achieve *cognitio* by using God-guaranteed clear and distinct perception even prior to recognizing God's existence as a benevolent guarantor of one's properly-used cognitive faculties. One may then use *cognitio* to prove God's existence and ascend to perfect certainty and *scientia*. *Scientia* involves not only immunity to any indirect or retrospective doubts of clear and distinct perceptions, but further provides one with secure metaphysical foundations upon which one can come to have a systematic and deductive understanding of the world. In this way, the methodical doubts and subsequent proofs of the existence of God in the *Meditations* are not used to demonstrate the possibility of knowledge *simpliciter*. Rather, the epistemic goal in the *Meditations* is to show how one can arrive at a higher-form of knowledge (*scientia*), which has its basis in recognizing God's nature and which makes possible deductive knowledge of the physical world.

Steven Nadler has argued that the case against the skeptic fails since by believing only clear and distinct perceptions we are led to accept both that certain eternal truths follow from God's nature (e.g., that the laws of motion can be deduced from God's immutability) and that these eternal truths cannot follow from God's nature, since Descartes's Creation Doctrine tells us that they are contingent on

God's free will.¹ He thus argues that our best use of reason leads us to "incoherent" conclusions. Furthermore, Nadler finds Descartes's scientific program, which requires physical truths (e.g., the laws of motion) to be deducible from metaphysical foundations, to be doomed owing to Descartes's commitment to the Creation Doctrine. In this chapter, I will argue that Nadler's worrisome conclusions result from mischaracterizing the status of both the eternal truths and the laws of motion in Descartes's philosophy.

Nadler's challenge to Descartes's anti-skeptical program and scientific program (of deducing physical truths from metaphysical foundations) can be seen to take the form of a dilemma. Nadler's dilemma is that making only the best use of our reason, we are led to two conflicting conclusions: (1) that certain eternal truths follow from God's nature and (2) that they do not follow from God's nature. The first horn of the dilemma follows from the foundations of Descartes's scientific program: we clearly and distinctly perceive the laws of motion to deductively follow from God's immutability. The second horn follows from Descartes's Creation Doctrine, which tells us that the eternal truths are contingent on God's free will.

I provide a two-pronged response to this dilemma. First, I show that Nadler's worries about Descartes's anti-skeptical program and scientific project are premised on a mischaracterization of Descartes's commitments. More specifically, Nadler believes that eternal truths are non-necessary according to Descartes's Creation Doctrine. I argue that the contingency of the eternal truths on God's will is no threat to their necessity; according to Descartes, they are necessary because God willed them as such (and his will is immutable). Second, I argue that the first horn of Nadler's dilemma is based on a confusion; the laws of motion are not eternal truths. The laws of motion are deducible from God's immutability (given God's creation of a material world that is set in motion), rather than being based on God's freely willing an essence of motion from eternity. I argue that the laws of motion can nonetheless be known *a priori* with deductive certainty (according to Descartes's understanding of these terms). I thereby show that, contrary to Nadler's contention, Descartes's anti-skeptical and scientific programs are not in tension with his Creation Doctrine: there is no inconsistency in Descartes's claim to proceed from absolutely certain metaphysical foundations to physical truths by means of a deductive method.

¹ Nadler, "Scientific Certainty and the Creation of the Eternal Truths: A Problem in Descartes."

The Creation Doctrine and the Necessity of Eternal Truths

Nadler's dilemma is that the laws of motion, which he identifies as eternal truths, are contingent on God's free will, which entails that they do not follow necessarily from God's nature (the second horn), while Descartes claims that the laws of motion can be deduced from considerations of God's nature (the first horn). I will argue later in this chapter that the laws of nature are not in fact eternal truths (i.e., truths about essences dependent on God's free will and imprinted in our souls). Thus, the specific claims upon which Nadler's dilemma is built are in fact consistent and the dilemma is thereby resolved. That said, Nadler's dilemma is an instance of the more general worry that despite our coming to know that God exists and has a perfect nature, we are mistaken about the modal status of things we clearly and distinctly perceive to be necessarily true (e.g., the eternal truths of mathematics and the laws of motion). If this were the case, it would spell trouble for both Descartes's anti-skepticism and his scientific program. In this section, I will begin my defense of Descartes's anti-skeptical and scientific programs against Nadler's general worry by arguing that Nadler has mischaracterized the upshot of the Creation Doctrine: the (admitted) contingency of the eternal truths on God's free will does not entail that they are not necessary.²

Descartes espouses what has been dubbed his Creation Doctrine of the eternal truths in both his correspondence and his replies to objections to the *Meditations*.³ In these works, Descartes explains that God is the omnipotent author of the eternal truths: truths of mathematics and logic that depend upon essences and are imprinted in our souls. That is to say, they depend on God completely.⁴ God is not only the complete cause of the eternal truths,

² This claim can sound paradoxical, but necessary truths can be grounded by a contingent fact as long one denies that if Lp then LLp . Descartes provides this denial in his 2 May 1644 Letter to Mesland (AT IV: 118-9, CSMK: 235). Cf. McFetridge, "Descartes on Modality," pp. 174-7.

³ Letter to Mersenne 15 April 1630 (AT I: 146, CSMK: 23); Letter to Mersenne 6 May 1630 AT I: 149 -150, CSMK: 24-5); Letter to Mersenne 27 May 1630 (AT I: 152, CSMK: 25); Fifth Replies (AT VII: 380, CSM 2: 261); Sixth Objections (AT VII: 417-8, CSM 2: 281); Sixth Replies (AT VII: 431-2, CSM 2: 291); Sixth Replies (AT VII: 435-6, CSM 2: 293); Letter to Mesland, 2 May 1644 (AT IV: 118-9, CSMK: 235). See also: Sixth Meditation, (AT VII: 78, CSM 2: 54); Second Replies (AT VII: 150-2, CSM 2: 108); Second Replies (AT VII: 169, CSM 2: 119); Letter to Gibieuf, 19 January 1642, (AT III: 476, CSMK: 202); Letter to Arnauld, 29 July 1648 (AT V: 223-4, CSMK: 358-9); Letter to More, 5 February 1649 (AT V: 272-3, CSMK: 362-4).

⁴ "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" (To Mersenne, 6 May 1630, AT I: 149, CSMK: 24).

but he willed and created them freely. For Descartes, insisting that God freely willed and created the eternal truths is of the utmost importance for respecting God's omnipotence. Descartes claims that "the power of God cannot have any limits"⁵ and in the Sixth Replies, Descartes makes clear that truths being independent of God's will would be a limitation on God's freedom and power.⁶ Descartes goes on to explain that unlike in humans, for whom indifference is a sign of ignorance as to what is best, for God it is a sign of his omnipotence and freedom from external limitations and values.⁷

It should also be noted that Descartes understands God to be simple – his intellect is not distinct from his will or from his creative power.⁸ In other words, there is no priority of one of God's essential attributes over the others. Descartes holds that it could not be the case that God wills what his intellect presents as best, as this supposes that God first understands certain possible essences or potential states of affairs and then subsequently exercises his will and creative power. Thus, Descartes's God does not create deliberately or by

⁵ Letter to Mesland of 2 May 1644 (AT IV: 118-9, CSMK: 235)

⁶ "As for the freedom of the will, the way in which it exists in God is quite different from the way in which it exists in us. It is self-contradictory to suppose that the will of God was not indifferent from eternity with respect to everything which has happened or will ever happen; for it is impossible to imagine that anything is thought of in the divine intellect as good or true, or worthy of belief or action or omission, prior to the decision of the divine will to make it so. I am not speaking here of temporal priority: I mean that there is not even any priority of order, or nature, or of 'rationally determined reason' as they call it, such that God's idea of the good impelled him to choose one thing rather than another." (Sixth Replies, AT VII: 431-2, CSM 2: 291)

⁷ "God did not will the creation of the world in time because he saw that it would be better this way than if he had created it from eternity; nor did he will that the three angles of a triangle should be equal to two right angles because he recognized that it could not be otherwise, and so on. On the contrary, it is because he willed to create the world in time that it is better this way than if he had created it from eternity; and it is because he willed that the three angles of a triangle should necessarily equal two right angles that this is true and cannot be otherwise; and so on in other cases. ... Thus the supreme indifference to be found in God is the supreme indication of his omnipotence" (Sixth Replies, AT VII: 432, CSM 2: 291-2).

⁸ In his letters to Mersenne (6 May 1630, AT I: 149 –150, CSMK: 24-5; 27 May 1630, AT I: 152, CSMK: 25), Descartes identifies knowing, willing and creating and writes regarding the eternal truths: "... from all eternity he willed and understood them to be, and by that very fact he created them... In God, willing, understanding, and creating are all the same thing without one being prior to the other even conceptually." Furthermore in his letter to Mesland of 2 May 1644 (AT IV: 118-9, CSMK: 235) he writes: "nor should we conceive any precedence or priority between his understanding 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."

design, by actualizing possibilities that he understands to be best. Instead, God creates completely freely without any prior judgment.⁹

God's free willing of eternal truths such as '2+3=5' and 'squares have four sides' means that these truths are contingent on God's free will. Thus, eternal truths do not follow necessarily from God's nature.¹⁰ So, the second horn of Nadler's dilemma is strictly speaking true: Descartes's Creation Doctrine concerns what are strictly speaking eternal truths and says of them that they do not deductively follow merely from considerations of God's perfect nature. However, Nadler's general worry is that we clearly and distinctly perceive some truths to be necessary (and God guarantees the truth of our clear and distinct perceptions), but the Creation Doctrine tells us that they are contingent on God's will, and thus not necessary. I will respond to this worry by arguing that their contingency upon God's will is no threat to the necessity of the eternal truths; according to Descartes, they are necessary because God created them as such.

Descartes repeatedly makes the point that God willed the eternal truths to be not just true but necessary, eternal and immutable. He writes for example: "...it is because he willed that the three angles of a triangle should necessarily equal two right angles that this is true and cannot be otherwise; and so on in other cases."^{11,12} Earlier I noted that Descartes makes clear that God is the sole and complete cause of the eternal truths and in no way are they independent of or prior to him. Descartes holds in the Sixth Replies that independence from God is not requisite for these truths to be eternal and immutable. The contingency on God's free will does not entail that these truths are not necessary; God has immutably willed them from eternity to be necessary.¹³

⁹ Descriptions of God's creative act as "indifferent" or "*ex nihilo*" express the fact that God creates without any prior judgment or prompting.

¹⁰ In other words, there is nothing about God's nature that would determine prior to his creation of the eternal truths that he would will that 2+3=5 be true rather than false.

¹¹ Sixth Replies, AT VII: 431-2, CSM 2: 291. Descartes also writes: "I do think that they are immutable and eternal, since the will and decree of God willed and decreed that they should be so." (Fifth Replies, AT VII: 380, CSM 2: 261); and: "from all eternity he willed and understood them to be, and by that very fact he created them. (To Mersenne, 27 May 1630, AT I: 152, CSMK: 25).

¹² Dan Kaufman recognizes the straight-forward explanation of the necessity of the eternal truths: they are necessary owing to God's willing them to be necessary. Kaufman, "God's Immutability and the Necessity of Descartes's Eternal Truths."

¹³ While God is omnipotent, his will is immutable. In his Letter to More of 5 February 1649, Descartes explains that God's immutability is no defect. While at once claiming God's infinite and boundless power, Descartes explains that it would be a defect in God's power to be unable to do something that we perceive to be possible –

Two clarifications are helpful for motivating this otherwise counter-intuitive position: that the eternal truths are necessary, despite the fact that God has freely willed them and so could have done otherwise with respect to the eternal truths.¹⁴ In the remainder of this section, by providing these clarifications, I will show that Descartes's Creation Doctrine, despite initial appearances to the contrary, is in fact coherent.

The first clarification to be made is that while God's free will entails that he could have done otherwise, there was never a specific alternative or possibility (e.g., $2+3=6$) for God to consider prior to exercising his will and creative power. God does not will the eternal truths by considering a set of possibilities from which to decide. To do so would impinge on his ultimate freedom and omnipotence by placing external constraints on his will.¹⁵ Furthermore, willing from alternatives would suggest that God's intellect considers possibilities prior to his will, which would speak against God's simplicity. In this way, Nadler is wrong to conclude from Descartes's claim that God could have done otherwise with respect to the eternal truths that "[God] very well could have made it such that one plus one equals three; or that the sum of the angles of a triangle equals 210 degrees..."¹⁶ While Descartes does believe that God could have "made it false that the three angles of a triangle were equal to two right angles, or in general that contradictories could not be true together"¹⁷ or "make it not true that all the radii of the circle are equal – just as free as he was not to create the world"¹⁸, never does Descartes make a positive claim that God could have made true that $1+1=3$ or that contradictions be true together.¹⁹ Making such a positive claim would

splitting an atom. However, it is no limitation for God to "not do" what "we perceive to be altogether impossible" – to undo what is done. (AT V: 272-3, CSMK: 362-4)

¹⁴ Letter to Mesland, 2 May 1644, AT IV: 118, CSMK: 235; Letter to Mersenne, 27 May 1630, AT I: 152, CSMK: 25

¹⁵ Descartes seems to want to avoid God being constrained either by a limited set of alternatives or by the law of non-contradiction.

¹⁶ Nadler, "Scientific Certainty and the Creation of the Eternal Truths: A Problem in Descartes," p. 177.

¹⁷ Letter to Mesland, 2 May 1644, AT IV: 118, CSMK: 235, my emphasis

¹⁸ Letter to Mersenne, 27 May 1630, AT I: 152, CSMK: 25, my emphasis

¹⁹ Richard La Croix writes: "the claim that God can violate the law of contradiction or do what human reason judges to be logically impossible or contradictory is conspicuous by its very absence. It is an easy enough claim to make, yet Descartes chooses his words very carefully and quite obviously avoids making that claim" (La Croix, "Descartes on Gods Ability to Do the Logically Impossible," p. 471). Calvin Normore similarly finds that Descartes avoids making the positive claim. (Normore, "Descartes's Possibilities," p. 70 and his footnote 10 on p. 82). In footnote 10 Normore writes: "But what Descartes says, I think, is that God could have *not* made

lead to contradiction since these states of affairs (e.g., $1+1=3$) would be either possibilities that are prior to God's willing (which would conflict with God's freedom and simplicity) or are possibilities that God has willed (in which case God would have willed some states of affairs to be possible and also to be impossible, since they conflict with what he has willed to be necessary).

Descartes has a way of explaining how God could have made it false that some eternal truth p (e.g., $2+2=4$) be the case without thereby making true some particular instance of not- p (e.g., $2+2=5$). When the sixth objectors²⁰ pose the question: "Could [God] have brought it about that there has never been any such thing as the nature of a triangle? And how, may we ask, could he have made it untrue from eternity that twice four makes eight, or that a triangle has three angles?"²¹, they seem to recognize that Descartes understands the eternal truths to be identical with essences or natures²² and thus see that God having not willed these essences would have falsified the eternal truths which are dependent on them.²³ Descartes had already revealed this strategy to Mersenne in his letter of 27 May 1630, when he wrote that God "was free to make it not true that all the radii of the circle are equal – just as free as he was not to create the world."²⁴ I believe that Descartes is here claiming that God could have made eternal truths false by not creating the essences which the eternal truths are identical with or depend upon.²⁵ If God did not will the

it true that contradictories cannot be true together. This does not imply that contradictories could be true together unless one accepts the thesis that it cannot be that both of a pair of contradictory sentences are false. Since the reader will see immediately below, I think Descartes is willing to maintain that, were God not to establish the relevant possibilities, *all* the positive claims of mathematics would be false, and since I think Descartes would regard $2+2=4$ and $2+2=5$ as contradictory, I don't find this text compelling." See also Ishiguro, "The Status of Necessity and Impossibility in Descartes."

²⁰ These objections were by "various theologians and philosophers" and were compiled by Mersenne.

²¹ Sixth Objections, AT VII: 417-8, CSM 2: 281

²² In his Letter to Mersenne, 27 May 1630 (AT I: 152, CSMK: 25) Descartes claims that the essences or natures are nothing other than the eternal truths.

²³ Descartes suggests that mathematical truths about the properties of figure or number which are immutable and eternal are demonstrated of these essences or natures: Fifth Meditations (AT VII: 64-5, CSM 2: 45); Fifth Replies (AT VII: 380, CSM 2: 261)

²⁴ Letter to Mersenne, 27 May 1630 (AT I: 152, CSMK: 25)

²⁵ I agree with Calvin Normore, who explains that willing the possibility of some object is the same as creating its essence (Normore, "Descartes's Possibilities," p. 71). As such, "eternal truths depend on the possible existence of things." They are "about objects but considered as possibly rather than actually existing" (p. 73). Furthermore, Normore explains: "God has the power to make or not make the

possibility of triangles (i.e., the essence of triangle), then the proposition 'triangles have three sides' would be false without it being the case that the proposition 'triangles have other than three sides' is true.²⁶

The second clarification is that while God could have done otherwise by not willing and creating the essences that he in fact willed from eternity, he limits himself by his willings such that he cannot undo what he has willed to be necessarily so. As I mentioned above, Descartes explains that God has willed the eternal truths to be necessary, immutable and eternal.²⁷ Furthermore, God's will does not change (he does not undo what he has willed to be necessary).²⁸ While God could have willed otherwise (by not willing these eternal truths),

eternal truths. God does this by making or not making the possibilities of the existence of things, that is by making or not making essences. But given that God has made things possible there is nothing further to be done to make the eternal truths true." (p. 79)

²⁶ Jonathan Bennett (Bennett, "Descartes's Theory of Modality") has explained that denying the antecedent condition upon which a modal claim is based, does not entail the opposing modal claim. Bennett writes: "If Basis were not the case, (NI) it would not be impossible that Q" doesn't entail "If Basis were not the case, (P) it would be possible that Q". Bennett provides an analogy to spatial concepts (p. 655):

If Basis weren't the case, nothing would have the same size.

Doesn't entail: If Basis weren't the case, everything would differ in size.

This insight melds nicely with Descartes's Letter to Mersenne 15 April 1630 (AT I: 146, CSMK: 23) in which he holds that not-impossible does not imply possible.

²⁷ Descartes writes: "I do think that they are immutable and eternal, since the will and decree of God willed and decreed that they should be so." (Fifth Replies, AT VII: 380, CSM 2: 261). Furthermore: "...it is because he willed that the three angles of a triangle should necessarily equal two right angles that this is true and cannot be otherwise; and so on in other cases." (Sixth Replies, AT VII: 431-2, CSM 2: 291)

²⁸ In his 15 April 1630 Letter to Mersenne Descartes writes: "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. In general we can assert that God can do everything that is within our grasp but not that he cannot do what is beyond our grasp. It would be rash to think that our imagination reaches as far as his power." Letter to Mersenne 15 April 1630, (AT 1: 146, CSMK: 23); The ability to change, like the ability to deceive, seems to be a power, however the desire to change or deceive displays a lack or weakness incompatible with God's nature. In his Letter to More of 5 February 1649, Descartes explains that God's immutability is no defect. While at once claiming God's infinite and boundless power, Descartes explains that it would be a defect in God's power to be unable to do something that we perceive to be possible – splitting an atom. However, it is no limitation for God to "not do" what "we perceive to be altogether impossible" – to undo what is done. (AT V: 272-3, CSMK: 362-4)

he did in fact will these eternal truths with his immutable will, and having done so, he is not able to do otherwise.²⁹

In order to account for both God's omnipotence and his immutability, Descartes (following Aquinas) distinguishes between God's absolute power and ordained power. With regard to his absolute power, God is subject to no constraints and is thus absolutely free in his creation of the eternal truths. However, having created the eternal truths, God's ordained power is limited by what he has freely willed and decreed to be necessary.³⁰ The immutability of God's understanding, along with divine simplicity (the unity of God's will, intellect, and creative power) entails that God's will is immutable. The fact that God's will is immutable allows for there to be necessity in the created order. Osler sums up the view nicely when she writes: "In other words, God's design for the world, maintained by his ordained power, is not subject to further change, even by his absolute power."³¹

These two clarifications show that the contingency of eternal truths on God's will does not entail that it might have been the case that triangles have other than three sides nor is it possible that God will now intervene and undo what is now necessarily true. Noting these clarifications, we can see the response to Nadler's worry that eternal truths are non-necessary. While the eternal truths are contingent upon God's will and this means that they could have been false (with respect to God's absolute power), they are nonetheless necessary (with respect to God's ordained power). They would have been false had God not willed and created them, but given that he did will them, and willed them to be necessary, they are necessarily true; God will not – indeed cannot – change them.³²

²⁹ God's will and decrees cannot change. (See To Elisabeth 6 October 1645, ATIV: 316, CSMK: 273; Fifth Replies, ATVII: 380, CSM 2: 261) In this way, God constrains himself by his own willing.

³⁰ Descartes's ordained power is "bound by the necessity he had freely introduced into the created order" (Osler, *Divine Will and the Mechanical Philosophy*, p. 120).

³¹ Osler, *Divine Will and the Mechanical Philosophy*, p. 131. Osler summarizes the view as follows: "Descartes proceeded to argue that God has created us in such a way that we can have a priori knowledge of the eternal truths and that his own nature prevents him from changing what he once created freely. In other words, God's ability to intervene in the created world is limited by his initial act of creation. According to Descartes, God's ordained power does not reach to the full extent of his absolute power. In this sense, Descartes differed from the voluntarists. It is with regard to his ordained power that Descartes was an intellectualist: He accepted the existence of some necessity in the world, something that the voluntarists could never accept because of their emphasis on the utter contingency of the world." (p. 130)

³² One might worry that necessity with respect to God's ordained power is necessity in name only. However, I agree with Ian McFetridge, who explains that the

Having made these clarifications, let me briefly mention a few further points to bolster the case that Descartes was committed to the necessary status of eternal truths. If Descartes held the view that contingency on God's will amounts to non-necessity and thus that all things are possible ("universal possibilism"), this would conflict radically with many critical aspects of Descartes's philosophy.³³ For example, Descartes's truth rule – everything we clearly and distinctly perceive to be the case, is the case – maintains that clear and distinct perception of the necessity of certain truths mandates that these truths are in fact necessary. If Descartes had held that nevertheless everything is possible, then our minds, when performing to the best of their abilities, would not be reliable indicators of modal truths and so God would be a deceiver. Furthermore, the tasks for which the truth rule is deemed necessary (e.g., establishing the real distinction between mind and body) would no longer require the truth rule – they would be trivially true. (Since everything is possible, of course it is possible for mind to exist without body and vice versa.)³⁴ Finally, because God will not change what he has freely willed and created to be necessarily true, we can achieve deductive knowledge of the created material world. It is to this topic that I now turn.

The Laws of Motion and Deductive Knowledge of the Material World

The first horn of Nadler's dilemma is that by relying on clear and distinct perception we are led to accept that the laws of motion,

dependence of necessary truths on something contingent doesn't require arriving at the conclusion that nothing is (really) necessary. (See, e.g., McFetridge, "Descartes on Modality," p. 177) I explore this issue in more depth in Chapter IV "Another Possibility for Descartes".

³³ Lilli Alanen writes that the notion that Descartes is committed to everything being possible (and so nothing being necessary) is "inconsistent with other fundamental tenets of Descartes's philosophy" and is "incoherent, not to say extravagant and eccentric" (Alanen, "Descartes, Conceivability and Logical Modality," p. 65). Many others have noted the problems with attributing universal possibilism to Descartes.

³⁴ See Bennett, 'Descartes' Theory of Modality' p. 644. See also Kaufman 'Descartes's Creation Doctrine and Modality,' p. 30. I should mention, one reason sometimes cited for rejecting that Descartes's Creation Doctrine entails that everything is possible is that the ontological argument requires that there are eternal truths about God, the necessity of which forces itself upon my mind ("I now clearly recognize whether I want to or not..."). For example, "It is necessary that God has existed from eternity and will abide for eternity" (AT VII: 68, CSM 2: 47)). I, however, do not believe that these necessary truths about God are telling in this particular debate because truths about God follow from his essence and are therefore not contingent on God's free will.

which Nadler identifies as eternal truths, follow from God's nature (i.e., they can be derived from God's immutability). In this section I will explain that the laws of motion are not eternal truths. Then I will argue that the laws of motion can be known with deductive certainty despite the fact that they are contingent upon both God's willing eternal truths about matter and setting the world in motion.

Nadler is right that in *Le Monde* and the *Principles* Descartes explains that the laws of motion can be deduced from considerations of God's nature. For example, in *Le Monde*, Descartes writes that these laws "follow manifestly from the mere fact that God is immutable and that, acting always in the same way, he always produces the same effect."³⁵ As Nadler notes "the exact nature of the derivation is somewhat obscure,"³⁶ but the gist is that God freely created the world (i.e., matter which is divided into parts and set in motion³⁷) and having done so, God sustains the world – both matter and its motion by conservation and ordinary concurrence³⁸ – since God is immutable in his understanding and his willing.³⁹ According to Descartes, we can derive from God's immutability and simplicity that he will conserve motion by making true the laws of inertia ("each individual part of

³⁵ AT XI: 43, CSM I: 96

³⁶ Nadler, "Scientific Certainty and the Creation of the Eternal Truths: A Problem in Descartes," p. 183.

³⁷ The fact that matter is extension entails a plenum physics in which motion is thereby required to provide for the variety and diversity of physical phenomena present in the world.

³⁸ Unlike many of his Scholastic predecessors, Descartes doesn't make a clear distinction between *conservatio* (God's sustaining being through a creative act) and *concursus* (God's serving as primary cause in each instance of secondary causation). See Schmaltz, *Descartes on Causation*, pp. 100-2 for a helpful treatment of this topic.

³⁹ Margaret Osler writes: "The immutability of God's understanding and the unity of his will and intellect jointly entail the immutability of his will. Similarly, divine immutability provides Descartes justification for the necessity of the eternal truths that God created freely. ... In other words, God's design for the world, maintained by his ordained power, is not subject to further change, even by his absolute power" (Osler, *Divine Will and the Mechanical Philosophy*, p.131). Osler thus argues that Descartes's embracing the medieval distinction between God's absolute and ordained power makes him an "intellectualist" and contrasts his Creation Doctrine with Mersenne's "voluntarism". Descartes makes clear that God cannot be externally constrained, but finds no problem with God limiting himself by his own willings and creations. For considerations of God constraining himself, see La Croix, "Descartes on God's Ability to Do the Logically Impossible," pp. 463-4. La Croix mentions the following passages as examples of what God cannot *now* do having willed and created as he has: Sixth Replies (AT VII: 434-5, CSM 2: 292-3): God cannot make real accidents; Letter to Hyperaspistes, August 1641 (AT III: 429-30, CSMK: 193-4): God cannot make creatures that exist independently of him; Letter to More, 5 February 1649 (AT III: 273, CSMK: 363): it is no defect in God that he cannot do the impossible.

matter continues always to be in the same state so long as collision with others does not force it to change that state⁴⁰), impact (“when one body pushes another it cannot give the other any motion unless it loses as much of its own motion at the same time; nor can it take away any of the other’s motion unless its own is increased by as much⁴¹) and rectilinear motion (“when a body is moving...each of its parts individually tend always to continue along a straight line⁴²”).⁴³ Basically, Descartes holds that having willed and created the world with a certain amount of matter and motion, God has thereby constrained himself to conserve this amount of matter and motion.⁴⁴

Nadler believes that Descartes’s scientific program fails insofar as he is after absolute deductive certainty in the sciences and Nadler worries that the laws of motion, as eternal truths contingent on God’s free will, cannot be deduced from God’s essence after all, which “means that whatever follows these laws in the chain will lack an absolutely certain foundation in self-evident metaphysical principles.”⁴⁵ I have shown that the eternal truths can be known to be necessary, immutable, and eternal due to God’s willing them to be so and imprinting them in our minds as such. So, if Nadler were right about the laws of motion being eternal truths, our clear and distinct perception of their necessity would not be threatened by Descartes’s Creation Doctrine. However, earlier I mentioned that I believe the laws of motion are not in fact eternal truths (i.e., truths about essences dependent on God’s free will). I now wish to explain this claim and argue that despite the fact that the laws of motion are not eternal truths, we can nonetheless be deductively certain of them.

⁴⁰ AT XI: 38, CSM 1: 93

⁴¹ AT XI: 41, CSM 1: 94

⁴² AT XI: 43-4, CSM 1: 96

⁴³ See also: *Principles* 2: 36-42, AT VIII A: 61-6, CSM 1: 240-3.

⁴⁴ The derivation of these laws of motion from God’s immutability is obscure because Descartes has not made explicit why God’s immutability constrains him to sustain some initial conditions of the world rather than others. This obscurity has led Janet Broughton to claim that God was free to choose which initial conditions are law-generating (e.g., transfer of motion rather than the particular speeds bodies had initially). (Broughton, “Necessity and Physical Laws in Descartes’s Philosophy.”) I will argue against Broughton that God must preserve the laws of motion (as opposed to other initial conditions) given his willing of the nature of matter and his setting the world in motion.

⁴⁵ Nadler, “Scientific Certainty and the Creation of the Eternal Truths: A Problem in Descartes,” p. 187.

A. The Origin of the Laws of Motion

There is some suggestive, albeit inconclusive, indirect textual evidence for identifying the laws of motion as eternal truths in Descartes's pre-*Meditations* thinking.⁴⁶ These texts led to the "standard view" that the laws of motion are eternal truths. I believe that *at least* in Descartes's mature works, the laws of motion are not eternal truths because, unlike eternal truths, laws of motion do not merely follow from a freely-willed essence. In this way, I follow both Andrew Pavelich and Janet Broughton who dismiss the "standard view" as Descartes's considered position. Pavelich points out that motion is a mode of matter and does not follow from the essence of matter. While motion has a "determinate nature"⁴⁷, the laws of motion are not derived from that determinate nature; they are derived by considering God's nature. Pavelich argues that "God was free to choose how much motion he originally put in the universe" but that "[God's] immutable nature alone guarantees that he will continually

⁴⁶ In the fifth part of the *Discourse* in which Descartes describes what he had done in his then unpublished work *Le Monde*, Descartes writes: "I have noticed certain laws which God has so established in nature, and of which he has implanted such notions in our minds, that after adequate reflection we cannot doubt that they are exactly observed in everything which exists or occurs in the world" (AT VI: 41, CSM 1: 131). If the "certain laws" referenced in this passage were laws of motion, then there would be a case for subsuming them under the eternal truths owing to the fact that Descartes claims that they are imprinted in our minds. Andrew Pavelich argues that context tells us that the "laws" being referenced are not the laws of motion, but are "basic Cartesian notions of mechanism" which are used to explain light in chapter two of *Le Monde* and notes "[w]hile these are the fundamental tenets of mechanism, the laws of motion themselves do not occur in *Le Monde* until after chapter seven, well after what the *Discourse* is describing in Nadler's quotation" (Pavelich, "Descartes's Eternal Truths and Laws of Motion," p. 525). To be fair, Descartes treats of the topic of light not only in chapter two, but also in chapters 13-15, such that the context doesn't seem as helpful as Pavelich claims. Stephen Gaukroger writes: "Descartes' purpose in the last three chapters [i.e., 13-15] is to show how the behaviour of light rays can ultimately be explained in terms of his theory of the nature of matter and the three laws of motion" (Gaukroger, "Introduction to *The World*," xxii). Another relevant piece of text comes from the sixth part of the *Discourse* in which Descartes writes that he derived "the principles or first causes of everything that exists or can exist in the world ... only from certain seeds of truth which are naturally in our souls" (AT VI: 63-4, CSM I: 143). These texts, while suggestive, are not conclusive about whether the laws of motion should be afforded the status of eternal truths in Descartes's early works.

⁴⁷ "Motion is the transference of one piece of matter, or one body, from the vicinity of the other bodies which are in immediate contact with it, and which are regarded as being at rest, to the vicinity of other bodies" (*Principles* II.25; AT IXB: 53-4, CSM 1: 233)

sustain exactly that amount of motion for all eternity.”⁴⁸ Broughton similarly finds that the laws of motion are not dependent upon essences in the way that mathematical truths are. God’s immutable sustaining of the world⁴⁹ grounds the necessity of the laws of motion.⁵⁰

While Pavelich and Broughton agree that Descartes’s considered view⁵¹ is that the laws of motion are in some sense necessary and knowable *a priori* (which I will discuss in the following subsection), they disagree about whether God could have created the laws of motion differently. Broughton believes that these laws of motion are “physically necessary” (as opposed to “mathematically necessary” like the eternal truths) because they are initial conditions of the created material world that God chooses to preserve, but God’s free decrees leave open which initial conditions will be law-generating conditions. In this way, for Broughton, the laws of motion depend on God’s choice and they are “not dictated either by his decrees from all eternity or by his decision to create a world at all”.⁵² Pavelich, on the other hand, holds “that because they are derivable directly from God’s nature, unlike the eternal truths, God could not have created the laws of motion any differently.”⁵³

⁴⁸ Pavelich, “Descartes’s Eternal Truths and Laws of Motion,” p. 528.

⁴⁹ “God’s perfection involves not only his being immutable in himself, but also his operating in a manner that is always utterly constant and immutable” (*Principles* II.36, CSM I: 240.)

⁵⁰ Broughton writes: “What makes eternal truths true is God’s timeless decree; what makes this law of motion true is God’s preservation of the world from moment to moment by the same activity by which he created it. This proof, then, appeals to a different relation between God and a truth than the one constituting his creation of mathematically necessary truths.” (Broughton, “Necessity and Physical Laws in Descartes’s Philosophy,” p. 212) Similarly, Calvin Normore writes: “It seems most natural to suppose that these [the eternal truths] depend eternally on the immutable will of God. With the laws of nature it seems otherwise. These laws do not describe the essence of matter but its behaviour and they are deduced not from considerations about the essence of matter but from considerations about its states and dispositions and considerations about the immutability of God.” (Normore, “Descartes’s Possibilities,” p. 76)

⁵¹ Broughton holds the view that Descartes identifies the laws of motion with eternal truths in his early works. Pavelich denies that Descartes ever identifies the laws of motion with eternal truths.

⁵² Broughton, “Necessity and Physical Laws in Descartes’s Philosophy,” p. 215.

⁵³ Pavelich, “Descartes’s Eternal Truths and Laws of Motion,” p. 528. Pavelich goes on to write: “Descartes is willing to assert that God was free not to create the universe, and we can assume Descartes would also agree that God was free to create the universe without any motion. However, once these decisions were made, the nature of how God sustains the world guarantees that motion will occur in straight lines, and God’s own nature determines how he will sustain the world.” (p. 530)

Broughton and Pavelich are right that the laws of motion depend upon God's sustaining activity rather than depending solely upon his freely willing essences.⁵⁴ However, I believe that neither correctly captures the status of the laws of motion because neither appreciates the way in which the laws of motion only exist relative to both God's creation of the nature of matter and his setting the material world in motion.⁵⁵ In this way, I will argue that we can be absolutely certain of the laws of motion given our knowledge that God has created a material world with its matter set in motion.

Descartes does indeed derive the laws of motion from God's nature in both *Le Monde* and the *Principles*, but only having already supposed (since *Le Monde* speaks of a hypothetical world) or observed (in the *Principles*) that God has created a world filled with matter and set the parts in motion. In Chapter Seven of *Le Monde*, Descartes unveils the laws of nature and writes: "God continues to preserve [matter taken together with all its qualities] in the same way that he created it. For it follows of necessity, from the mere fact that he continues thus to preserve it, that there must be many changes in its parts which cannot, it seems to me, properly be attributed to the action of God (because that action never changes), and which therefore I attribute to nature. The rules by which these changes take place I call the 'laws of nature'."⁵⁶ Thus, in *Le Monde* Descartes is declaring that whatever amount or distribution of motion God freely chooses in his initial act of creation of the material world, insofar as he creates any motion, this motion will abide by the laws of motion. Furthermore, Descartes believes that creating nothing more than the initial matter in motion, the laws of motion that he goes on to derive from God's immutability will be sufficient to bring about all the

⁵⁴ Broughton describes the difference between the two cases as follows: "Divine activity is required to *keep* moving bodies transferring motion in the same way they have. Divine activity is *not* required to keep triangular bodies having the same number of sides they have. To see how different the two cases are, we need only imagine the oddity of Descartes's saying that God, by conserving the world from moment to moment, keeps triangular bodies three-sided." (Broughton, "Necessity and Physical Laws in Descartes's Philosophy," p. 213)

⁵⁵ Pavelich provides a helpful discussion of the deduction of the conservation of motion, the law of inertia and the law of rectilinear motion (Pavelich, "Descartes's Eternal Truths and Laws of Motion," p. 527f). Pavelich believes the law of impact is derivative of the other laws of motion and the eternal truth that matter is extension (which entails a plenum). I differ from Pavelich in that I believe that all of the laws of motion are derivative of the eternal truth that matter is extension. I will defend this interpretation below.

⁵⁶ AT XI: 37, CSM I: 92-3

observable physical phenomena: “not only light but also all the other things, general as well as particular, which appear in the real world.”⁵⁷

In Part 2 of the *Principles*, Descartes similarly explains that matter is extended substance and “the true nature of body consists solely in extension.”⁵⁸ Descartes subsequently writes: “The matter existing in the entire universe is thus one and the same, and it is always recognized as matter simply in virtue of its being extended. All the properties which we clearly perceive in it are reducible to its divisibility and consequent mobility in respect of its parts, and its resulting capacity to be affected in all the ways which we perceive as being derivable from the movement of the parts.”⁵⁹ Furthermore, the movements of the parts are governed by the laws of motion, which follow from God’s immutability (i.e., “his operating in a manner that is always utterly constant and immutable”).⁶⁰

The laws of motion are thus deducible from God’s immutability *given* the eternal truth that matter is extension and God’s setting the material world in motion. So, while the laws of motion “follow manifestly from the mere fact that God is immutable and that, acting always in the same way, he always produces the same effect,”⁶¹ this is already to suppose (as in *Le Monde* and in the *Principles*) that God has created a material world that is set in motion. So, when Descartes writes in *Le Monde* and the *Discourse* that if God had created many worlds, the laws of nature would be true and observed in each of them,⁶² this shows that the laws of nature would be true in any material world that is set in motion.

Clearly Descartes holds that the laws of motion are derivative from the eternal truth that matter is extension. Neither Broughton nor Pavelich appreciates the significance of this commitment for the status of the laws of motion. According to Broughton, God chooses freely (in a way “not dictated either by his decrees from all eternity or by his decision to create a world at all”⁶³) some initial conditions, rather than others, to be law-generating conditions. For example, Broughton suggests that God could have just as well chosen for the particular speeds of bodies to be law-generating conditions, rather than the transfer of motion. Similarly, Pavelich seems to assume that it is possible for God to arrange for bodies to be set in motion and yet

⁵⁷ AT XI: 35, CSM I: 91

⁵⁸ AT VIIIa: 42, CSM I: 225

⁵⁹ AT VIIIa: 52, CSM I: 232

⁶⁰ AT VIIIa: 61, CSM I: 240

⁶¹ AT XI: 43, CSM I: 96

⁶² AT XI: 47, CSM I: 97; AT VI: 43, CSM I: 132

⁶³ Broughton, “Necessity and Physical Laws in Descartes’s Philosophy,” p. 215.

there be no collision and no transfer of motion. Neither of these positions takes into account the fact that God's decree of the eternal truth that matter is extension entails that the material world is a plenum.⁶⁴ In a plenum, if any individual bodies are in motion (so that they have particular speeds relative to other bodies), there will necessarily be impact and transfer of motion.⁶⁵ Furthermore, the speeds of individual bodies cannot be conserved. Having decreed the eternal truth that matter is extension, God is not free to make the particular speeds of bodies a law-generating condition.⁶⁶ God could have created and sustained a material world with no motion (and thus with no variety in its parts) and in this case there would be no laws governing impact or transfer of motion. However, given that God created a material world and set it in motion, the laws of motion cannot be otherwise than what we clearly and distinctly conceive them to be.

B. *A Priori* Deductive Knowledge of the Laws of Motion

In the previous section, I argued that the laws of motion are not eternal truths because they do not follow from an essence freely decreed by God. Instead, they have their origin in God's immutable creation of a material world that is set in motion. In this section, I will explain that despite their origin in God's contingent willing of a world consisting of matter in motion, the laws of motion are nonetheless deducible *a priori* such that we can be absolutely certain of them.

In order to provide this explanation, I will first need to clarify the way in which the laws of motion are "necessary", "deducible" and "knowable *a priori*". First, the laws of motion are contingently necessary; they are necessary given God's creation of a material world set in motion.⁶⁷ This means that God freely willed a material world with certain physical phenomena (e.g., land, seas, stars, light, etc.),

⁶⁴ While God could have failed to will the eternal truth that matter is extension, it is not a possibility for Descartes that there be an eternal truth about matter being something other than extension. See my first clarification in the section above entitled "The Creation Doctrine and the Necessity of Eternal Truths."

⁶⁵ AT XI: 37, CSM 1: 93

⁶⁶ In *Le Monde*, Descartes explains that given a plenum, the introduction of motion will entail impact and transfer of motion. Furthermore, God's immutable sustenance of matter in motion will not preserve the same individual motions of individual bodies. "That is to say, with God always acting in the same way and consequently always producing substantially the same effect, there are, as if by accident, many differences in this effect" (AT XI: 37, CSM 1: 93).

⁶⁷ Broughton dubs this "physical necessity" in her "Necessity and Physical Laws in Descartes's Philosophy."

which are explicable in terms of the motions of the parts of matter. God, in so willing and creating, has “constrained” or “limited” what he could will (i.e., God does not fail to will what he in fact wills)⁶⁸ such that by recognizing that God is immutable, we can deduce the laws of motion and gain scientific knowledge of the world around us.⁶⁹ Second, Descartes uses the term ‘deduction’ to signify “the inference of something as following necessarily from some other propositions which are known with certainty.”⁷⁰ Deduction for Descartes does not align with contemporary notions of logical entailment and can be ampliative (i.e., add new knowledge) and is certainty-preserving as opposed to necessity-preserving.⁷¹ Third, Descartes’s use of the term “*a priori*” is pre-Kantian such that something is knowable *a priori* for Descartes when it can be shown to follow from something prior in the order of explanation.⁷²

⁶⁸ Margaret Osler writes in *Divine Will and the Mechanical Philosophy*: “By his omnipotence, his absolute power, God created matter and motion; by his ordinary concurrence, his ordained power, he conserves them. That is, he relies on the natures and second causes he created to bring about particular effects” (p. 137). Furthermore, “In Descartes’ world, even the omnipotent God would not disturb the ordinary concurrence of nature lest he prevent us from having *a priori*, demonstrative knowledge of the world. God established this stability by creating necessary laws, which restricted his further freedom of action” (p. 148).

⁶⁹ I thus wish to qualify both Pavelich and Broughton’s claims about the status of the laws of motion. Pavelich is right that “God was free to create the universe without any motion” (Pavelich, “Descartes’s Eternal Truths and Laws of Motion,” p. 530) only in the sense that God was free to create a world that is merely undifferentiated extension. God could not have created the universe with individual bodies but without any motion (since motion is what differentiates material bodies). Broughton believes that God chooses which initial conditions will be law-generating conditions independently of “his decrees from all eternity or by his decision to create a world at all.” (Broughton, “Necessity and Physical Laws in Descartes’s Philosophy,” p. 215) I believe that whatever amount or distribution of motion that God freely chooses in his initial act of creation of the material world, insofar as he creates any motion (divides and differentiates matter) it will abide by the laws of motion.

⁷⁰ Rule 3; AT X: 369; CSM 1: 15

⁷¹ See for example Clarke, *Descartes’ Philosophy of Science* and Normore, “The Necessity in Deduction: Cartesian Inference and Its Medieval Background.” Unlike formal logical entailment, Descartes’s deduction can add new knowledge and preserves certainty as opposed to necessity (since we can deduce contingent truths from necessary ones).

⁷² Normore writes: “An *a priori* demonstration is a demonstration that proceeds from what is prior in the order of explanation to what is posterior. [...] When Descartes claims that we can demonstrate the laws of nature *a priori* he may be claiming no more than that we can deduce them from the immutability of God and the existence of matter in motion. We need not suppose that we could deduce them from premisses we could know without any experience of the external world.”

Given these clarifications, we are in a position to see how we can know the laws of motion *a priori* by means of deduction. We can be certain of the laws of motion if we can deduce them from what we know with certainty that is prior in the order of explanation. At the end of Part IV of the *Principles*, Descartes summarizes his scientific method of deducing effects from causes and thereby arriving at absolute certainty in the sciences:

[Absolute] certainty is based on a metaphysical foundation, namely that God is supremely good and in no way a deceiver, and hence that the faculty which he gave us for distinguishing truth from falsehood cannot lead us into error, so long as we are using it properly and are thereby perceiving something distinctly. Mathematical demonstrations have this kind of certainty, as does the knowledge that material things exist; and the same goes for all evident reasoning about material things. And perhaps even these results of mine will be allowed into the class of absolute certainties, if people consider how they have been deduced in an unbroken chain from the first and simplest principles of human knowledge.⁷³

Here Descartes makes clear that we can be absolutely certain of mathematical demonstrations as well as knowledge of the existence of a material world and “all evident reasoning about material things.” Earlier in the paper, I argued that the eternal truths have an absolutely certain foundation in God’s willing them to be necessary. Now we are in a position to see that the laws of motion also have an absolutely certain foundation as they follow from God’s immutable nature, the nature of matter, and the absolutely certain knowledge of the existence of a material world set in motion.⁷⁴

(Normore, “The Necessity in Deduction: Cartesian Inference and Its Medieval Background,” p. 76)

⁷³ *Principles* IV.206, AT VIIIa: 328, CSM 1: 290

⁷⁴ In this way, I differ from Broughton who suggests that despite the fact that laws of motion are not eternal truths, they are nonetheless known innately. Broughton wants to avoid the basic features of the world being known by means of empirical investigation, which she sees as a threat to their being known *a priori* with deductive certainty and thereby serving as a foundation for a mathematized physics. She believes that if Descartes allowed sense perception to be a reliable source for discovering the laws of motion, then he could not prevent substantial forms and real secondary qualities from being “respectable scientific notions”. I suggest that the role sense perception plays involves recognizing the existence of a physical world with bodies set in motion, not in proving the laws that govern motion. The laws of motion are proved by means of *a priori* deduction from the (innate) eternal truths of

Conclusion

In this chapter I introduced a supposed dilemma facing Descartes. The dilemma alleges that Descartes holds that the laws of motion can be deduced solely from consideration of God's nature and are thus necessary⁷⁵, but that as eternal truths they are contingent upon God's free will and are thus non-necessary. The dilemma may be removed by recognizing that the laws of motion are not strictly-speaking eternal truths (i.e., truths about essences willed by God). However, a more adequate response to this dilemma consists in making a number of clarifications which remove both the dilemma and the underlying broader worry that we are misled by our clear and distinct perception to believe that eternal truths and the laws of motion are necessary.

The broader worry results from holding that the contingency of eternal truths implies a *live* and *conceivable* possibility that they be otherwise. Nadler believes that the Creation Doctrine entails that it is possible for truths that we clearly and distinctly perceive to be necessarily true to be false, so we cannot rest assured from our discovery of a perfect God that our clear and distinct perceptions are reliable. If this is the case, then we lack the necessary foundations to carry out either Descartes's anti-skeptical program or his scientific project.

I have argued that the contingency of eternal truths on God's will is no threat to their necessity. While we do not know from a consideration of God's nature alone what eternal truths he would will or how he would create the world, we do know which eternal truths he has in fact willed and know that he has created the world with (physically) necessary laws of motion. We know these things because he has made eternal truths innate for us⁷⁶ and because he has created our minds such that their powers of conception align with what God has created as possible and impossible.⁷⁷ It was possible that eternal truths be otherwise relative to God's absolute power (since God was completely free and undetermined by any external considerations in his willing of them). However, because God willed them as necessary

God's immutability and the essence of matter (given the existence of a material world set in motion).

⁷⁵ As such, we could be absolutely certain of these truths since they are deduced from an absolutely certain metaphysical foundation.

⁷⁶ To Mersenne, 15 April 1630, AT I: 145, CSMK: 23

⁷⁷ To Mesland, 2 May 1644, AT IV: 118, CSMK: 235

from eternity, it is not possible, relative to his ordained power, that they fail to be the case.⁷⁸

I am able to overcome Nadler's dilemma since the laws of motion are not themselves eternal truths. Furthermore, I have shown that Descartes holds that the laws of motion can be deduced from eternal truths about God's essence (viz., God's immutability), the essence of matter (matter being extension), and the certain fact that God has willed a material world set in motion. God's immutability grounds both the laws of motion and the eternal truths such that both can be known with deductive certainty. In this way, contrary to Nadler's contention, Descartes's anti-skeptical and scientific programs are on solid footing: he can proceed from certain metaphysical foundations to physical truths by means of a deductive method.

⁷⁸ I revisit and provide further explanation of this distinction in Chapter IV of this dissertation "Another Kind of Possibility for Descartes". In this chapter, I explain that there are possibilities with respect to God's absolute power that are not possibilities with respect to his ordained power. These are possibilities regarding what God can do that are dependent on God's absolute power as opposed to his willing and creating essences (viz., the eternal truths).

Chapter IV

Another Possibility for Descartes

Introduction

In this chapter, I will further elaborate my claim that for Descartes the eternal truths are necessary despite the fact that they could have been otherwise. By introducing a distinction between two kinds of possibility that overcomes the difficulties presented by the most common interpretations of Descartes's Creation Doctrine, I will argue that the sense in which the eternal truths could have been otherwise in no way threatens our certainty and knowledge of that which we clearly and distinctly perceive to be necessarily true.

Descartes's Creation Doctrine

Descartes believes that God is perfect. God's perfections include omniscience, omnipotence, freedom and immutability. Descartes's Creation Doctrine is an attempt by Descartes to provide an account of God's relation to necessary truths that respects these perfections. For instance, Descartes believes that God would be neither omnipotent nor free if the eternal truths were true independent of him or if they followed necessarily from his essence. In his Letter to Mersenne of 15 April 1630, Descartes writes that the eternal truths "have been laid down by God and depend on him entirely... Indeed to say that these truths are independent of God is to talk of him as if he were Jupiter or Saturn and to subject him to the Styx and the Fates."¹

Similarly in the Letter to Mersenne of 6 May 1630, Descartes writes: "As for the eternal truths, I say once more that they are true or possible only because God knows them as true or possible. They are not known as true by God in any way which would imply that they are true independently of him. ... In God willing and knowing are a single thing in such a way that by the very fact of willing something 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..."²

Finally, in the 27 May 1630 Letter to Mersenne, Descartes makes clear that God freely created the eternal truths. "You ask also what necessitated God to create these truths; and I reply that he was

¹ Letter to Mersenne, 15 April 1630, AT I: 145, CSMK: 23

² Letter to Mersenne, 6 May 1630, AT I: 149-50, CSMK: 24

free to make it not true that all the radii of the 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 and understood them to be, and by that very fact he created them.”³

So, Descartes believes that God’s omnipotence and freedom entail that God freely wills and creates the eternal truths. To a number of readers (perhaps most notably Harry Frankfurt) it has appeared that Descartes thereby supports a doctrine in which anything and everything is possible, which I will refer to as Universal Possibilism.⁴ Others, finding that this interpretation is obviously at odds with Descartes’s claims that there are necessary truths (as well as much of Descartes’s philosophical agenda), have tried to make sense of Descartes’s Creation Doctrine in a way that avoids Universal Possibilism. One response is to suggest a Limited Possibilism according to which eternal truths are necessary, but their necessity is itself a contingent fact. This view is most famously championed by Edwin Curley.⁵ This interpretation takes seriously Descartes’s claim in his 2 May 1644 Letter to Mesland that “even if God has willed that some truths should be necessary, this does not mean that he willed them necessarily”⁶ as displaying that the eternal truths are contingently necessary. In this next section, I will briefly consider both of these possibilist interpretations and show why neither successfully fits with Descartes’s commitments.

Universal Possibilism & Limited Possibilism

There is an ambiguity in Descartes’s texts which has led to two opposed interpretations of Descartes’s theory of modality: universal possibilism and limited possibilism. While Descartes’s official answer to the question of why a certain truth p is necessary is that God willed it to be so, Descartes doesn’t distinguish clearly between God freely willing the necessity of p and God freely willing p . In other words, Descartes doesn’t make explicit whether the dependence of some

³ Letter to Mersenne, 27 May 1630, AT I: 152, CSMK: 25

⁴ Harry Frankfurt, Leonard Miller, Peter Geach, Alvin Plantinga have each been charged/credited with holding this interpretation. Frankfurt, “Descartes on the Creation of the Eternal Truths”; Miller, “Descartes, Mathematics, and God”; Geach, “Omnipotence”; Plantinga, *Does God Have a Nature?*

⁵ Curley, “Descartes on the Creation of the Eternal Truths.”

⁶AT IV: 118-9, CSMK: 235. The passage continues: “...for it is one thing to will that they be necessary, and quite another to will this necessarily, or to be necessitated to will it.”

necessary truth p on God's free will makes p contingent or the necessity of p contingent. If one focuses merely on the fact that the necessity of p is contingent on God's freely willing it, then one arrives at limited possibilism (i.e., for all p , it is not necessary that p is necessary). However, if one focuses on the fact that p itself is contingent on God's freely willing it, then one arrives at universal possibilism (i.e., for all p , it is not necessary that p).

Each interpretation seems to have defeating arguments stacked against it. Opponents of limited possibilism have pointed out the damning fact that the argumentation for arriving at limited possibilism, by its own lights, entails universal possibilism. The argument for limited possibilism hinges on two principles: (1) that volition is contingent (if a wills that p , it is possible for a not to will that p) and (2) that God is omnipotent (a proposition is true if and only if God wills it to be true). From the assumption that p is necessary, valid argumentation from these principles leads to the fact that it is not necessarily necessary that p (that is, Limited Possibilism).⁷ However, from the assumption that p , valid argumentation from these principles leads to the fact that it is not necessary that p (that is, Universal Possibilism).⁸ While I mentioned

⁷ See Curley, "Descartes on the Creation of the Eternal Truths," pp. 569-97. I will briefly summarize the argument:

1. If a wills that p , it is possible that a not will that p (contingency of volition)
2. A proposition is true if and only if God wills it to be true (God's omnipotence)
3. Lp (assumption that p is necessary)
4. If Lp then God wills Lp (instance of 2)
5. If God wills Lp then it is possible that God not will that Lp (instance of 1)
6. It is possible that God not will that Lp (3, 4, 5)
7. It is possible that not Lp (4, 6)
8. For all p , if Lp then it is possible that not Lp
9. For all p , it is not necessarily necessary that p

⁸ See, McFetridge, "Descartes on Modality," pp. 179-80 and Van Cleve, "Foundationalism, Epistemic Principles, and the Cartesian Circle," pp. 58-62. From the assumption that p and the same reasoning, we reach the universal possibilist conclusion:

1. If a wills that p , it is possible that a not will that p (contingency of volition)
2. A proposition is true if and only if God wills it to be true (God's omnipotence)
3. p (assumption that p is true)
4. If p then God wills p (instance of 2)
5. If God wills p then it is possible that God not will that p (instance of 1)
6. It is possible that God not will that p (3, 4, 5)
7. It is possible that not p (4, 6)

that one can arrive at a limited possibilist interpretation by focusing merely on the fact that the necessity of p is contingent on God's freely willing it, one would need to further deny that p itself is contingent on God's free will to avoid arriving at a universal possibilist interpretation by the same logic. Thus, to arrive at the limited possibilist interpretation, God's power would need to be limited in a strange way so that for any necessary truth p , it is possible that God not will that p is necessary, but it is not possible that God not will that p .⁹ In other words, it would be possible for God to will that p be contingent, but not possible for God to will that p be false.¹⁰ This limitation of God's power is at odds with Descartes's views on God's omnipotence.¹¹

While Descartes's commitments to the contingency of volition and God's omnipotence seem to lead to universal possibilism, this view plainly goes against a number of Descartes's other philosophical commitments. For one, Descartes holds that God did will some truths to be necessary. For another, universal possibilism spells the demise of human knowledge because human knowledge for Descartes depends on grasping necessities.¹² Many commentators have

8. For all p , if p then it is possible that not p

9. For all p , it is not necessary that p

McFetridge and Van Cleve thus argue that the very commitments which Curley believes lead to the "iterated modality" interpretation also ironically lead to the "no necessity" interpretation. Van Cleve concludes that Descartes, along with anyone else who grounds necessity in something contingent, is committed to universal possibilism. McFetridge disagrees and suggests that "a general and ultimate answer to the question [why are some truths necessary?] will have to be expressed in some proposition which is contingent" and this doesn't require one to say that no truths are (really) necessary. (See esp. McFetridge, "Descartes on Modality," pp. 174-7)

⁹ Contrast step 6 in the argument for limited possibilism (in footnote 7) with step 6 in the argument for universal possibilism (in footnote 8). Where the first version claims that it is possible that God not will Lp , the second version claims that it is possible that God not will p .

¹⁰ Kaufman notes that limited possibilism limits God's power in a strange way. He writes, "God can perform the incredibly difficult task of willing a necessary truth to be possibly false, but (and here is the rub) he cannot perform the relatively simple task of willing that possibly false proposition to be actually false." (Kaufman, "Descartes's Creation Doctrine and Modality," p. 33)

¹¹ God's omnipotence entails that God has power not only over modal propositions, but also over non-modal propositions or general states of affairs.

¹² Descartes's truth rule – everything we clearly and distinctly perceive to be the case, is the case – maintains that clear and distinct perception of the necessity of certain truths mandates that these truths are in fact necessary. If Descartes had held that nevertheless everything is possible, then our minds, when performing to the best of their ability, wouldn't be reliable indicators of modal truths and so God would be a deceiver. In addition, the tasks for which the truth rule is deemed necessary (e.g., establishing the real distinction between mind and body) would no

therefore denied universal possibilism without qualification.¹³ Neither possibilist interpretation seems to fit Descartes's commitments. Something has to give.

Contingent But Not Possible

One option for avoiding the problems that arise from possibilist interpretations is to hold that for Descartes nothing is possible without God's willing it to be possible.¹⁴ The possibilist interpretations each emphasize that the contingency of God's volition entails that if God wills that *p*, it is possible that not-*p*. This view, however, denies that the contingency of God's volition has this implication. This view avoids both varieties of possibilism and preserves the necessity of the eternal truths by holding that when

longer require the truth rule; they would be trivially true. (Since everything is possible, of course it is possible for mind to exist without body and vice versa.) See Bennett, "Descartes's Theory of Modality," p. 644. See also Kaufman, "Descartes's Creation Doctrine and Modality," p. 30.

¹³ For example, Lilli Alanen writes that the notion that Descartes is committed to everything being possible (and so nothing being necessary) is "inconsistent with other fundamental tenets of Descartes's philosophy" and is "incoherent, not to say extravagant and eccentric." (Alanen, "Descartes, Conceivability and Logical Modality," p. 65.) Similarly, Dan Kaufman writes: "almost every positive step in the *Meditations* is undermined by the Creation Doctrine if it entails [everything being possible]." (Kaufman, "Descartes's Creation Doctrine and Modality," p. 30)

¹⁴ Kaufman writes: "the thrust of the Creation Doctrine is that nothing is possible prior to God's willing it to be so." (Kaufman, "Descartes's Creation Doctrine and Modality," p. 35) Furthermore, "...because God never willed that *it is possible that not-P* or *it is possible that not-P is possible*, those propositions are not true, nor were they ever true" (p. 37). Lilli Alanen and Richard La Croix also hold that there are no possibilities independent of God's will and creation. All of them find the 6 May 1630 Letter to Mersenne decisive on this issue. In this letter, Descartes writes that the eternal truths are "true or possible only because God knows them as true or possible. They are not known as true by God in any way which would imply that they are true independently of him... In God willing and knowing are a single thing in such a way that by the very fact of willing something he knows it and it is only for this reason that such a thing is true" (To Mersenne, 6 May 1630, AT I: 148, CSMK: 24). Lilli Alanen writes: "What is implied by Descartes's thesis is that there are no possible or necessary truths before God decides to make them" (Alanen, "Descartes, Omnipotence, and Kinds of Modality," p. 189). Alanen puts it in nearly identical fashion in "Descartes, Conceivability and Logical Modality," where she writes: "What is implied by Descartes's thesis is that there are no possible or necessary truths before or independently of God's voluntary act of creating them" (Alanen, "Descartes, Conceivability and Logical Modality," p. 74). Similarly, Richard La Croix writes: "There are no substances, there are no essences, there are no truths possible or necessary about anything whatsoever that are independent of God, for God *created* them all" (La Croix, "Descartes on Gods Ability to Do the Logically Impossible," p. 458).

Descartes writes that God “could have done the opposite” with respect to eternal truths¹⁵, this doesn’t amount to some kind of possibility that eternal truths be non-necessary or false. This interpretive commitment is inconsistent with the seemingly uncontroversial modal principle at work in the possibilist arguments that enables the transition from *A*: God could fail to will that *p* is necessary (or God could fail to will that *p*) to *B*: it is possible that *p* is not necessary (or *p* is false).¹⁶ In other words, this view holds that the contingency of God’s volition (i.e., God’s free and indifferent willing) does not entail the possibility that things be otherwise since God has not willed the possibility that things be otherwise.

While this move avoids the problems that arise for the possibilist interpretations, it does so at the expense of obfuscating the modal implications of Descartes’s claim that God could have willed otherwise.¹⁷ I believe that this interpretive move (along with its confusing consequences for Descartes’s modal theory) is based upon a misinterpretation of the commitments that Descartes expresses in his 6 May 1630 Letter to Mersenne. In the relevant passages, Descartes is claiming that God freely willed the eternal truths (of mathematics) without being externally determined to do so. That is, there are no necessary or possible truths *independent of God* that determine or influence his willing these eternal truths. However, I will argue below that it is wrong to conclude from this passage that there are no truths *independent of God’s will and creation*. Truths about God’s essence (e.g., that God is free, omnipotent, immutable, omniscient) are not

¹⁵ For example, Descartes writes: “...God cannot have been determined to make it true that contradictories cannot be true together, and therefore he could have done the opposite.” (Letter to Mesland, 2 May 1644, AT IV: 118; CSMK: 235). See also, Letter to Arnauld, 29 July 1648: “For since every basis of truth and goodness depends on his omnipotence, I would not dare to say that God cannot make a mountain without a valley, or bring it about that 1 and 2 are not 3.” (AT V: 224; CSMK: 358-9)

¹⁶ The move from *A* to *B* is the move from steps 4 and 6 to step 7 in the arguments in footnotes 7 and 8. This move is made according to the modal principle that if *x* entails *y* and it is possible that not-*y*, this entails that it is possible that not-*x*.

¹⁷ Kaufman writes that it has been difficult for commentators to understand “the sense in which God could have willed that an eternal truth be false and the implications this ‘could’ has for the modal status of propositions” (Kaufman, “Descartes’s Creation Doctrine and Modality,” p. 25). Kaufman mentions as examples Harry Frankfurt, Janet Broughton, and Lilli Alanen. Alanen, for example, suggests that in some sense we lose our commonsense grasp of modal notions: “To say that God has created or established the necessary truths as a free and efficient cause is to make the necessary as well as the possible contingent upon his will: *it is, in a way, to abolish the very distinction between the necessary, as that which cannot possibly not be, and the possible as that which may or may not be.*” (Alanen, “Descartes, Conceivability and Logical Modality,” pp. 68-9 (my emphasis))

subject to God's free will and creation; they are *uncreated* eternal truths. This distinction between created and uncreated eternal truths will serve an important role in my explanation of the way in which it is possible for God to have done otherwise with respect to the created eternal truths. I will show that we can avoid the problems associated with possibilist interpretations without taking on the onerous commitment to there being no possibilities independent of God's will and creation. This would leave Descartes with a coherent modal theory.

Distinguishing Two Kinds of Possibility

Earlier, I noted problems for both limited and universal possibilism. The argument for limited possibilism leads to universal possibilism, and universal possibilism plainly goes against several of Descartes's philosophical commitments. Subsequently, I considered denying possibilism on the basis of the claim that for Descartes nothing is possible unless God wills it to be possible. I noted that while this view is able to avoid the problems associated with possibilist interpretations, it has its own problem: it is unable to make sense of Descartes's claims concerning God's voluntary creation of modal propositions. In addition, I found the view's basis in the text to be dubious. I will now introduce a distinction between two different kinds of possibility which is able to resolve the troublesome ambiguities in Descartes's modal claims. This distinction displays how Descartes can be seen to be committed to both forms of possibilism. Furthermore, it shows how Descartes's claim that God could have done otherwise (with respect to what he has willed to be necessary) does entail a possibility that eternal truths be non-necessary or false, albeit a possibility that we cannot fully conceive or grasp being the case. This distinction thus provides the basis for a coherent modal theory for Descartes.

The distinction that I will adopt is a sharpened version of a distinction owing to Ian McFetridge. In his unfinished essay "Descartes on Modality", McFetridge introduces a distinction between two different notions of possibility (as well as their corollary notions of necessity). McFetridge locates his modal distinction epistemologically, in terms of our conceptual capacities, and metaphysically, in terms of what God wills or could have willed. Thus, a proposition or state of affairs is possible₁ if God wills it to be possible and we can conceive (comprehend, grasp) its possibility. Descartes distinguishes between comprehending or grasping, which involves complete understanding or adequation, and mere knowing or

understanding. For Descartes, conceiving is the cognitive activity related to our modal judgments and it requires grasping or comprehending.¹⁸ Accordingly, “it will be necessary₁ that p iff it is impossible₁ that $\sim p$ iff we cannot conceive of $\sim p$ ’s being the case.”¹⁹ However, a proposition or state of affairs is possible₂ if God could have willed it to be the case, but it is inconceivable for us.²⁰ In this way, since God could have done the opposite of things we cannot conceive being otherwise, “for no p is it necessary₂ that p .”²¹

With this distinction in hand, we are able to vindicate both universal possibilism (since there are no necessary₂ truths) and limited possibilism (since some truths, e.g., $2+2=4$, are necessary₁, but it is possible₂ that they not be necessary₁) as expressions of Descartes’s modal theory. Furthermore, we can interpret Descartes’s writing that God *could have* done otherwise with respect to necessary truths as expressing a possibility₂, which does not entail that we can conceive of this possibility. In this way, by adopting McFetridge’s proposed distinction, we can remove an apparent contradiction that arises in regard to Descartes’s claim in his Letter to Mesland of 2 May 1644 that God could have made possible things which he has in fact made impossible.

In this letter to Mesland, Descartes endorses the following principles: (1) Contingency of Volition: if God wills that p , it is possible that God not will that p ²² and (2) Conceivability: God created our minds as guides to possibility so that our powers of conception align with the modal facts that God has willed.²³ We also know that

¹⁸ Descartes distinguishes between knowing or understanding (*intellegere*, *connaître*) and comprehending or grasping (*comprehendere*, *comprendre*) in the Third Meditation, AT VII: 46, CSM 2: 32; Letter to Mersenne, 15 April 1630 AT I: 145, CSMK: 23; Fifth Replies AT VII: 368, CSM 2: 253-4; Letter to Mersenne, 27 May 1630, AT I: 152, CSMK: 25; and Conversation with Burman (AT V: 154, CSMK: 339). For example, we can know or understand the essence of God or infinity, but we cannot grasp or comprehend these essences. For Descartes, conceiving that p is possible requires grasping or comprehending the possibility of p . See McFetridge, “Descartes on Modality,” pp. 181-4.

¹⁹ McFetridge, “Descartes on Modality,” p. 188.

²⁰ It is inconceivable that p be possible₁, but we can understand p . For example, consider $p = 2+3\neq 5$. We can understand the proposition (i.e., we can make sense of what that string of symbols expresses) but cannot conceive of the proposition being the case (i.e., we cannot grasp or comprehend what is expressed by that string of symbols being true). See McFetridge, “Descartes on Modality,” p. 202.

²¹ McFetridge, “Descartes on Modality,” p. 188.

²² For example, “God cannot have been determined to make it true that contradictories cannot be true together, and therefore he could have done the opposite” (Letter to Mesland, 2 May 1644, AT IV: 118, CSMK: 235).

²³ “We can conceive as possible things which God has wished to be in fact possible” but cannot “conceive as possible things which God could have made possible, but

Descartes holds (3) Omnipotence: a proposition is true or possible if and only if God wills it to be true or possible. When we apply these principles to some proposition q , which God could have made possible but in fact made impossible, we seem to arrive at a contradiction. Applying Contingency of Volition to q entails that it is possible that God make q possible: $MGMq$.²⁴ Then, applying Conceivability to this possibility entails that we *can* conceive that it is possible that God make q possible: $CMGMq$. However, God in fact made q impossible, so applying Conceivability to q entails that we cannot conceive that it is possible that q : $\sim CMq$. The principle of Omnipotence states that for all p , p is possible if and only if God makes p possible. Thus, we *cannot* conceive that it is possible that God makes q possible: $\sim CMGMq$. So, it seems we both *can* and *cannot* conceive that it is possible that God make q possible.

Adopting the distinction between the two kinds of possibility enables us to remove the apparent contradiction. The possibility involved in Contingency of Volition (i.e., God could have done otherwise with respect to that which he in fact willed to be impossible), is possibility₂, which doesn't require that we be capable of conceiving these modal facts being the case. Furthermore, Conceivability states that our minds are guides to possibilities₁. In this way, applying these principles to q doesn't lead us to contradiction. Instead, we can conclude that God wills that q is impossible₁ ($G\sim M_1q$) and it is possible₂ that God will that q is possible₁ (M_2GM_1q).

While McFetridge has supplied a helpful distinction, he is unable to provide evidence that his distinction is one that Descartes can embrace. McFetridge notes that his hypothesis of two notions of possibility is not explicitly taken up by Descartes²⁵ and furthermore, in the places where Descartes does speak of two senses of possibility, these senses do not happily coincide with McFetridge's distinction.²⁶

which he has in fact wished to make impossible" (Letter to Mesland, 2 May 1644, AT IV: 118, CSMK: 235).

²⁴ I will use the following notation to make the apparent contradiction more easily recognizable: Cp = we can conceive of p being the case; Gp = God wills (and thus makes) p be the case; Mp = it is possible that p .

²⁵ McFetridge notes that "in the passage from the letter to Mesland, and in most others expressing the 'creation' doctrine, Descartes shows no consciousness of two notions of possibility" (McFetridge, "Descartes on Modality," p. 191).

²⁶ Descartes speaks of two senses of possibility ("whatever does not conflict with our human concepts" and the "kind of possibility that relates to the object itself") in his Second Replies (AT VII: 150-1, CSM 2: 107). In this passage and in Descartes's Letter to Gibieuf, 19 January 1642 (AT III: 476-8, CSMK: 402-3), Descartes writes that these two senses of possibility must be co-extensive or else "all human knowledge will be destroyed" (Second Replies) since "God would be a deceiver and we would have no rule to make us certain of the truth" (Letter to Gibieuf). These two

McFetridge does not further pursue the question of whether or how Descartes could embrace this distinction as part of his modal theory. In the following section I will sharpen McFetridge's distinction in a way that will show that Descartes can embrace this distinction and arrive at a coherent modal theory.

Grounding the Epistemic Distinction

Earlier I explained that McFetridge locates his modal distinction epistemologically, in terms of our conceptual capacities, and metaphysically, in terms of what God wills or could have willed. Thus, a proposition or state of affairs is possible₁ if God wills it to be possible and we can conceive its possibility and a proposition or state of affairs is possible₂ if God could have willed it to be the case, but it is inconceivable for us. I now want to sharpen the distinction by identifying that which is possible relative to God's absolute power with possibility₂ and that which is possible relative to God's ordained power with possibility₁. Descartes (following Aquinas) embraces the distinction between God's absolute and ordained power in order to account for both God's omnipotence and his immutability.²⁷ With regard to his absolute power, God is subject to no constraints and is thus absolutely free in his creation of the eternal truths. However, having created the eternal truths, God's ordained power is limited by what he has freely willed and decreed to be necessary.²⁸ When Descartes claims that God could have done otherwise with respect to willing the eternal truths, he is making a claim about what is possible₂ *relative to God's absolute power* (i.e., he is claiming that God's will is free from external constraints). However, when Descartes claims that the eternal truths are necessary, he is claiming that it is impossible₁ that they be otherwise *relative to God's ordained power* (i.e., it is not possible₁ that God wills otherwise with respect to the truths that God has willed to be necessary). God's ordained power is limited by the essences he has willed and created. Thus, while everything (besides what is contrary to God's essence) is possible₂ *relative to God's absolute power*, this does not imply that God could do anything *by his*

senses of possibility do not coincide with McFetridge's distinction since (as we noted earlier) there are possibilities₂ that are not possible₁.

²⁷ God's immutability is expressed by his "ordinary concurrence" and conservation of his creation.

²⁸ Margaret Osler writes that Descartes's ordained power is "bound by the necessity he had freely introduced into the created order" (Osler, *Divine Will and the Mechanical Philosophy*, p. 120).

ordained power, since God limits himself by the essences he has willed and created.²⁹

Descartes acknowledges the absolute/ordained power distinction by contrasting God's initial free creation of the world with God's immutable sustenance of his creation of matter and its motion by conservation and ordinary concurrence.³⁰ In order to show that possibility₂ reflects God's absolute power while possibility₁ reflects God's ordained power, I will argue that possibilities₂ and necessities₂ depend on or express God's essence as an omnipotent being, while possibilities₁ and necessities₁ depend on or express the essences that God has willed and created. In so doing, I will reject the view that for Descartes there are no possibilities independent of God's will and creation by making the case for *uncreated* eternal truths, which relate to God's essence rather than created essences.³¹

Descartes writes in his 6 May 1630 Letter to Mersenne that the eternal truths are dependent upon God's will because: "the existence of God is the first and most eternal of all possible truths and the one

²⁹ In this way, I agree with La Croix who finds that Descartes distinguishes between "what God *could have done* from all eternity with respect to establishing the eternal truths and what God *can do* having established the eternal truths that he did establish." (La Croix, "Descartes on Gods Ability to Do the Logically Impossible," p. 467) La Croix finds that there is a point of view from which God's power is unlimited, absolute, and undetermined and there is another point of view from which God's power is limited. It is limited not by something independent that determines or limits God's power, but by God's willing and creation of the eternal truths as ultimate conditions of reality and truth). La Croix recognizes that "God was not determined or limited in his creation of the eternal truths, but having established them as both eternal and immutable he is restricted in his subsequent actions by his maintenance of them" (La Croix, "Descartes on Gods Ability to Do the Logically Impossible," pp. 463-4). La Croix mentions the following passages as examples of what God cannot do given his willings. Sixth Replies (AT VII: 434-5, CSM 2: 292-3): God cannot make real accidents; Letter to Hyperaspistes, August 1641 (AT III: 429-30, CSMK: 193-4): God cannot make creatures that exist independently of him; Letter to More, 5 February 1649 (AT III: 273, CSMK: 363): it is no defect in God that he cannot do the impossible.

³⁰ Descartes provides this contrast in Principles II.36, AT VIIIa: 61, CSM 1: 240. Furthermore, in his Letter to Mersenne 15 April 1630, Descartes writes that God could change the laws if he could change his will, but that he is immutable. (AT I: 146, CSMK: 23) See also Schmaltz, *Descartes on Causation*, pp. 99f. and Osler, *Divine Will and the Mechanical Philosophy*, pp. 118f.

³¹ This is the view that nothing is possible without God's willing it to be possible shared by Kaufman, Alanen and La Croix. The view arises from reading the 6 May 1630 Letter to Mersenne passage as declaring that there are no truths *independent of God's will and creation*. Earlier I wrote that this passage can be more reasonably interpreted to suggest that God is not externally determined in his willings; i.e., there are no necessary or possible truths *independent of God* that determine or influence his willing the eternal truths.

from which alone all others proceed.”³² This claim not only defends Descartes’s Creation Doctrine, it furthermore suggests that the truth of God’s existence is prior to other eternal truths. The basis of this priority is most readily explained by noting that the other eternal truths of which Descartes’s is speaking are created eternal truths, which depend on God’s will, while God’s existence is an uncreated eternal truth.³³ Indeed, since God’s essence is not distinct from his existence, the truth that God necessarily exists cannot be dependent upon and subject to God’s will and creative power.

There are additional reasons that suggest that truths about God are independent of God’s free will and creation. For one, Descartes considers God as separate from the created world; God is not a member or part of ‘possible worlds’, but stands separate from them as their creator.³⁴ For another, the necessity of created eternal truths can be explained in part by truths about God’s essence being independent of God’s free will.³⁵ Finally, if truths about God were

³² Letter to Mersenne, 6 May 1630, AT I: 149 –150, CSMK: 24

³³ Descartes goes on to argue in this Letter to Mersenne that perfectly comprehended mathematical truths depend on God’s existence. He writes: “...since God is a cause whose power surpasses the bounds of human understanding, and since the necessity of these truths [i.e., the created eternal truths] does not exceed our knowledge, these truths are therefore something less than, and subject to, the incomprehensible power of God” (AT I: 149 –150, CSMK: 24). Here Descartes’s main point is to reaffirm his Creation Doctrine against doubts that might arise from an atheist who believes that mathematical truths could hold independently of God’s willing them. The basis of Descartes’s claim that mathematical truths depend on God’s willing them seems to be that that which is beyond our comprehension (viz., God’s power) is greater than that which we are capable of grasping (viz., the necessity of created eternal truths). While Descartes’s argument here is a bit hard to follow, the important thing for my reading is that this passage seems to suggest (by this reasoning) that God’s incomprehensible essence is itself *not* less than, and subject to, God’s power.

³⁴ *The World*, AT XI: 47, CSM 1: 97; *Discourse on Method* AT VI: 43, CSM 1: 132; see also Curley: “That necessary truths about God should occupy a special position may also be suggested by reflection on the fact that, insofar as Descartes has the concept of a possible world, he thinks of it as a world God might have created.” (Curley, “Descartes on the Creation of the Eternal Truths,” p. 594) So, God is not a constituent of the possible worlds.

³⁵ See Curley, “Descartes on the Creation of the Eternal Truths,” pp. 569-597. Curley, following Gueroult, distinguishes truths about God from the other eternal truths. Curley theorizes that the necessity of the eternal truths that God created is due to God’s immutability. He writes: “If God’s immutability does not belong to a ‘higher order’ of eternal truth, then it’s hard to see how it can serve to explain the necessity of created eternal truths.” He also goes on to suggest some independent reasons for thinking that truths about God are “necessarily necessary”. For example, God is not a constituent of the possible worlds (see the previous footnote). Furthermore, on page 596 he writes: “According to my interpretation, the whole problem arises from

created truths, they in some sense could have been otherwise, which leads to paradoxical conclusions.³⁶ These paradoxes are resolved by recognizing that truths about God are not dependent upon God's will and creative power.

To better understand why truths about God are independent of God's will and creative power, it is helpful to recognize that eternal truths are, or are about, essences. Descartes writes that the eternal truths are either identical with essences or dependent upon them.³⁷ Furthermore, for Descartes, God's willing the possibility of some object is the same as creating its essence.³⁸ Thus, the created eternal truths are true due to God's creation of the relevant essences (e.g., 'a triangle has three sides' is made true due to God's creation of the essence of triangle). Truths about God should bear the same relation

worrying about the truth-conditions of necessary truths dealing with things which may or may not exist, with essences which, according to Genesis, at one time were not actual. In the case of God, the question does not arise. God's essence is eternally actual. So there is no need to provide a foundation for essential truths about God in his immutable will. Eternal truths about God, in Descartes's view, would constitute a legitimate exception to the creation thesis." (p. 596)

Later in the paper I will consider Kaufman's rejection of Curley's "Immutability Interpretation" of the necessity of eternal truths. I will contend that Curley overplays the explanatory role of God's immutability, but that Kaufman doesn't seem to understand the role that immutability does play.

³⁶ The question of God's relation to the modality of truths concerning himself presents a number dilemmas. For example, either God could annihilate himself, thereby making him a non-necessary being, or he could not, preserving his status as a necessary being but making him subject to limitations in what he could will (thereby restricting his power and freedom). Furthermore, if God's existence depends upon God's willing it to be the case, then God would need to bootstrap himself into existence (prior to his already existing).

I think that these dilemmas about God's relation to modality are false dilemmas based upon the mistaken supposition that truths about God are dependent upon God's will and creative power. Instead, I think that these truths should be considered identical with God – they immediately follow from his essence and so are not dependent upon his will and creative power.

³⁷ In his Letter to Mersenne, 27 May 1630 (AT 1: 152, CSMK: 25) Descartes claims that the essences or natures are nothing other than the eternal truths. In other places, he seems to suggest that the eternal truths are propositions about properties that belong to these essences or natures: Fifth Meditations (AT VII: 64-5, CSM 2: 45); Fifth Replies: (AT VII: 380, CSM 2: 261).

³⁸ Accordingly, as Calvin Normore has explained, "eternal truths depend on the possible existence of things." They are "about objects but considered as possibly rather than actually existing" (Normore, "Descartes's Possibilities," p. 73). Furthermore, Normore explains: "God has the power to make or not make the eternal truths. God does this by making or not making the possibilities of the existence of things, that is by making or not making essences. But given that God has made things possible there is nothing further to be done to make the eternal truths true." (p. 79)

to God's uncreated essence. The proposition 'God is immutable' is true because of God's essence as a perfect being. In the same way, the truth 'God could have done otherwise' expresses God's essence. This doesn't express a specific created possibility (e.g., $2+2=5$) since God never created this as possible by creating the relevant essence(s); rather, the claim that 'God could have done otherwise' expresses God's essence, and more specifically, his ultimate freedom and power.

To recap, I have attempted to explain Descartes's seemingly problematic claim that God could have done otherwise with respect to necessary truths. I have suggested that this possibility depends on God's essence, and not on his willing and creating this possibility. This explanation involves recognizing the distinction between created and uncreated eternal truths. *Created* eternal truths are true and necessary owing to God's will and creation of essences. Our conceptual faculties (which involve grasping or comprehending) are guides to the possibilities₁ and necessities₁ that depend on these created essences. *Uncreated* eternal truths (viz., those about God) are true and necessary owing to God's uncreated essence. Our conceptual faculties do not allow us to grasp or comprehend the possibilities that follow from the *uncreated* eternal truth that God is free and omnipotent (in other words, our conceptual faculties do not allow us to grasp or comprehend the possibilities entailed by the fact that God could have willed otherwise with respect to necessary truths).³⁹ According to this distinction, there are some possibilities that are independent of God's will and creation, but importantly none that are independent of God.

Descartes's Theory of Modality

The sharpened distinction between possibility₁ and possibility₂ provides the helpful clarification that McFetridge's original distinction offered (explaining how Descartes could be seen to hold both universal and limited possibilist views and removing the apparent

³⁹ We have knowledge of God's essence (since it is an eternal truth imprinted in our souls) and know that God creates necessary₁ and possible₁ truths with his free will. However, we are not able to grasp, comprehend or conceive of the possibilities₂ that God's free creation seems to entail. Lilli Alanen tries to capture this when she writes: "What follows is that since God creates the modal structure by which our thinking is bound there is no common, absolute frame in which questions about what is possible independently of this structure can be posed. There are no independent standards of rationality or possibility, shared by created rational beings and God, against which the acts of God's infinite intellect and will can be measured" (Alanen, "Descartes, Omnipotence, and Kinds of Modality," p. 190; Alanen, "Descartes, Conceivability and Logical Modality," p. 75).

contradiction in Descartes's Letter to Mesland). Furthermore, this distinction between two kinds of possibility is grounded by Descartes's distinctions between God's absolute and ordained power and between uncreated and created eternal truths. Earlier, I noted that postulating two different kinds of possibility helps to disambiguate many of Descartes's puzzling modal claims and removes apparent contradiction. Now, I have provided a deeper motivation for this distinction, making it more plausible and further spelling out how Descartes employs the distinction in the context of his larger program.

McFetridge's proposed distinction between possibility₁ and possibility₂ stated that a proposition or state of affairs is possible₁ if God wills it to be possible (i.e., creates it as a possibility by creating a corresponding essence) and we can conceive (comprehend, grasp) its possibility, whereas it is possible₂ if God could have willed it to be the case, but it is inconceivable for us. Now we can see that the epistemic aspects of this distinction are grounded in the distinction between God's absolute and ordained power which can be understood in terms of God's essence as an omnipotent being and his immutability with respect to those essences that he wills and creates. Possibility₁ expresses what God can do *relative to God's ordained power*, i.e., possibilities₁ are limited by God's having willed and created essences in his initial act of creation. Possibility₂ expresses what God *could have done relative to God's absolute power* (i.e., what God could have willed and created in his initial act of creation). Possibilities₂ are in this way uncreated possibilities; they express something about God's essence (viz., God's freedom and omnipotence).

This metaphysical grounding of the epistemic aspects of the distinction allows us to explain how McFetridge's distinction supplies a viable solution – that Descartes can embrace – to the otherwise puzzling claim from his Letter to Mesland that God could have made possible that which he in fact willed to be impossible. Applying our sharpened distinction between possibility₁ and possibility₂, we can see that the contingency of God's volition (that God could have willed otherwise with respect to that which he has in fact willed to be necessary) applies to possibilities₂ and reflects the fact that God freely wills and creates essences.⁴⁰ Our ability to conceive of certain

⁴⁰ McFetridge glosses this principle as entailing that if God wills that *p*, it is possible that God not will that *p*. We are now in a position to see that this gloss is problematic. While God's absolute power with respect to his creation of eternal truths means that God *could have failed to will* that *p*, once God wills that *p* (by creating the corresponding essence), the immutability of God's will limits what God can subsequently do with his ordained power. Given God's essence, it is not possible that God change his will with respect to what he has initially willed to be necessary.

propositions or states of affairs being the case is limited to possibilities₁.⁴¹ Finally, the principle concerning God's omnipotence needs to be qualified: a proposition is true or possible if and only if God wills it to be true or possible (in the case of possibility₁) *or* it is an expression of God's essence as an omnipotent creator (in the case of possibility₂). In other words, we have amended the upshot of God's omnipotence by denying the problematic claim that for Descartes nothing is possible unless God wills it to be possible; we now recognize that there are possibilities₂ which God did not will and create.⁴² These principles do not lead to the apparent contradiction that we both can and cannot conceive these modal facts being the case. Instead, we can conceive the possibilities₁ that God has willed to be the case, but we understand (although we cannot conceive) the possibility₂ that God could have willed otherwise with respect to what he has willed to be necessary.⁴³ In this way, we recognize that there are possibilities₂ that follow from God's absolute power, but our conceptual faculty – our ability to grasp or comprehend something being possible₁ – serves as a guide to the world and the modal facts that God has created.

Conclusion

The view that there are things which are possible₂ with respect to God's essence, but which are impossible₁ because God has willed and created certain necessary truths has a number of things in its favor: 1) it captures the view expressed in the text and makes sense of Descartes's ambiguous and seemingly contradictory claims; 2) it expresses a view consistent with Descartes's theology (e.g., that God is not limited by external laws or considerations); 3) it doesn't posit a bizarre sounding conclusion (e.g., that God could have done things without them being possible); 4) it allows Descartes to hold that God

⁴¹ "We can conceive as possible things which God has wished to be in fact possible" but cannot "conceive as possible things which God could have made possible, but which he has in fact wished to make impossible" (Letter to Mesland, 2 May 1644; AT IV: 118, CSMK: 235).

⁴² Truths about God are not willed by God; they are uncreated eternal truths. These truths about God are necessary₂ (we understand but don't fully grasp them). Things which are possible₂ (e.g., it not being the case that $2+2=4$) are only possible relative to God's absolute power. This sense of possibility expresses God's freedom and indifference in his initial willing and creation, but does not imply that God's will might change subsequent to his creation of the eternal truths.

⁴³ Recall the distinction between conceiving, which involves comprehending or grasping, and understanding or knowing, which is a less demanding cognitive activity. See footnote 18 above.

is the source of modality while avoiding undermining our ability to discover modal facts.

Appendix to Chapter IV

In this chapter, part of my focus has been to respond to a criticism of possibilist interpretations. According to this criticism, the contingency of God's volition (i.e., God's free and indifferent willing) does not entail the possibility that eternal truths be otherwise because, for Descartes, nothing is possible without God's willing it to be possible. Dan Kaufman, for example, in his 'Descartes's Creation Doctrine and Modality', rejects Edwin Curley's limited possibilist interpretation on these grounds. I have argued that this criticism of possibilism is misguided as it stems from a failure to recognize that there are some truths that depend on God but are independent of his willing and creation (viz., uncreated eternal truths about God's essence).

In this section, I would like to provide a sort of "error theory" for Kaufman's anti-possibilist interpretation by briefly considering some of Kaufman's other commitments. First, I will consider another complaint that Kaufman has with Edwin Curley's interpretation of Descartes's Creation Doctrine. Curley supports an "immutability interpretation" of the necessity of the eternal truths. On this interpretation, what explains the necessity of eternal truths is God's immutability. Kaufman rightly sees that this cannot serve as the explanation because it is "either too weak to explain the necessity of the eternal truths or it is too strong in that it would commit Descartes to necessitarianism, a view he does not hold."⁴⁴ Kaufman goes on to supply a more straightforward interpretation: that the eternal truths are necessary because God wills that they are necessary.⁴⁵ I think that Kaufman is right that immutability *alone* can't explain the necessity of the eternal truths and that Descartes thought that their necessity was owing to God's willing them to be necessary. However, I believe that Kaufman misses out on an important role that immutability plays in securing the necessity of necessary truths.⁴⁶ Kaufman does seem to recognize that God can limit (the scope of) his own powers, but he fails to recognize that this is what preserves the necessity of what God

⁴⁴ Kaufman, "God's Immutability and the Necessity of Descartes's Eternal Truths," pp. 2-3.

⁴⁵ He cites: Fifth Replies, AT VII: 380, CSM 2: 261; Sixth Replies AT VII: 432, CSM 2: 291; Letter to Mesland, 2 May 1644, AT IV: 118, CSMK: 235.

⁴⁶ To be fair, one of the main advocates of the Immutability Interpretation, Edwin Curley, doesn't seem to clearly see the limited role that God's immutability plays.

wills to be necessary truths. Consider if God were mutable in his willings of necessary truths, he could will that p be necessary, but then will that p be false. God's immutability preserves and guarantees that he won't change his willings of necessary truths. This seems to be something that Curley is aware of: "if [Descartes is] prepared to concede that God's will might change, then the fact that God has once willed the eternal truths to be *immutable* does not seem to provide much security for the future"⁴⁷. Kaufman also seems to recognize this when he writes: "Descartes never intends God's immutability to explain the necessity of the eternal truths, but rather to explain why God cannot change the eternal truths he has willed."⁴⁸ However, Kaufman doesn't seem to recognize that without explaining why God cannot change them, he hasn't explained why they are necessary (at least not completely, since they aren't really necessary if God can change them). So, Kaufman is unable to see the role that immutability plays in explaining the necessity of the necessary truths willed by God. I believe that not seeing the further requirement for explanation beyond the "straight-forward explanation" that God willed them as necessary may contribute to Kaufman's missing the distinction between truths that depend upon created essences and truths about God's essence, which in some sense ground the created eternal truths. As I have argued in this paper, this distinction between created essences and God's essence provides the basis for the possibility₁/possibility₂ distinction.

In addition, Kaufman has trouble with the limited possibilist interpretation because he thinks that it results in limiting God's power such that: "God can perform the incredibly difficult task of willing a necessary truth to be possibly false, but (and here is the rub) he cannot perform the relatively simple task of willing that *possibly* false proposition to be *actually* false."⁴⁹ But, we can see that according to my reading, God doesn't will that a necessary truth is possibly false. That would mean that he didn't will that it was necessary. Instead, recognizing the contingency of the necessary truths (i.e., recognizing that God could have willed otherwise) doesn't involve God willing the possibility of something contradictory (e.g., $2+2=5$) as Kaufman seems to suppose. Rather, it merely involves God having the essence that he has, i.e., being the supremely free and powerful creator that he is.

⁴⁷ Curley, "A God Who Can Do All Things," p. 10 as quoted in Kaufman, "God's Immutability and the Necessity of Descartes's Eternal Truths."

⁴⁸ Kaufman, "God's Immutability and the Necessity of Descartes's Eternal Truths," p. 17.

⁴⁹ Kaufman, "God's Immutability and the Necessity of Descartes's Eternal Truths," p. 33.

Chapter V

Descartes's Creation Doctrine and Deductive Certainty in the Sciences

Introduction

In Chapters III and IV, I argued that Descartes's Creation Doctrine survives the worry that its claims lead to paradox. In this chapter, I will demonstrate the significance of saving Descartes's Creation Doctrine from obscurity and paradox by revealing its role in Descartes's program to achieve systematic understanding of the world. In so doing, I will pick up on the interpretation of Descartes's epistemic program that I introduced in Chapter II. There, I claimed that to appreciate the value of Descartes's epistemic program in the *Meditations*, one must recognize that God is not only the guarantor of one's cognitive faculties, but also the metaphysical foundation of scientific truths. I maintained that the *scientia* possessed by the graduate of the *Meditations* is superior to the *cognitio* held by an atheist geometer because *scientia* involves not merely immunity to indirect doubt, but also appreciation of the ultimate source of truths and the relations these truths bear to one another. An atheist can gain piecemeal knowledge of mathematical truths and attempt to construct a physics on the basis of hypothesis and analogy. The Cartesian scientist's knowledge of mathematical truths involves recognizing God's creation of these truths (and his imprinting them in our souls), which further enables deductive understanding of the physical world, since God creates and conserves the world in accordance with these eternal truths.

In this chapter, I will explain that Descartes abandons his method presented in the *Regulae* and develops a scientific method that involves using the metaphysical foundations outlined in the Creation Doctrine to gain deductive certainty of the physical world. I will begin by introducing Descartes's scientific method in the *Regulae*. I will then suggest that Descartes abandons the *Regulae* prior to its completion and pursues metaphysical system building because he finds that the method of the *Regulae* will not provide him with deductive certainty of complex physical facts. Descartes cannot solve what he calls "imperfectly understood problems" concerning the physical world by means of the reductive method of the *Regulae*. There is no straight-forward way to reduce complex and obscure empirical problems to simple and evident intuitions (from which one could subsequently deduce answers to these problems). Abandoning

his unsuccessful reductive method, Descartes instead makes a metaphysical move that enables him to demonstrate that complex empirical facts, while discovered by sense perception, can in fact be deductively proved from God-guaranteed intuitions of innate truths. The metaphysical move is Descartes's Creation Doctrine (which involves God's immutable nature, his voluntary creation of the eternal truths, and the creation of the physical world in accordance with these truths). I will outline how Descartes envisions this metaphysical move to provide him with the foundation for scientific knowledge. As I explained in Chapter III, according to Descartes, the laws governing motion can be deduced from God's immutability along with the essence of matter (an eternal truth). Furthermore, Descartes believes that knowledge of these laws of motion will ultimately lead him to be able to explain all physical phenomena. In this way, Descartes's Creation Doctrine enables him to have deductive certainty with regard to scientific discoveries. In the end, I will not defend Descartes's physics (nor his metaphysics for that matter), but will suggest that the audacious program suggested by this interpretation is befitting Descartes.

Descartes's Method of the *Regulae* and a Paradox of Analysis

The *Regulae* is an early work of Descartes's in which he aims to provide a method for arriving at "true and sound judgments" and eventually certainty in the sciences. The project is to build from "certain and indubitable cognition" of simple things (e.g., arithmetic and geometry) to *scientia* (all-embracing knowledge) in all scientific disciplines.¹ Descartes believes that we must begin by using intuition ("the indubitable conception of a clear and attentive mind"²) to arrive

¹ In the *Regulae*, Descartes emphasizes the interconnectedness or all-embracing nature of understanding (*scientia*). For example, in Rule 1 he writes: "It must be acknowledged that all the sciences are so closely interconnected that it is much easier to learn them all together than to separate one from the other. If, therefore, someone seriously wishes to investigate the truth of things, he ought not to select one science in particular, for they are all interconnected and interdependent" (AT X: 361, CSM 1: 10). In Rule 12, he explains that the relations between particular domains of knowledge stems from their each being founded on an understanding of simple natures and self-evident facts: "...the whole of human knowledge (*scientia*) consists uniquely in our achieving a distinct perception of how all these simple natures contribute to the composition of other things" (AT X: 427, CSM 1: 49). ... "[I]t follows that we should not regard some branches of our knowledge of things as more obscure than others, since they are all of the same nature and consist simply in the putting together of self-evident facts." (AT X: 428, CSM 1: 50)

² "[T]he conception of a clear and attentive mind, which is so easy and distinct that there can be no room for doubt about what we are understanding. Alternatively, and

at knowledge and certainty of pure and simple things. Having gained an appreciation for truth and certainty, we can extend our learning to more “remote conclusions” which are not immediately self-evident (as is requisite for intuition) by means of deduction (“the inference of something as following necessarily from some other propositions which are known with certainty”³). Finally, we should arrive at “all-embracing knowledge” and “universal wisdom” – *scientia* in all scientific disciplines – if we just employ “extreme care”.⁴ Rule Five explains that employing this “extreme care” and following this method consists in “ordering and arranging” the objects of inquiry such that we “reduce complicated and obscure propositions step by step to simpler ones, and then, starting with the intuition of the simplest ones of all, try to ascend through the same steps to a knowledge of all the rest.”⁵ In order to cultivate this knowledge then, Descartes must first differentiate what is absolutely pure and simple from what is relatively simple. Then, Descartes must explain how one is to continually achieve certainty as one journeys towards more distantly removed and complex objects of study.

Descartes’s project in the *Regulae* is somewhat ironically hampered by obscurity and confusion, which the method itself recognizes as antithetical to arriving at certainty and knowledge. While at once admonishing the reader to take the utmost care in order to achieve knowledge in the sciences, Descartes’s prescription of the method is itself unclear. Descartes’s definitions of intuition, deduction and enumeration leave questions about their objects and their respective roles in attaining all-embracing knowledge.⁶ Beyond the concerns regarding terminological clarity, Descartes’s overall project seems to face a much larger problem.

In Rule Ten, Descartes explains that proceeding in a methodical, orderly fashion enables one to deduce more difficult and

this comes to the same thing, intuition is the indubitable conception of a clear and attentive mind which proceeds solely from light of reason.” (AT X: 368, CSM 1: 14)

³ A deduction furthermore is an inference “from true and known principles through a continuous and uninterrupted movement of thought in which each individual proposition is clearly intuited.” (AT X: 369, CSM 1: 15)

⁴ Rule 4, AT X: 371-379, CSM I: 15-20

⁵ AT X: 379, CSM 1: 20

⁶ For example, Descartes defines enumeration both as an aid to deduction (a process of checking for completeness and order which aids in making deductions (AT X: 388-9, CSM 1: 25-6)) and as a species of deduction itself (a complex deduction which involves memory (AT X: 408, CSM 1: 37)). Furthermore, Descartes is unclear about the relationship between intuition and deduction and whether deductions are capable of being reduced to intuitions (especially if some complex deductions involve memory or sense perception).

complicated truths from basic, evident principles. However, he rejects the method of Scholastic syllogism and writes that this form of reasoning is “inimical to our project”. Descartes goes on to accuse the dialectician of a paradox of analysis, viz., that one can come to know something only if one already possesses knowledge of this very thing. Descartes writes:

But to make it even clearer that the aforementioned art of reasoning contributes nothing whatever to knowledge of the truth, we should realize that, on the basis of their method, dialecticians are unable to formulate a syllogism with a true conclusion unless they are already in possession of the substance of the conclusion, i.e., unless they have previous knowledge of the very truth deduced in the syllogism. It is obvious therefore that they themselves can learn nothing new from such forms of reasoning, and hence that ordinary dialectic is of no use whatever to those who wish to investigate the truth of things.⁷

Descartes is well aware of the paradox of analysis insofar as it applies to the Scholastic Aristotelian syllogism. Scholastic syllogisms are not ampliative, i.e., they cannot allow one to discover new truths or further one’s scientific knowledge. The truths that one is able to arrive at through Scholastic syllogisms must be true if the premises are true. Descartes, however, wants to provide a method which can deliver not only perfectly certain knowledge but also knowledge of all things. In this way, a similar problem applies to Descartes’s method of the *Regulae*. Descartes wants to achieve universal knowledge; that is, *scientia* concerning all matters, including complex facts about phenomena in the physical world. In the *Regulae*, Descartes claims that intuition and deduction are the only two actions of the intellect that provide us with *scientia*. Complicated and obscure physical truths, however, are known by means of “complex deduction” or “heterogeneous enumeration”. This means that we combine intuited corporeal simple natures and logical relations with empirical observations and memories to gain understanding of complex physical truths. The problem for Descartes’s method in the *Regulae* then is that complicated and obscure physical truths cannot be

⁷ Rule X, AT X: 406-7, CSM 1: 36-7. See also *Principles of Philosophy*, in which Descartes writes that one should study logic, but not “the logic of the Schools, for this is strictly speaking nothing but a dialectic which teaches ways of expounding to others what one already knows or even of holding forth without judgment about things one does not know” (AT IXB: 13-4, CSM 1: 186).

understood solely by means of *a priori* reasoning – i.e., deduction from intuited propositions – because there is no straightforward way to reduce complex and obscure empirical propositions to simple and evident intuitions. Our knowledge of complicated and obscure physical truths depends upon empirical observation and memory (themselves potentially fallible faculties), so these truths cannot be known purely through intuition or deduction and our knowledge of them falls short of *scientia*.⁸

Abandoning the *Regulae* for Metaphysical System Building

Descartes's *Regulae* was planned to consist of three parts with twelve rules each, but Descartes abandoned the project before its completion. The third part does not exist and the second part ends at Rule 21 (with Rules 19 to 21 being only headings without the annotations that accompany all the other extant rules). The first part explains that one should use intuition and deduction to arrive at knowledge of simple propositions. The second part explains that “perfectly understood” problems (problems regarding the empirical world that involve determinate quantities of matter and motion) should be reduced to their simplest terms so that we may use our intuitive knowledge about simple natures and mathematical relationships to arrive at deductive solutions to these problems. The third part was to display how “imperfectly understood” problems about obscure or complex features of the empirical world (e.g., magnets, rainbows, or the nature of sound in general) could be reduced to “perfectly understood” problems. In other words, applying the method of the *Regulae*, we should be able to come to solve “imperfectly understood” problems such as “what is the nature of the magnet?” or “what is the nature of sound?” We are supposedly able to do this by having first solved “perfectly understood” problems like “what is the nature of sound with respect to determinate data which can be reduced to mathematical comparisons of magnitude?” in the second part of the *Regulae*. These “perfectly understood” problems in turn are to be solved by reducing these questions to questions about the simplest things, which can be known through intuition (e.g., what is the nature of matter?). Starting from these intuitions, we are then supposed to construct a deductive proof of the imperfectly

⁸ We can have knowledge (*cognitio*) that these physical facts are the case if we know that our observation and memory are reliable faculties, but we lack explanatory understanding – deductive knowledge – that shows these physical truths to be the effects of more basic (and intuitively known) causes.

understood problems by deducing the solutions to each of the more complex problems (in reverse order of the reduction).

Descartes, however, never finished the *Regulae*. In a letter to Mersenne (15 April 1630) he mentions his abandoning “treatises” (presumably the *Regulae*) in favor of beginning a new project (presumably *Le Monde*). Descartes writes:

Perhaps you find it strange that I have not persevered with some other treatises I began while in Paris. I will tell you the reason: while I was working on them I acquired a little more knowledge than I had when I began them, and when I tried to take account of this I was forced to start a new project, rather larger than the first.⁹

Descartes thus abandons the individual problem-solving project of the *Regulae* and proceeds to become a metaphysical system-builder.¹⁰ The question is then: what knowledge did Descartes acquire that “forced” him to abandon the *Regulae* and begin a new project of metaphysical system-building? I believe that Descartes came to see that the method of the *Regulae* itself falls victim to a paradox of analysis. Descartes cannot solve “imperfectly understood problems” concerning the physical world by means of the method of the *Regulae* alone. A metaphysical move must be made for one to arrive at deductive certainty of obscure and complex empirical facts. I believe Descartes abandons the (impossible) project of methodically reducing complicated and obscure empirical problems to simple and evident propositions due to his recognition that there is no way to reduce these empirical problems to simple intuitions. Descartes instead makes a metaphysical move that enables him to demonstrate that empirical facts, while discovered by sense perception, can in fact be deductively proved from intuitions. The metaphysical move is the recognition that God is the metaphysical foundation of all scientific knowledge. In the same letter to Mersenne (15 April 1630) in which Descartes mentions abandoning his previous treatises, he writes that he has discovered new “foundations of physics” by studying the

⁹ Letter to Mersenne, 15 April 1630, AT I: 137-8, CSMK: 21.

¹⁰ Doyle, “How (not) to Study Descartes’ *Regulae*.” Doyle writes: “There is a general consensus among scholars that, just as Schuster suggests, when Descartes moves to Holland in 1628 and begins work on *Le Monde*, he ceases to be essentially a mathematical problem-solver and starts to become a metaphysical system-builder.” (p. 11) Doyle cites Schuster, “Descartes’s *Mathesis Universalis* 1619-28,” pp. 73–80 and Daniel Garber, *Descartes Embodied*, p. 50.

nature of God as well as his own nature as a knower. He also writes: "...I think that I have found how to prove metaphysical truths in a manner which is more evident than the proofs of geometry..."¹¹ Finally, in this letter, Descartes introduces his Creation Doctrine, which he describes as a way of understanding God in a "worthier manner" by recognizing that God is the free, but immutable, creator of the eternal truths.

Garber on Abandonment

Daniel Garber in his "Descartes on Knowledge and Certainty: From the *Discours* to the *Principia*"¹² explains that by the *Principles*, Descartes had abandoned his project of attaining scientific knowledge of the natural world by means of method in the *Regulae, Discourse, and Essays* in favor of achieving moral certainty of these matters by means of analogy and hypothetical argument. Garber describes the transition as follows: "we ... passed from a certain knowledge of hidden natures, obtained through a hopelessly obscure cognitive process (intuition), to a clear and manifest cognitive process (analogy and hypothetical argument) that claims to give us not truth, but only utility."¹³

Garber tells a story in which Descartes gives up on his earlier extravagant claims of the possibility of absolute certainty in the sciences and makes more modest claims about knowledge acquisition concerning the substructure or inner nature of physical things. While Garber is right that Descartes can be read to possess a newfound modesty in the *Principles*, I believe that this ignores an essential aspect of Descartes's program. Garber points to Descartes's use of analogy with larger observable natural structures and artifacts¹⁴ and hypothetical argument¹⁵ as indications of modesty, which he equates with abandoning the extravagant aims for absolute certainty of his earlier works. Garber's conclusion is too strong. Descartes's recognition of the role for analogy and hypothetical argument does not mark the end of his bold project to attain absolute certainty in the sciences. Garber is right insofar as sections 204 and 205 of Part IV of the *Principles* do talk of modesty and moral certainty with respect to

¹¹ Letter to Mersenne, 15 April 1630, AT I: 144, CSMK: 22

¹² Chapter Six of Garber, *Descartes Embodied*.

¹³ Garber, *Descartes Embodied*, p. 128.

¹⁴ *Principles* Part IV.201& 203 (AT VIIIa: 324-5, CSM 1: 286-7; AT VIIIa: 325-6, CSM 1: 288-9)

¹⁵ *Principles* Part IV.203 (AT VIIIa: 325-6, CSM 1: 288-9) and Part III. 44 & 45 (AT VIIIa: 99-100, CSM 1: 255-6)

conclusions about the substructure of particular things (that are unperceivable by the senses) reached on the basis of analogy and hypothesis. However, in section 206 Descartes writes that all “evident reasoning about material things” is absolutely certain since it is based on the metaphysical foundation “that God is supremely good and in no way a deceiver.” Descartes goes on that “perhaps even these results of mine will be allowed into the class of absolute certainties, if people consider how they have been deduced in an unbroken chain from the first and simplest principles of human knowledge.”¹⁶ By these results, Descartes is referring to the particular conclusions he has reached about the natural world. Here it is important to recall that analogy and hypothesis as well as sensory observation are useful for making informed conjectures¹⁷, but Descartes believes that we ultimately deduce effects from their causes and that we come to know these effects by means of an “unbroken chain” of deduction from first principles.¹⁸

I think that Garber holds Descartes to be overtly modest in the *Principles* because he believes Descartes to have completely given up on the method of the *Regulae*. Garber’s “Descartes and Method in 1637”¹⁹ argues that “perhaps by 1637 and certainly after, [the] method began to show its limitations, and the method that was one of Descartes’ first discoveries, one of his first inspirations, proved itself inadequate to the mature program that it led Descartes to undertake.”²⁰ Garber describes Descartes’ project in the *Regulae* as follows:

...Rule 12 of the *Rules* suggests that by 1628 Descartes saw all knowledge grounded in intuitions about the very most general features of the world, thought, extension, shape, motion, existences, duration, etc. On these intuitions are grounded layers of successively less general propositions. If knowledge is structured in this way, then Descartes thinks we should be able to solve any problem in an orderly and methodical way, tracing

¹⁶AT VIIIa: 328, CSM 1: 290.

¹⁷ In fact, Descartes recognizes that careful reasoning on the basis of analogy, hypothesis and sensation can lead to a kind of knowledge: *cognitio*. *Cognitio* is the type of knowledge that can be achieved by atheist geometers and non-Cartesian scientists. To achieve Descartes’s ultimate goal of *scientia*, one must recognize that God is both the creator of all truths (save those about God himself) and the guarantor of the reliability of our cognitive faculties.

¹⁸ See also Part III.43 (AT VIIIa: 99, CSM 1: 255).

¹⁹ Chapter Two of Garber, *Descartes Embodied*.

²⁰ Garber, *Descartes Embodied*, p. 34

step by step through the layers, back toward the intuition, and deducing down from there to the question that interests us.²¹

Garber believes Descartes abandons this method of the *Regulae* owing to a recognition that “the method of the *Rules* can at best give us imperfect knowledge, the moral certainty we get when we take intuitions for granted, rather than the metaphysical certainty that comes from knowing that our clear and distinct perceptions are the creation of a God who does not deceive.”²² Garber writes:

...two changes in Descartes’ thought conspired to make the method of the *Rules* largely inapplicable to the system of knowledge he hoped to build: (1) the change from a problem-solving conception of scientific activity to a system-building conception; and (2) the adoption of the idea that intuition cannot be taken for granted and must be validated, and that this is the essential preliminary to any system of knowledge. Given these features of Descartes’ mature system of the 1640s, it is no wonder that Descartes came to have relatively little use for the method of the *Rules*, oriented to the solution of individual problems, and incapable of leading us to metaphysical certainty.²³

While I agree with Garber that Descartes concentrated more on system-building than individual problem solving and came to see the need to validate intuition as the foundation of knowledge, I do not believe that this marks a clean break from deducing scientific conclusions from intuited first principles. Descartes never abandons this aspect of his method. Rather, Descartes takes up metaphysical system-building in order to validate intuition and show that deductions are capable of providing absolute rather than mere moral certainty with respect to the physical world. In the *Principles*, this is exactly what we find from Descartes. Descartes has taken care to show that his conclusions about the physical world can be seen to be morally certain and useful to those who do not possess the metaphysical foundation that he has set out in the *Meditations* and *Principles* and alluded to in the *Discourse*. This, however, does not show that Descartes himself believes his conclusions lack absolute certainty.²⁴

²¹ Garber, *Descartes Embodied*, p. 38

²² Garber, *Descartes Embodied*, p. 50

²³ Garber, *Descartes Embodied*, p. 50

²⁴ See *Principles* Part IV.206 (AT VIIIa: 328-9, CSM 1: 290-1)

The Metaphysical Move: Arriving at Deductive Certainty of Physical Facts

In the previous two sections, I explained that Descartes cannot solve “imperfectly understood problems” concerning the physical world by means of the method of the *Regulae*. Descartes sees the need to build a metaphysical system in order to demonstrate how one can arrive at deductions (and thus deductive certainty) concerning the physical world from intuited foundational first principles. While Descartes abandons the impossible reductive aspect of his method of the *Regulae* (viz., methodically reducing complicated and obscure empirical propositions to simple and evident *a priori* propositions), he has not abandoned the constructive aspect of this method, but rather has amended it. While in the *Regulae*, Descartes aimed to show that physical effects could be deduced from simple natures and general laws, after the *Regulae*, Descartes supplements this constructive aspect of his method by demonstrating how God serves as the metaphysical foundation for these simple natures and general laws, and secures their relations to more complex physical truths. Throughout his works, Descartes aims to display how we can come to know the nature of the physical world with deductive certainty. While the method of the *Regulae* is initially unsuccessful in this regard, Descartes comes to display that with the support of the appropriate metaphysical foundation, we can achieve absolute certainty in the sciences.

I now wish to provide an example of how Descartes envisions this metaphysical foundation (viz., God’s perfect nature and his voluntary creation of the eternal truths and the physical world) to enable deductive certainty and scientific knowledge with regard to the physical world. Descartes holds that the laws of motion can be deduced from God’s nature and furthermore the eternal truths can be known to be necessary due to God’s willing them to be so and imprinting them in our minds as such.²⁵ From an understanding of the laws of motion and the nature of matter, he believes we can deduce complex truths about the physical world.

In the *Discourse*, Descartes writes that God established laws in nature and implanted them in our minds such that with “adequate reflection we cannot doubt that they are exactly observed in

²⁵ I examine Descartes’s treatment of the laws of motion and the respect in which they can be demonstrated from considerations of God’s nature in Chapter III: “The Creation Doctrine, Anti-Skepticism, and Descartes’s Scientific Method: A Response to Nadler’s Dilemma”. I will briefly revisit Descartes’s account below.

everything which exists or occurs in the world. Moreover, by considering what follows from these laws it seems to me that I have discovered many truths more useful and important than anything I had previously learned or even hoped to learn.”²⁶ So, from God’s infinite perfections and from the innate truths imprinted in our souls, Descartes believes we can come to know the laws of motion and their consequences. In Part VI of the *Discourse*, Descartes goes on to report that he has derived “the principles or first causes of everything that exists or can exist in the world” from the “seeds of truth” which God has implanted in our souls. We then may deduce “ordinary effects” from these causes and use further observations to understand the specific way in which “particular effects” should be deduced from these principles. Descartes clarifies that observation allows us to discover what our world is like, but we deductively explain those physical features of the world that we have empirically discovered by means of innate truths.²⁷

In the *Principles*, Descartes describes a method for arriving at deductive knowledge of empirical matters based on his metaphysical system in which God is the creator of all things. In Part I of the *Principles*, Descartes writes:

We pass from knowledge of God to knowledge of his creatures by remembering that he is infinite and we are finite.

Now since God alone is the true cause of everything which is or can be, it is very clear that the best path to follow when we philosophize will be to start from the knowledge of God himself and try to deduce an explanation of the things created by him. This is the way to acquire the most perfect scientific knowledge, that is, knowledge of effects through their causes. In order to tackle this task with a reasonable degree of safety and without risk of going wrong we must take the precaution of always bearing in mind as carefully as possible both that God, the creator of all things, is infinite, and that we are altogether finite.²⁸

²⁶ AT VI: 41, CSM 1: 131. Andrew Pavelich argues that the “certain laws” referenced in this passage are not laws of motion, but rather “basic Cartesian notions of mechanism” (Pavelich, “Descartes’s Eternal Truths and Laws of Motion,” p. 525). I briefly discuss Pavelich’s interpretation of this passage in footnote 46 in my Chapter III: “The Creation Doctrine, Anti-Skepticism, and Descartes’s Scientific Method: A Response to Nadler’s Dilemma”.

²⁷ AT VI: 76, CSM 1: 150.

²⁸ *Principles* I.24; AT VIIIa: 14, CSM 1: 201.

Descartes goes on in *Principles* I.28 to explain that we won't arrive at knowledge of the physical world by coming to understand God's purposes (i.e., the final causes of things), but "we should, instead, consider [God] as the efficient cause of all things; and starting from the divine attributes which by God's will we have some knowledge of, we shall see, with the aid of our God-given natural light, what conclusions should be drawn concerning those effects which are apparent to our senses."²⁹ Finally, at the end of Part I of the *Principles*, Descartes reiterates: "a consideration of [God's] attributes enables us to investigate the truth of other things, since he is their cause."³⁰

In these passages Descartes is explaining that our knowledge of God's existence and nature underlies our ability to attain knowledge of the physical world. Descartes makes it even clearer in Part III of the *Principles* when he takes to examining the "visible universe". Descartes explains that we do not use experiential phenomena "as the basis for proving anything, for we aim to deduce an account of effects from their causes, not to deduce an account of causes from their effects."³¹ To put the point in slightly different terminology, Descartes is not aiming to use inductive reasoning to prove the existence of physical laws on the basis of observational data. Rather, Descartes aims to show that the observational data (while discovered by the senses) can be deduced from physical laws, which are known on the basis of our knowledge of God and his attributes. In Part III.43 Descartes outlines a plan to deduce, from evident principles, conclusions which agree with our observations of natural phenomena. At the end of Part IV of the *Principles*, Descartes summarizes his method:

[Absolute] certainty is based on a metaphysical foundation, namely that God is supremely good and in no way a deceiver, and hence that the faculty which he gave us for distinguishing truth from falsehood cannot lead us into error, so long as we are using it properly and are thereby perceiving something distinctly. Mathematical demonstrations have this kind of certainty, as does the knowledge that material things exist; and the same goes for all evident reasoning about material things. And perhaps even these results of mine will be allowed into the class of absolute certainties, if people consider how they have

²⁹ *Principles*, I.28; AT VIIIa: 15-6, CSM 1: 202.

³⁰ *Principles* I.75, AT VIIIa: 38, CSM 1: 221.

³¹ *Principles* III.4, AT VIIIa: 81, CSM 1: 249.

been deduced in an unbroken chain from the first and simplest principles of human knowledge.³²

From both the *Discourse* and the *Principles*, we see that Descartes believes that he can attain deductive certainty with respect to those particular effects which we discover through sensory experience or observation. In other words, facts about the physical world can be known (i.e., explained or understood) with deductive certainty. In these works, Descartes has come to appreciate the role that God's existence and infinitely perfect attributes play in enabling one to arrive at deductive certainty of empirical truths. No longer does he promote a method according to which enumerations that rely on observation and memory reduce to self-evident intuitions of simple propositions. Rather, Descartes now claims that we can gain deductive knowledge of physical facts by recognizing that they follow from God's having willed and created both the eternal truths (e.g., the nature of matter) as well as the existence of the physical universe that we perceive.

A Solution to the Paradox of Analysis: God's Immutability and His Creation of the Eternal Truths and the Physical World

If truths about the physical world were explained solely by empirical methods (e.g., induction from observations) and these methods are doubtful (or, at best, morally certain), how could we expect to achieve *absolute certainty* about these matters? Descartes wants it all: knowledge of the empirical world that is deductively certain. As we have seen, Descartes recognizes the need to make a bold metaphysical move in service of this epistemic goal. That Descartes has attempted to validate intuition and provide a firm and lasting foundation for knowledge is universally accepted. While it is commonly recognized that God's benevolence plays a philosophical role in Descartes's epistemology by serving to guarantee clear and distinct perceptions (and furthermore provide assurance that any perceptions which cannot possibly be corrected are true), I believe that God's other attributes (e.g., immutability, omnipotence, and simplicity), which underlie Descartes's commitment to intuitive knowledge of the eternal truths and deductively certain knowledge of physical truths, also play an indispensable role in Descartes's goal of achieving *scientia* in all disciplines. In this way, Descartes's Creation Doctrine (which involves God's immutable nature and his creation of

³² *Principles* IV.206, AT VIIIa: 328, CSM 1: 290.

the eternal truths and the physical world) serves as the metaphysical foundation that explains the possibility of deductive certainty with regard to knowledge of the physical world.

In the previous section I explained that Descartes believes that while we discover physical “effects” through sensory experience, we can understand them to deductively follow from more basic metaphysical “causes”. For example, I can deductively explain various physical phenomena that I observe in the physical world (e.g., light, tides, planetary motion, etc.) by means of the laws of motion, which themselves follow deductively from God’s immutable nature. In each case I do not discover or prove the existence of the physical phenomenon by means of deducing it from its causes (rather, I observe it to exist), but I *explain* or *understand* it in this manner. According to Descartes, I do not inductively infer the cause (a general physical law) from observed effects; rather, I deduce the observed effects from a cause, which is known with absolute certainty since it follows deductively from God’s nature and the eternal truths that have been imprinted in my soul.

I would now like to explain how the fact that we understand God to have created the physical world in accordance with both God’s nature and the eternal truths freely created by God, means that we can achieve deductive certainty with respect to the physical world. I will do this by explaining Descartes’s account of how physical laws (from which particular physical phenomena can be deduced) are known on the basis of our innate knowledge of God’s immutable nature.³³

God freely created a material world that is divided into parts and set in motion.³⁴ Having willed and created the world with a certain amount of matter and motion, God sustains the quantity of matter and motion owing to his immutability. According to Descartes, we can derive from God’s immutability and simplicity that he will conserve motion and make true the laws of inertia, impact, and rectilinear motion.³⁵ The laws of motion have an absolutely certain

³³ The following paraphrases my discussion of how laws of motion can be deduced from consideration of God’s attributes in Chapter III “The Creation Doctrine, Anti-Skepticism, and Descartes’s Scientific Method: A Response to Nadler’s Dilemma”.

³⁴ The fact that matter is extension entails a plenum physics in which motion is thereby required to provide for the variety and diversity of physical phenomena present in the world.

³⁵ In *Le Monde*, AT XI: 38-45, CSM 1: 93-7, the law of inertia is: “each individual part of matter continues always to be in the same state so long as collision with others does not force it to change that state” (AT XI: 38, CSM 1: 93); the law of collision is: “when one body pushes another it cannot give the other any motion unless it loses as much of its own motion at the same time; nor can it take away any of the other’s

foundation as they follow from God's immutable nature and the absolutely certain knowledge of the existence of a material world that has been set in motion.³⁶ The various physical phenomena (e.g., land, seas, stars, light, etc.) are explicable in terms of the motions of parts of matter so, having deduced the laws of motion (the rules that govern the motion of the parts of matter) from absolutely certain foundations, we can gain scientific knowledge of the world around us.

Descartes believes that by considering both God's initial creation of matter in motion and the laws of motion that he derives from God's immutability and the essence of matter, he can explain all the physical phenomena: "not only light but also all the other things, general as well as particular, which appear in the real world."³⁷ In this way, Descartes can achieve deductive certainty with respect to empirical phenomena insofar as they are explained on the basis of his knowledge both of God's nature and of the truths that God has willed to be necessary.

Conclusion

Descartes's scientific program is to provide a method by means of which one can arrive at deductive certainty with regard to the physical world. In this chapter, I have argued that Descartes abandons the *Regulae* because he recognizes that even a thorough and careful execution of the method of the *Regulae* cannot get him what he wants: absolute certainty in *all* scientific disciplines. By 1630, Descartes realized that in order to achieve *scientia* with regards to physical truths, he would need to make a bold metaphysical move. I have further suggested that the metaphysical facts relevant to this deductive certainty and systematic understanding of the physical world are the very facts outlined in Descartes's Creation Doctrine: that God is the free and immutable creator of the eternal truths; that God creates the physical world and the laws that govern it in accordance with both his nature and the eternal truths; and that God has imprinted knowledge of his nature and of the eternal truths in our

motion unless its own is increased by as much" (AT XI, 41, CSM I, 94); and the law of rectilinear motion is: "When a body is moving...each of its parts individually tend always to continue along a straight line" (AT XI: 43-4; CSM 1: 96)). See also:

Principles II.36-42, AT VIIIA: 61-6, CSM 1: 240-3.

³⁶ *Principles* IV.206, AT VIIIA: 328, CSM 1: 290. Having ruled out radical skeptical hypotheses, sensation is a reliable source for determining the existence of a world composed of material things set in motion. Clear and distinct perception of God's immutable will and the essence of matter enables us to deduce the laws that govern the material world.

³⁷ AT XI: 35, CSM 1: 91.

souls. According to Descartes, this metaphysical foundation will enable us to understand and explain the physical world with deductive certainty.

It is important to recognize that Descartes is rejecting the Aristotelian Scholastic view that we can come to understand the physical world by means of substantial forms and real qualities. In the broadest of strokes, Descartes is dismissing teleological explanation in favor of purely mechanistic explanation. This dismissal involves Descartes denying not only the strivings and ends of substantial forms and real qualities, but also the notion that we are capable of understanding the world by first understanding God's ends. Descartes nevertheless believes that our knowledge of God's existence and nature can enable us to achieve an understanding of the physical world. Our limited understanding of God's nature (knowing that he is immutable and benevolent, for example) will lead us to gain understanding of physical phenomena from magnets to rainbows.

In providing these metaphysical foundations, Descartes is not merely rejecting Scholasticism. He is also going well beyond the methodology of many of his contemporary mechanistic philosophers. While other philosophers offered a mechanistic physics that could provide hypothetical or analogical solutions to individual problems by means of general laws of motion that govern the behavior of particles of matter, Descartes attempts to provide a more thoroughgoing explanation of physical facts that gives them absolute certainty by grounding them in innately-known foundations about God's nature and the simple natures that God imprinted on our minds (i.e., the eternal truths).

I think that the role of the Creation Doctrine in providing the metaphysical foundation for Cartesian science has been overlooked for two reasons. First, while Descartes's scientific work is itself at times insightful and well-reasoned, his method is impracticable. While Descartes describes a deductive method by means of which one may arrive at absolute certainty with regard to various physical phenomena, his scientific work fails to demonstrate the method. Descartes never makes clear how particular (complex and obscure) physical truths are deduced straightforwardly from innately known eternal truths.

Second, Descartes's approach to science is a far cry from our contemporary methodology. Descartes's use of hypothesis and analogy in his scientific work receives some attention, but his effort to achieve absolute deductive certainty in the sciences has been largely overlooked. According to our model, the scientific method consists in a project of attempting to test hypotheses. There are no scientific

“proofs.” One’s aim nowadays is to disprove various hypotheses in order to arrive at more probable theories (that more consistently, simply, or elegantly make sense of observations). An unprovable (and *a fortiori* unproven) theory may meet the highest standards for scientific knowledge having survived countless attempts to undermine it and having beat out competing hypotheses that fail to meet the explanatory burden. If one were to assume that Descartes’s method is similar to our own contemporary method, one would fail to see the role that grounding science in absolutely certain metaphysical foundations plays for Descartes’s scientific program.

The interpretation of Descartes’s philosophical program that I offer in this dissertation enables us to appreciate aspects of Descartes’s work that have either received *ad hoc* explanations or remained mysterious. Descartes’s interest in proving the existence of God and his somewhat infamous foray into theology in his development of the Creation Doctrine are neither vestiges of Scholastic enterprise in an otherwise anti-Aristotelian program, nor lame attempts at appeasing the Church by a philosopher who is sympathetic to the condemned beliefs developed by Copernicus and Galileo. Descartes has made God central to his program because he believes that it is the way to absolute certainty and understanding of everything within one’s capacity.

In Chapter II, I provided an interpretation of Descartes’s epistemic program and his response to the charge of circularity. The methodical doubts and subsequent proofs of the existence of God in the *Meditations* are not used to demonstrate the possibility of knowledge *simpliciter*. Rather, the epistemic goal in the *Meditations* is to show how one can arrive at a higher-form of knowledge (*scientia*), which has its basis in recognizing God’s nature and which enables deductive knowledge of the physical world. Recognizing God not only as the guarantor of cognitive faculties but also as the perfect creator of the eternal truths and the physical world supplies one with both knowledge of the origin of foundational truths (*viz.*, God created them as necessary and imprinted them in our minds) and knowledge of how our intuitions of these foundational truths can lead to deductive and systematic understanding of the complex physical world.

In Chapters III and IV, I provided an interpretation of the Creation Doctrine according to which Descartes’s thesis that God freely created necessary truths is not damning for his philosophical program. I argued that the sense in which the eternal truths could have been otherwise in no way threatens our certainty and knowledge of that which we clearly and distinctly perceive to be

necessarily true. In this way, Descartes's view that the eternal truths depend upon God's free will and creation is not problematic for Descartes's anti-skeptical and scientific programs.

Finally, in Chapter V, I provided a reading of Descartes's program that highlights the role of Descartes's Creation Doctrine. I suggest that after 1630, Descartes's aim for deductive certainty in the sciences relies on metaphysical foundations outlined in the Creation Doctrine. While Descartes's scientific work does not offer a transparent view of the deductive method that he has advertised as leading him to his results, I nonetheless believe that we must understand Descartes's philosophical program in light of his audacious goal of achieving absolute certainty in the sciences.

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