THE ROLE OF THE SIMPLE NATURES AND METHOD IN DESCARTES' *MEDITATIONS*

by

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ABSTRACT

My topic is the continuity of thought from Descartes' earliest writings to his mature thought as expressed in the *Meditations*. In the early work, the *Rules*, Descartes replaces the scholastic form-matter model of the physical world with a quantitative description of the physical as matter in a Euclidian space.

In the first two chapters I examine the early work showing its break with scholasticism and the structure of his new vision. The *Rules* was Descartes first major work; it was to consist of thirty six rules. It was neither completed nor published. He stopped working on it in 1628, completing only twenty one rules with commentary on the first eighteen. The first twelve are the philosophically interesting ones. In those he develops a method based on mathematical proofs and introduces a set of basic principles he calls 'simple natures' which are intuitively known. This model has the simple principles (natures) analogous to the postulates and axioms of Euclidian geometry. From the principles complex problems are solved by reducing the terms to those of the simple natures and re-constructing the problem in those terms. While the *Rules* emphasizes material natures as the basis for physical science, he also introduces a definition of mind as thought.

In the next two chapters I argue that this basic structure of method and simple natures carries over into the *Meditations*. The goal is different but the tools are the same. The definitions of matter and mind that Descartes sets in Meditation II are the same as in the *Rules*: mind as thought and matter as extension. Doubt, which is often taken as the new method is shown to be just a part of the early stage of the original method. It is used

to reduce a complex to simples by eliminating any uncertainties until an indubitable simple nature is reached: the *cogito*.

In the final chapter I examine the problem of apparent contrasting explanations of true and immutable natures in Meditation V and the First Reply. I argue that they are compatible if we understand natures in terms of the principles of the *Rules*.

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ABBREVIATIONS & REFERENCES

AT — *Oeuvres de Descartes* ed. C. Adam and P. Tannery. 12 vols. (Revised edition, Paris: Vrin/CNRS, 1964-1976)

CSM
CSMK — *The Philosophic Writings of Descartes,* tr. J. Cottingham, R. Stoothof, D. Murdoch and A. Kenny. 3 vols. (Cambridge: Cambridge University Press, 1985 – 1991)

All references to the Cartesian text will be cited by Adams and Tannery volume and page number and Cottingham et al. e.g. (AT X, 419; CSM I, 44); with the exception of the following.

Descartes' Conversation with Burman tr. J. Cottingham (Oxford: Clarendon Press, 1976)

Passages from this will be cited by title and paragraph number. e.g. (*CwB*, 49)

Discourse on Method, Optics, Geometry and Meteorology tr. P. Olscamp (Indianapolis: Hackett Publishing, 2001)

Passages from this will be cited by translator and page number. e.g. (Olscamp, 19)

Other works referred to will be cited by author, translator or editor and page number.

INTRODUCTION

My thesis in this paper is that there is continuity of method and simple natures in Descartes' *Rules* and his more mature philosophy of the *Meditations* and *Principles*. I argue this from the point of view that his main interest is in the development of the new mathematically based science that emerged in the 16th and 17th centuries. This involves the rejection of the scholastic ontology and science that had been dominant for the prior 300 years. If I am correct, this continuity sheds light on some problems that arise in Descartes' later thought. One example: the seemingly incompatible treatment of true and immutable natures in Meditation V and First Reply.

To support this claim I examine the *Rules* in some detail in terms of his new picture of the nature of material objects and how it both differs from and still retains elements of scholasticism. Then I argue that the *Meditations* can be best understood as a development of the ideas initiated in the *Rules*. Finally I look at the true and immutable natures in his later work and argue that his treatment is not as problematic as it first appears, if we understand it in terms of the ontology carried over from the *Rules*.

The dissertation is laid out in five chapters. Chapters 1 and 2 examine the *Rules* in detail (1) showing the break with scholasticism and, (2) the new ontology and method that replaces it. Chapters 3 and 4 argue that the new method and ontology shape the *Meditations*. The last chapter takes up the question of the true and immutable natures and shows that the different things he says about them are compatible.

Chapter I – The *Rules* and Scholasticism

The *Rules* is normally understood as an essay in method. But it is also a rejection of scholastic ontology which he still accepts in part, perhaps unconsciously. The

examination involves the basic scholastic model of form-matter and Descartes' replacement of it with quantifiable matter alone. From this perspective, what is new in the method results from his new picture of the essence of the material world.

Chapter II – The *Rules*: Method and the Simple Natures

Descartes' rejection of scholastic form-matter ontology and its replacement with quantitative matter is the important theme in the *Rules*. It is what provides his unique set of simple natures: mind as thought and body as extension in Euclidian space. Method follows from the latter since geometry has a particular structure and method of proof.

In this chapter I examine the method and simple natures in more detail from the point of view of their continuity in the mature ontology of Descartes' later work. (a) The method was developed for solving problems but I will argue that we can abstract a 'pure' method that has a wider range of applicability. (b) The simple natures are more complex than is usually considered; so, I will catalogue all of the natures of the *Rules* in the substance-property model that Descartes presents in Rule XII and inherited from the scholastics. I argue that all of the elements in his more developed ontology are found in the *Rules*.

Chapter III – Method in the *Meditations*

This chapter argues that Descartes' increased concern with skepticism led to an expansion and development of the method of the *Rules*, rather than a replacement of it. His mature thought, especially in the *Meditations*, is taken to show a new method based on hyperbolic doubt, clarity and distinctness and God. I argue that each of these – even God – are already present, although in seminal form, in the *Rules*. My argument involves showing that these ideas are present in the earlier work and that the principles of that

work also show up in the *Meditations*. I first introduce the *Meditations*, then outline 17th century skepticism and finally discuss each of the three 'new' methodological principles arguing that they already appear in the *Rules*. I then address the main critic of continuity: Curley. His assessment rests on the introduction of hyperbolic doubt in the *Meditations*. I argue that its presence as an active procedure is new but doubt is already recognized in the *Rules* as an important tool for reaching certainty. So, the 'method' of the *Meditations* is a development of that of the *Rules* and not a replacement for it.

Chapter IV – Simple Natures in the *Meditations*

Based on the thesis that the method is essentially the same in both works, I argue in this chapter that the simple natures which underlie the method in the *Rules* also appear in the *Meditations*, playing the same role. This chapter has two main sections. First, I show that the ontological structure of the later work, material and mental substance, is basically the same as that of the *Rules*. In Rule XII the simple natures are presented as material and mental substance with their properties and this is the ontology of the *Meditations*. Second I offer a reading of the *Meditations* as an exercise in the ordering of the natures with metaphysical natures (the self and God) grounding the physical. This is done by an application of the method. In the *Meditations* Descartes reduces the world to the self. From that single existent, along with its ideas, the world (God and matter) is re-established with certainty.

Chapter V – Natures: Simple and True & Immutable

In addition to helping understand the purpose of his later work, in its anti-skeptical mode, the acceptance of continuity sheds light on problems that appear in his later thought. In this chapter I examine one problem in particular, that of Descartes'

apparently incompatible characterization of true and immutable natures in Meditation V and the First Reply. In the body of the text he says that true and immutable natures (the simple natures of the *Rules*) have unforeseen consequences. In the Reply he says that constructed natures do not but then allows a constructed nature to be true and immutable. I argue that this is not inconsistent since the notion of simplicity that Descartes has in mind is epistemological. Under certain conditions, this allows the same nature to be epistemologically simple while logically complex and thus constructed.

CHAPTER I

THE *RULES* AND SCHOLASTICISM

The *Rules for the Direction of the Mind in the Search for Truth* is the first major work written by Descartes. He stopped working on it in 1628 and made no direct reference to it in any of his published work. Descartes envisioned a total of thirty-six rules; they were to be divided into three sets of twelve rules each. The first twelve concern simple propositions, i.e. the simple natures and the general form of the method for solving problems in physical science: analysis and synthesis. The second twelve rules were to deal with perfectly understood problems, i.e. mathematical problems. The third set was to deal with imperfectly understood problems but it is not certain exactly what these were to be. This was probably a set of rules for dealing with scientific problems where there is considerable data that must be taken into account.[1] Only rules 1 through 21 are listed; the document ends here. Rules 1 through 18 are accompanied by commentary of various lengths. The last three are just stated without any further elaboration. His overall purpose was to show how complex problems could be reduced to simpler perfectly understood ones; i.e. to show how the method of the first twelve rules is applied to both kinds of problems. In what follows, I will concentrate on that first twelve, since these are the most broadly philosophic and methodological.

While it is true that Descartes' stated aim is to revolutionize scientific method, I argue in this chapter that his real break with the past lies in the rejection of scholastic ontology rather than a break with an older method. His new method was a result of the

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[1] This outline of the structure is at the end of Rule XII (AT X, 429; CSM I, 50-51)

new view of the material world just as scholastic method, the syllogism, was based on the older ontology. That ontology was a medieval interpretation of Aristotelianism. It understood the physical world as individual portions of matter organized into specific types by a variety of qualitatively definable organizing principles – the forms. Since these forms were what differentiated the types, physical science was explained in qualitative terms. By contrast, Descartes was a champion of the new science that developed in and after the Renaissance. He substituted particles of matter in motion for the scholastic form-matter picture. This meant that properties of matter were reduced to shape, position and motion and were thus subject to quantitative, i.e. mathematical explanation. The *Rules*, introduces the new ontology and the new method as well as other themes that follow from his new ontology.

This chapter then will be devoted to Descartes' fundamental ontological and methodological break with scholasticism and the two systematic consequences that follow from it. I will do this in four sections. First: I will briefly contrast Descartes' method with scholastic method. Although re-picturing of the world in mechanical terms underlies the work, it is ostensibly about a new method and the methodological perspective is the one he takes throughout. Second: I will outline the scholastic ontological model and then show how Descartes, for the most part, rejects it, replacing it with the simple material nature of extension.[2] These are the basic themes of the *Rules*. I introduce them here to show their importance to the two consequent themes: the unity of science and the bifurcation of nature. Most of the rest of the chapter will be devoted to

[2] I say 'for the most part' because he does retain some key scholastic ideas. The notion of scientific knowledge as absolute certainty is the major scholastic principle he carries into his thought. This idea follows from an ontology of substances with fixed natures, which Descartes accepts as well.

discussing those consequences in terms of their dependence on his ontology and their deviation from scholasticism. So, the third section will treat the unity of science based on Descartes' simpler definition of matter and the fourth, the sharp separation of the knower (mind) from the objects of knowledge (matter), also based on that definition.

The most important contribution of this work, the ontological shift, is seen in his introduction of the simple natures and their place in his method. As elements of the method, their simplicity is epistemological, i.e. graspable in a single act of cognition. Descartes views them as a successful basis for scientific knowledge because their truth is directly intuited. The ontological role of the material natures in simplifying and mathematizing the physical world is equally important. In Descartes' view, they are not just a conceptual scheme for organizing our scientific knowledge but the way the world actually is. My overall argument in this paper is that all the simple natures, when properly ordered are an integral part the mature Cartesian ontology found in the *Meditations*. Because of this broad foundational role, I will examine them and their place in the method in detail in the next chapter along with a further discussion of the method. Let us now look more carefully at the first twelve rules to see how Descartes effects his radical departure from the scholasticism of the seventeenth century and, in doing so, begins a new tradition that centers philosophic thought on the self.

1) Cartesian & Scholastic Methods

The *Rules* is Descartes' first attempt at developing a new project – systematizing the new science. He was educated in scholasticism at La Flèche, a Jesuit college but was sympathetic to this new science. As a result, his thought is a complex of anti-scholasticism along with often unacknowledged principles retained from his scholastic

training. His intellectual biography suggests that he already had doubts about the value of the scholastic view while at La Flèche.[3] There were constant disputes among the scholastics with no apparent criterion for adjudicating them. At the same time, scientists like Galileo were making new discoveries about the natural world based on mathematical analysis. Not only was scholasticism unsatisfactory but it was being replaced by a new more successful method.

The *Rules* was intended to systematize the new mathematical approach in such a way that its findings could be understood in terms of the simple concepts and principles that underlie that approach. The easiest way to understand Descartes' project is, unsurprisingly, to look at how a geometric proof works. Geometry begins with a set of unproven postulates stating relationships among a few basic concepts: line, point and the like. Then, using general axioms about equality one deduces new truths (theorems) from the postulates. We first analyze the theorem to be proved to determine what postulates and definitions are involved. The postulates and definitions are simple enough to be intuitively known so we then use them to construct a proof. Thus, the method has three steps: analysis, intuition and synthesis. The first proposition (theorem) of *Euclid's Elements* is a simple example: to construct an equilateral triangle on a given line segment AB. This means to construct a triangle one of whose sides is the line segment AB and each of the other sides equals AB. The proof runs roughly as follows:

> Given a line AB, we can draw two circles from each end with AB as the radius. Call the point where they intersect C. It then follows that AC and BC both equal

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[3] see *Discourse on the Method* (AT VII, 4-9; CSM I, 112-113)

AB and the result is an equilateral triangle. This can be analyzed into steps. 1) Draw the two circles. 2) From the definition of a circle, AB equals AC and AB equals BC. 3) The three lines are equal, i.e. AB=BC=AC. 4) The definition of an equilateral triangle. (Heath Bk I, Prop I – I have simplified the language)

The analytic step in this case is simple; it is the reduction of the sides of the triangle (the complex) to lines that are radii of equal circles. We then understand them in terms of postulates, definitions and common notions that are intuitively known. Finally, the complex is restored in terms of these simple elements proving that it is an equilateral triangle (the synthetic steps). Since the basic principles are intuitively known, their proper use results in knowledge that is certain and indubitable. Most of his examples are from mathematics but Descartes intended to apply this method to all science.[4]

For the scholastics science, i.e. certain knowledge must have basic principles that are "*true…better known…and causes of the conclusion.*" (Ariew, 103) This does not sound significantly different from what Descartes requires for his new method. The methodological difference lies in the demonstrative tool that is used by each. Descartes uses a mathematical model of demonstration; the scholastics use the syllogism. An example of demonstrative proof given by Scipion, a seventeenth-century scholastic, will illustrate the syllogistic method. "If I wanted to demonstrate that man is sensible, I would reason thus: All animals are sensible. All men are animals. Therefore, all men are sensible." (Ariew, 107) There are two important differences between these 'methods'.

[4] See Rule IV – AT X, 374; CSM I, 17

The first is the purpose of the demonstrations. Both aim to show the truth of the conclusions but Descartes' method is one of discovery. The syllogism is merely a method of exposition; it does not include the analytic step. Descartes makes this criticism in Rule X; "dialecticians are unable to formulate a syllogism with a true conclusion…unless they have previous knowledge of the very truth deduced." (AT X, 406; CSM I, 36-37) Syllogistic is a logic of classes so, as Scipion's example shows, the premises already show the membership relationship between the two terms of the conclusion. In the geometric proof we do not know how to construct the required figure until we reduce the problem to simple concepts and principles that we know intuitively.

The real issue is that the syllogism is a purely formal method. Descartes' method is new in that it involves more than just logical form; it depends on content. Geometry, for example, is an axiomatic system that describes the relationships among various ideal shapes. The proofs can be stated in logically valid form but the conclusions depend on the meaning of the non-logical terms. Finding the basic relationships that define the complex problem to be solved (or theorem to be proven) is what constitutes the discovery portion of his method. I will discuss this in more detail in the next chapter.

The second and underlying difference is the world picture they appeal to. In the scholastic ontology it is the qualitative form that gives the individual its particular structure. A bronze statue for instance is bronze (matter) in a particular shape (form). The structure of the natural world is more complicated but follows the same basic principles. Objects exist in a taxonomic order where each level is a differentiated, i.e. formed, sub-class of the prior, more general, level (matter). For example, humans are defined as rational animals. In the definition animal is the *genus* and rational is the

qualitative form differentiating humans from all other animals yielding the *species* rational animal. The forms are ontological elements that provide knowledge of the thing.

Since each form is a *differentia*, various sciences are studied separately since their objects are formally different. As we shall see, this is one of the things that Descartes opposes based on rejecting the general tenets of the scholastic picture First I will outline the scholastic system that led to the diversity of sciences and then explain the conceptual scheme he presents as a replacement.

2) Scholastic Ontology: Matter, Form and the Four Causes

Scholastic ontology is a fairly complex system. It attempted to make Aristotle's philosophy compatible with Christianity. Two principles characterized it; one, the form-matter distinction, which I noted above (p. 6), is a static notion that gives the general structure of the thing. The other, is the idea that there are four causes which explain change: formal, material, efficient and final. These ontological principles give rise to an epistemological principle: knowledge by abstraction of the form from its embodiment in the individual. I will discuss each of these principles separately.

Formed Matter: The Structure of the Material World

The first principle is that every material substance is a hylomorphic composite of matter and form. The form (*hylē*) is the organizing principle of the thing and the matter (*morphē*) is the stuff that is organized. The non-technical term 'stuff' is useful here; it suggests that matter is a homogenous unformed mass awaiting form and organization.[5] A

[5] The scholastic picture operates as an explanatory tool on various levels of generality. Here I am looking at it on the most general level. The example of the bronze statue took bronze as matter and the particular shape as differentiating form. But we can analyze bronze into metal (matter) and whatever differentiates it from other metals as form. The same thing can be done with metal as a form of earth (matter) and so on.

tree, for example, is a portion of physical stuff (matter) organized in a certain unique way (form). Roots draw water and minerals from the ground; bark protects the wood, and leaves use water and minerals with sunlight to increase growth. It was claimed that everything in the physical world can be understood in this way: rocks, plants, animals, humans, and even artifacts. The task of science was to identify the specific form that differentiated each species from other types of beings. A tree differs from any other type of plant by virtue of its unique specific form as opposed say, to tubers (e.g., potatoes, tuberous begonias). Both are plants and so, have basic properties in common but their root development, for example, differs significantly. Each species is characterized by the primary qualities that its form expresses. Since matter is only the stuff that is organized, it provides none of the properties that define the object. All that can be said about it is that there is this much stuff in the object. Eustachius a Sancto Paulo, a seventeenth century scholastic, puts it this way; "Now quantity comes from matter, but shape or external form comes from the inner substantial form."[6] (Ariew, 73) For scholastics even shape, which we will see Descartes includes in his physical ontology, is not a property of matter but a function of the form.

The Four Causes: Change in the Material World

Just as with the structure of substance, the scholastic explanation of change is complex. Scholastics accepted four causes that explain change. Material and formal causes are the matter and form previously discussed. The efficient cause is the agent that begins the process of change. The final cause is the purpose of the thing. In the case of

[6] Descartes considered Eustachius to be the best example of his contemporary scholastics. (Letter to Mersenne, 11 November 1640; AT III, 232; CSMK III, 156)

human artifacts, final cause is usually understood as its intended use: a house is built to provide shelter.[7] But, the completed house can also be understood as the immediate purpose of the construction process. Final causes in the natural world are understood in the second way. The growth of a tree is explained as follows. It begins as a seed which itself is a substance: formed matter. When water and nutrients are added the formal cause in the seed organizes the elements so that a tree develops. The mature tree, toward which the seed's development is aimed, is the final cause and the 'parent' tree that produced the seed is the efficient cause. This last cause is the only one that is external to the object; the other three are aspects of the thing itself. Efficient causality is what begins the process of change and so is separate since it must, itself, be active. "The efficient cause…is something whole and complete which acts to produce the change…in the subject (which is generally separate from it.)" (Ariew, 81) In other words, there must already be a tree to produce the seed that will grow to be another tree.

For the scholastics the certainty of scientific knowledge is obtained by knowing the causes of things. The formal cause "is the proper cause and the one that produces the science." (Ariew, 101) The other three causes do not give the essence of the thing. Matter is nearly propertyless and is the same in all physical things. Efficient cause is external to the thing under investigation and the proximate final cause is just the full development of the formal cause. The idea of this last point is that the formal cause directs the object toward the final cause. In biological cases the object develops over time, so the form is not only the organizational structure it is also an active principle

[7] While I will limit my discussion to natural objects since Descartes was more interested in science than technology, all four causes apply to objects we make as well as objects given to us.

directing the organism to a unique final state. But, that state is still understood as the unique set of qualities that define the *species*. So knowledge of the *species* is still knowledge of the formal properties of it and the changes that occur do so because it is the nature of the *species* to change in that way.

Epistemology: Knowledge by Abstraction

According to this view, knowledge is always knowledge of the form which is shared by all of the individuals in the *species*. This means knowledge is not of the individual but of the universal. Individuals were considered by most scholastics as unknowable in their individuality because they were constantly changing. "For, since science is a certain and infallible knowledge, it cannot be of singular things, which always unfold and flow by means of an uncertain and mutable vicissitude." (Ariew, 101) Science was based on the form since that does not change. It is the principle that guides change within the individual without itself changing and thus tells us what causes the individual to be that particular thing.

We come to know the form by abstracting from the individual. This process is something like induction in that it gives a general notion (universal) based on the analysis of particulars. But the scholastics take the result to be certain since all similar particulars have the same form. Once the forms were known, science develops through analysis and comparing of those forms. This results in an *a priori* science based on knowledge of forms without continuing reference to sensed particulars. The particular is of first importance; it is the initial object perceived. But, the form represents a fixed nature so when the intellect abstracts it from the particular it then has essential knowledge of all the particulars of the same *species*. As a result, continual experiments are not necessary to

develop a science. While beginning in sense experience, the sciences soon become *a priori* exercises. In what follows we will see, in his new ontology, Descartes retains the notion of a fixed essence for matter so his science also has a large *a priori* element.

3) Descartes' Response: Matter in Motion and Efficient Causality

The Limits of Scholastic Ontology

According to the new science, the scholastic view was flawed at its foundations: its physical ontology. The *a priori* character often resulted in new facts being forced into conformity with deduced principles even when they seemed opposed to them. Since abstraction gives the shared nature of every *species* member, the behavior of any particular substance must be deducible from universal principles, even when it appears to contradict the principle. Science becomes, for the most part, not a matter of discovery but just this classifying of new phenomena according to already known principles. The problem with this static view of science becomes clear when better forms of observation – the telescope for instance – are developed and anomalies become too many and too great to fit the existing received principles.

Astronomy offers a good example of the problem. Geocentric astronomy had been accepted for over a millennium and a half. The earth was believed to be stable and unmoving. Only heavenly bodies moved and were taken to always follow a circular path because the circle was a perfect motion. When discrepancies were observed in the position of one of those bodies it was explained by *epicycles*. These were like small circular nodes attached to the 'big' circle at the point where the body's path deviated from the original circular pattern. The perfect motion was saved and the apparent discrepancies explained. But eventually, more varied deviations from the norm were

observed with more precision; this makes the given principle of perfect circular movement unable to satisfactorily explain the phenomena.

Another problem was the emphasis on qualitative definitions. This made explanations often no more than appeals to those qualities. For example, Meister Eckhart explains a stone's natural tendency to fall. "It is the constant downward tendency ingrained in it (its form) and which neither God nor man nor creature can take away." (Blakney, 19) This seems to be nothing more than to say that it falls because that is what it is supposed to do, which gives no explanation at all. The uniqueness of specific forms also tended to limit the breadth of scientific theories; it makes it difficult to combine botany and zoology, for instance, into a comprehensive biology since the specific forms of plants and animals have unique characteristics.

None of this was particularly bothersome to medieval scholastics. They were not primarily interested in the natural world in itself but as a way to God. The cultural 'atmosphere' was religious not scientific. This changed during the Renaissance. God and religion were still important but there was a renewed interest in understanding the world for its own sake. Science became a subject to be pursued on its own, independent of anything it told us about God. Under these circumstances the limitations of scholastic ontology became apparent.

Descartes rejected these scholastic doctrines but he did not develop his new system in a vacuum. In the period before he developed his philosophy the new science had emerged. But it was more a matter of practice than of theory. Experimentation and mathematical measurement were being applied more often but there was not yet a developed system of scientific investigation. He writes of Galileo's *Two New Sciences*,

"he has not investigated matters in an orderly way, and has merely sought explanations for some particular effects, without going into the primary causes in nature; hence his building lacks a foundation." (Letter to Mersenne, 11 October 1638 – AT II, 380; CSMK III, 124) Descartes was concerned with 'a foundation', i.e. primary causes, throughout his career; this is a position that he shared with the scholastics. Like them he believed that 'particular effects' can only be adequately explained in terms of their place in a system that accounts for all the elements of the system by the same general set of explanatory principles.

Despite the growing revolution in science, scholasticism retained a strong influence in the intellectual life of the seventeenth century. Thus the new mechanical science and the scholastic notion of a fixed ontology both helped shape Descartes' outlook. Those scholastic ideas he retained tied his philosophic system to a two thousand year tradition; his divergence from the scholastic ontology made it new.

Descartes adopted the new scientific perspective wholeheartedly but not in its entirety. The forms he rejected were the *arche* that originated with Plato and traveled through Aristotle to the scholastics. Quantitative extension became, for Descartes, the new *arche* of material objects. According to him, one might need some experimentation in specific cases to determine the answer to the problem at hand. In his discussion of the anaclastic – "the line from which parallel rays are so refracted that they intersect at a single point" – he emphasizes the need for experiential knowledge of the medium through which the rays pass. (AT X, 191-193; CSM I, 28-29) But knowledge of the mathematical character of the material world is knowledge of its essential nature. So,

like the scholastic forms, mathematics provides the general principles from which specific cases can be deduced.

Substance: Cartesian Matter Replaces Scholastic Form

The renewed interest in the natural world and the inadequacy of scholastic science coincided with the re-discovery of Epicurean atomist and Platonic texts. Epicurean atomism claimed that particles of matter in motion explain the qualities of things, not inherent qualitative forms. Platonism brought a renewed interest in mathematics. These two factors, atomism and mathematics, produced a new scientific paradigm. Size and shape of particles along with the measurable trajectories and velocities of their motion offered a more systematic way to understand the world.

Descartes adopted both of these perspectives as the foundational principles of the material world. Shape, extension and motion are the only material properties present in bodies. All qualitative properties are either directly reducible to extension or a result of the physical interaction of material objects with the observer. In Rule XII he says that we should be able to reduce all that is "perceived by the sense" to some spatial configuration since "the infinite multiplicity of figures is sufficient for the expression of all the differences in perceptible things." (AT X 413; CSM I, 40-41) He does not tell us how this will be done but, like the scholastics, the fundamental structure of the material world is easily known and so the appearances must conform to that structure.

Aside from an occasional passage like the one above, he does not eliminate qualitative forms explicitly in the *Rules*. Rejection of scholasticism is the underlying principle there but he does it more by omission than commission. For the most part he just offers his alternative ontology but in Rule VI he alludes to scholastic principles by

rejecting the "categories into which philosophers divide things". (AT X, 381; CSM I, 21) These are Aristotle's ten categories. They are listed by Eustachius as: "substance, quantity, quality, relation, action, being acted on, place, time, position, and disposition". (Ariew, 72) He goes on to say that quantity and quality are the two fundamental predicables of substance since all the others are a function of these two. For example, 'relation' is not an independent category. It will be either quantitative, e.g. 'x is larger than y' or qualitative, e.g. 'x is red and y is white'.

This gives us a picture of the scholastic natural world. The two fundamental components of substances, form and matter, each have a primary property: quality (form) and quantity (matter) along with a collection of secondary characteristics that depend on the primary ones. Descartes' move then is simple. He continued the substance-property model but denied the scholastic division of physical properties into quality and quantity; he accepted only matter, i.e. quantifiable extension, as essential. He rejected forms because he rejected the unquantifiable qualities that they gave to the physical objects as uninformative.

Change: Efficient Cause is the Only Cause

Since his physical ontology consists of only material particles in motion, change is explained simply. It can only be changes in configuration and motion of those particles. Descartes did not deal with the cause of change in the *Rules*. This is probably because he never finished the work. The final section was the place where problems in physics were to be addressed. He did, however, give the one example from physical science that I mentioned above, determining the anaclastic. He does this in Rule VIII,

where he reduces the question to "what is a natural power?"[8] (AT X, 395; CSM I, 29) He defers explanation of 'natural power' to the uncompleted portion of the work. But he does explain it in the *Optics* as the movement of various bodies through various mediums. (AT VI, 81ff; CSM I, 152ff) So, a natural power, that which produces physical change, is just the movement of bodies in contact with other bodies.

Descartes' ontology dictated his position on efficient or moving causality. Without qualitative forms, both formal and final causes are eliminated. Change can only occur through the motion of particles of extended matter. Although he seldom gives examples of particular cases, we can look at the scholastic example of the growth of a tree. The process is not that different from their explanation; it is the terms of the explanation that makes his position new. It would presumably work like this. The seedling absorbs particles of matter, i.e. those particles are moved into the seedling. The particles that are absorbed are of the proper size and shape to make up the various parts of the tree. The result is a fully grown tree produced just by the movement of certain kinds of material particles.

This explanation is a bit crude but it gives a picture of how his physical ontology works. It was not new; atomism was almost two millennia old. Descartes' importance to the history of science lies in his application of this ontology so thoroughly in works like *The World* and the *Treatise on Man*. He also contributed to the progress of science by promoting the systematic use of well-developed mathematics (algebra and analytic geometry) in the analysis of physical behavior. Since size, shape and motion of particles

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[8] I will examine this example in more detail in the next chapter. Here I am primarily interested in his *analysis* of the problem to one of particles of matter in motion.

define matter, mathematics, especially geometry, is the perfect tool for explaining the material world. In philosophy, this ontological shift marked a major change in the way we look at the world and our place in it. There is an important consequence of this shift. Since Descartes explains all physical phenomena this way, mind was removed from nature; a gap was established between the two that is still being discussed today.

Epistemology: Knowledge by Intuition

Descartes uses the term 'abstraction' but generally takes it in a different sense than the scholastics. They separate, or abstract, the universal form from its particular instantiation, thus giving knowledge of the *species* to which the individual belongs. He uses the term to refer to the separation, or abstraction, of a particular aspect of a thing from other aspects. For example, we can abstract shape from a red, square object by ignoring its color, while concentrating only on the shape.[9] (Rule XII – AT X, 413; CSM I, 41) This separation does not to provide certain knowledge but, isolates some factor that we want to study. The first steps in his approach to obtaining knowledge takes a new but surprisingly similar form to the earlier mechanism.

Descartes offers a mechanical explanation of the transmission of information from the material world through sense-perception that closely parallel's scholastic abstraction. He uses the example of sight and describes it in terms of potentiality and literal transference of the properties of the body. The shape of a physical object is transmitted by multi-colored light and "the first opaque membrane receives the shape impressed upon it." (AT X, 412; CSM I, 40) Through local motion of physical particles the organ takes

[9] I added the particular color and shape in this example. Descartes presents the principle in general terms.

on the actual shape transmitted by the light just as the passive intellect takes on the form in the scholastic model. In both systems an 'organ' which is in potential takes on an actual property from a material source. But in the Cartesian case, the whole thing is accomplished in purely physical terms; the intellect lies outside of this process.

The mechanical process is the preliminary step; it just provides information to be understood. Descartes' primary concern is achieving certainty in our understanding. He simply calls on intuition to guarantee this certainty. I will examine this notion and its corollary, deduction, in more detail below; but the general sense is that of an immediate insight into the meaning of a concept like 'matter as extension' or the truth of a principle like 'Equals added to equals yield equals'. It is this sense that makes intuition absolutely basic to Cartesian epistemology. The intuitive grasp of the essence of material nature is the pivot point for the method. Reducing the complex that is the physical to the basic notion of 'extension' provides the tool for understanding how that world operates. It allows us to construct a body of knowledge about the material world. This explains Descartes' failure in the *Rules* to offer any integration of the source of the basic data with our certain understanding. As long as he thinks he can be intuitively certain of the fundamental structure of the physical world, he has what he needs to revolutionize physical science. How we obtain that data, though considered, is not important to his project. In fact, the sensory information we receive through the mechanism provides a great deal of misleading detail. Colors, sounds and the like are superfluous to the essential nature of matter; intuition provides certainty regarding that nature. The source of scientific data becomes important when the mental and the material are put together to

form the full ontology of his later thought. There the gap between the two must be explained and we have the fully developed doctrine of innate ideas.

This outline of Descartes' innovative move away from scholasticism gives us enough understanding to now examine the two main ontological themes that follow from his adoption of the new mechanical model. First I will examine the unity of science and then his early foray into the dualism of his mature philosophy.

4) One Consequence: Unity of Science

The unity of the sciences is the first and most direct result of his adoption of the new physical model. In spelling out that model I have already given the basic idea of this unity; so, this section is something of a summary. He introduces this theme at the beginning of the text. In Rule I he says that the various sciences such as biology and astronomy should not be studied in isolation from each other. Strictly speaking, there are not a number of sciences. As I have already noted, the scholastics with their numerous substantial forms distinguish each of the sciences by the object of the science, i.e. the form of each *species*. Each *species* then will have its own unique science, derived from the particular substantial form. Descartes doesn't identify the people who do this as scholastics but they are the target of his criticism. "Distinguishing the sciences by the difference in their objects, they think that each science should be studied separately, without regard to any of the others." (AT X, 360, 5-7; CSM I, 9) He goes on to say that in this "they are surely mistaken". Descartes' position will be easier to understand if, once again, we first look more closely at the scholastic doctrine.

<u>Scholasticism: Science as a Series of Separate Disciplines</u>

Scholastic science is based on their general ontology. Using the form-matter model, each species is distinguished from all others by its specific form. This means that there will be a number of sciences since each type of thing will have a unique form that defines it and distinguishes it from other types. Aquinas expresses the scholastic position in the prologue to his *Commentary on Generation and Corruption*. He says that "the sciences are divided off in the same manner as things are… (they) are distinguished by their objects, from which they are specified." (Clark, 193) For Aquinas, specifying forms divide matter into more restricted types such as non-living (*On Minerals*) and living (*On the Soul*). (*Commentary on the Physics* – Clark, p. 187) Many types will have some properties in common. For example all living things will have a nutritive function which non-living things lack but the final level of specificity will result in a unique type. So, while they have nutrition in common different living things will be sub-divided: plants from animals, for example. Animals would then be sub-divided into warm and cold blooded. This goes on until a final level is reached – the *infama species*. This last level is what distinguishes a specific type from all others: what makes a horse a horse rather than a bull. While it is the combination of the characteristics from all levels that provide the fully specific type there is always the final difference that makes each type unique. Their specific differences means that there is no single set of properties that gives a complete explanation of all material substances, resulting in numerous sciences tied to their unique objects.

Uniform Nature: Matter in Motion as the Unity

Descartes' new perspective on the sciences is clearly based on his physical ontology. Scholastic diversity followed from its adoption of the Aristotelian notion of a

multiplicity of unique specific forms; Descartes' idea of scientific unity rests on a physical ontology that reduces all physical structure and change to particles in motion. This is the local motion that characterizes the matter of all bodies for the scholastics. So, now there is a single set of properties that explains all material structure and change.

The idea that the sciences all comprise a unified field of knowledge was a Cartesian theme from his earliest reflections. After leaving Poitiers with his *Licence* in law in 1616 he traveled to Holland and then on and off in Europe through 1622. In a notebook written during these travels he says the following; "If we could see how the sciences are linked together, we would find them no harder to retain in our minds than the series of numbers." (AT X, 215; CSM I, 3 – emphasis added) The full confirmation of this unity comes in Rule XII when he defines material simple natures as extension and motion. This move is Descartes' acceptance of the scholastic notion of quantifiable matter. Since this notion of measurable 'stuff' characterizes all matter it is the perfect basis for uniting all natural sciences. Whatever a given science deals with, it will be 'pieces' of matter moving in some way. All non-mathematical properties are to be explained in mathematical terms.[10] Biology, for example, is not a fundamentally different science from physics. There is nothing about a biological body that makes it different from any other physical one. They both compose just one science that will be explainable in terms of that single set of principles and concepts. So, they can be learned all together because they are all subject to the same analysis. Like the scholastics, we

[10] AT X, 413; CSM I, 40-41

still study science on the basis of the object of the science but now all physical sciences have only one object, matter in motion.

5) Another Consequence: The Bifurcation of Nature

The idea that all physical sciences can be understood in terms of a single set of defining properties leads Descartes to a second break with scholasticism: the complete separation of mind and body. His determination to understand matter solely in terms of its quantifiable properties means that it stands alone, without any connection to mental phenomena. Mind then must be explained under a different set of categories. They have nothing in common. The *Rules* already presents this theme although not in any detail. Since Descartes' purpose is the reconstruction of the physical, he spends little time on the metaphysical. He does, however, make it clear that there is a basic distinction.

Rule XII gives a list of properties that specifically characterize matter. "Those…present only in bodies – such as shape, extension and motion." (AT X, 419; CSM I, 45) Unlike the early atomists, he applies their principles to a limited set of substances: bodies; he does not try to explain conscious thought in atomistic terms. The material properties, or natures as Descartes names them, are distinguished from intellectual properties like 'knowledge', 'doubt' and 'volition'. Each set of properties is unique to the substance; "those things (are)…purely intellectual or purely material." (AT X, 419; CSM I, 44) As with most of his positions, this is both like and unlike the scholastic view.

<u>The Scholastic Subject: Hylomorphic Composition</u>

Scholastic theory placed humans squarely in the natural world and as such, they have the same structure as the rest of nature: formed matter. As with other *species* in the natural world, form was the factor that distinguished humans. The human form (soul) encompassed a number of faculties. Humans are rational animals and animals are living things; so, the form provided nutrition (living), locomotion and sensation (animal) and reason (human). (Clark, 218-219) Although it provides the whole range of properties, the form is a single ontological entity. As with any other living composite, when death occurs the body loses its form and decays. Yet, the human form is unique. It provides a faculty that is not, in its immediate action, dependent on matter. Reason depends on formed matter as long as it is united with the body. All cognition begins with sense experience but through abstraction the universal (form) becomes the direct object of the rational function. Because of this the rational soul can continue to exist, unlike the other forms of the material world. Eustachius puts it this way, "The nature of each thing corresponds to its manner of operation, for operation follows essential nature. But the operations of the rational soul are raised above the nature and condition of the body and of matter. Therefore the rational soul is…immortal and spiritual." (Ariew, 89)

The Cartesian Subject: The Knowing Mind

Descartes treatment of the distinction between mind and matter shows a phenomenological perspective. Matter is understood as particles in motion and if we examine the raw experience of thinking, we find that it is a unique phenomenon showing no signs of that material type of activity. The shift to a phenomenological starting point is a prime example of Descartes' break with the past. For the scholastics, everything that

a human did, even the acquisition of knowledge, operated according to the form-matter scheme. Nature had a certain ontological structural under the scholastic model and epistemology grew out of the ontological order. Descartes reverses this. Epistemology becomes the first order in his scheme. The ontological structure is discovered and certified through the knowing intellect and its operations.

So Descartes agrees with Eustachius' conclusion but gives a different explanation. There is no longer a specific form of human that includes nutritional, motive and rational activity; the first two are explainable in terms of matter not form. He makes this point clear in the opening section of his *Treatise on Man*, which was to be the second section of his *World*.[11] There he describes the human body as a machine made of the basic physical element earth. Its movements are all mechanical, similar to the movements of a man-made machine.

By reducing all of the lower functions of the scholastic form to the property of matter, Descartes has no choice but to treat that which is specifically human, rational activity, as separate from the body since it alone operates independently of matter. Intellect cannot, he says, be subsumed under the material categories of 'shape, extension and motion, etc.' Whether it is remembering, conceiving, sensing or understanding, "nothing quite like this power is to be found in corporeal things."[12] (AT X, 415-416;

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[11] He began work on this in 1629 (see *Letter to Mersenne, 13 November 1629*; AT I, 70; CSMK III, 7) just months after he stopped working on the *Rules*. He abandoned plans to publish it during his lifetime as a result of the condemnation of Galileo for asserting the movement of the earth, a position that was basic to his own physics. (*Letter to Mersenne, November 1633*; AT 1, 270-272; CSMK III, 40-41)

[12] Here, Descartes is talking about sensible awareness not the purely mechanical act of sense data 'informing' the organ.

CSM I, 42) Sensing, for example, has as its content material particles in motion but if we reflect on the act itself, there is no evidence of physical change going on. The reflective experience is of a unique non-physical act.

At its most basic level, nature has been divided into two separate and unique categories. In the *Rules* Descartes glosses over this divide but he explicitly states the mind-body distinction; "I understand, therefore I have a mind distinct from my body." (Rule XII – AT X, 422; CSM I, 46) He even expresses misgivings about the accuracy of sense experience.[13] These points are not examined or expanded on, they are just mentioned. As I also noted earlier, his tone in the early work is that of an epistemological realist; he speaks as if we know the material world directly. The implications of this bifurcation must wait for the *Meditations*.

Since Descartes' world is divided between a knowing subject and the objects of knowledge I will examine them separately. Taking the knowing subject as the starting point, it is appropriate to first explore the ontology of the *Rules* with that subject. Descartes holds in Rule VIII that we must begin our investigation with the mind since knowledge of everything else depends on its abilities. (AT X, 395, 19-21, CSM I, 30) This is important to Descartes because many of the operations that we normally associate with obtaining knowledge are actually connected with the body and are thus, not truly part of the cognitive act. We need to identify these and distinguish them from what actually understands. So, in his analysis of the knowing subject he first considers those faculties that we normally connect with our understanding: intellect, imagination,

[13] AT X, 365; CSM I, 12

memory and sense perception. The first (intellect) is the only one that operates in the cognitive act; the other three just provide data to it.

I will offer an analogy which I hope clarifies this distinction. A painter has certain tools with which she performs the act of painting. Some provide the material for producing the painting: brushes, canvas and paint. The rest comes from her: the 'eye' for seeing the objects on canvas, steady skill with brushstrokes, etc. These factors turn the material into a picture. In the process of gaining knowledge, Descartes puts imagination, memory and sense experience in the first category; they just provide information. The intellect falls into the second category; it is the conscious subject that determines what data can actually be understood and organizes it into a system of knowledge. The intellect, like the painter, uses certain 'tools' to produce the final result. She uses her 'eye' and skill; the intellect uses intuition and deduction. I have already given a brief explanation of the term 'intuition'. (p. 17) Deduction, for Descartes, has its ordinary meaning of inferring new propositions from given ones. We intuit the basic nature of matter, for example, and then we can deduce further truths about it.

While they are crucial to the method, the operations of intuition and deduction do not fit into this analysis for two reasons. First, as I said, they are tools of the intellect and here he is concerned to first separate the intellect from the body. Second, they are prior to any understanding, including the understanding of the knowing subject. They are prior in the sense that they are pre-requisites for understanding. We cannot even examine the mechanism by which the mind obtains knowledge without already being able to intuit and deduce. Descartes says this in Rule IV. "If our intellect were not already able to

perform them (intuition and deduction), it would not comprehend any of the rules of the method." (AT X, 372, 18-20; CSM I, 16) These functions are the operation of the intellect so they are already in play when it engages in any process of understanding. This includes examining itself and its relation to the bodily faculties involved in the acquisition of knowledge.

The Bodily Faculties & The Intellect

He introduces the faculties in Rule VIII and elaborates on them in XII. Intellect can 'apply itself' to each of the other material-based faculties but those faculties' function in obtaining information can be explained independently of the intellect. Sense experience is the first; it provides data for the others. Memory and imagination are the other two physical faculties providing information for the intellect to examine. Rule XII gives Descartes' picture of their inter-relation. (AT X, 412-414; CSM I, 40-42) When the sense organ receives its initial input, the impression is simultaneously transferred to the common sense, a part of the brain which retains and combines specific sensations. This is corporeal memory, the storehouse of past experiences the intellect may access in its reasoning about the material world.

Descartes wants to include imagination in the purely physical but it is difficult to fit into that category. As we have seen, the acquisition and storage of sense-data can be described in physical terms alone. Film (that antiquated product of pre-digital technology) can acquire sense impressions from objects outside of it without presumably, being aware of it and information can be stored in a cell phone without it knowing it. Imagination, on the other hand, seems to require some sort of conscious agency; it

manipulates images and ideas. Descartes offers no purely physical counterpart as he does for the other two. He includes imagination in the physically based adjuncts to knowledge because, as he uses the term, imagination deals solely with physical images. The material with which it works is taken from the corporeal memory and serves as a useful tool in the acquisition of knowledge of the physical. For instance, in proving that the sum of the interior angles of a triangle equals 180^{o} a diagram eases the proof. So, we take the image of a triangle and that of a straight line parallel to the base and construct a new more complex image. His goal is to distinguish intellect from all other faculties and show that it is distinct from any functional reliance on the material. This is why, although it involves the conscious mind in its act, he places imagination with sense experience and memory, separate from the pure intellect.

Intellect is a single unified faculty whether it is directed to any of the other three or is performing a cognitive act independent of them. This cognitive power is not physical but, as I said 'purely spiritual' and distinct from its associated body. (AT X, 415, 12-14; CSM, I, 42) When it is applied to the other three it deals with them in a non-physical way. Sense-experience becomes awareness of the sense organ's impressions; memory is accessing stored impressions and imagination, as I said, is the construction of 'new' objects using data from the memory. But it is always the unified intellect that actually performs the cognitive act. Only this faculty can exercise the two basic actions of understanding: intuition and deduction.

The intellect's primary function is active understanding but it is more than that. In all of its relationships to the other faculties "the cognitive power is sometimes passive,

sometimes active." (AT X, 415; CSM I, 42) The sense experience of a rectangle, for example, is the passive awareness of the image while the calculation of its area is active understanding. The common factor in both of these conditions is conscious awareness. For Descartes it is this property that is not explainable by physical action. Machines can do many things and their accomplishments can all be explained in mechanical terms; the movement of physical parts. An abacus, for example, could be shown to calculate the area of the rectangle by purely physical motion but the abacus itself is not aware of what it is doing; only intellect is. The machine's operation can answer a question – what is the area of a 3x4 rectangle – but only a conscious intellect can recognize that there is a question and that twelve is an answer. Pieces of matter moving in space describe only the way in which the material world operates. Intellect is what 'reads' these motions and shapes and understands them as descriptions.

Now that intellect is established as the only faculty that actually provides knowledge we can return to its operations. Intuition and deduction are the only pure intellectual operations – "Let us now review all the actions of the intellect by means of which we are able to arrive at knowledge of things with no fear of being mistaken. We recognize only two: intuition and deduction." (Rule III – AT X, 368; CSM I, 14) I will give a brief sketch of them here and discuss them further in the next chapter.

Descartes defines <u>intuition</u> as "the indubitable conception of a clear and attentive mind which proceeds solely from the light of reason." (AT X, 368; CSM I, 14) This is not a very satisfactory definition but that is to be expected. Intuition is a primitive act. He says that it is the first step in acquiring certain knowledge; intuitions are self-evident.

We simply have to be able to intuit before we can proceed any further. As a result, he uses an analogy to explain; it is a cognitive act similar to clear vision. On a bright (but not too bright) sunny day with no fog or mist to interfere I see an object. [14] That object is visually defined as a tree: I see the trunk, the branches with leaves and I can clearly distinguish it from the background that is included in my visual field. This all takes place in a single 'act' of vision. Intuition operates in a similar way. For example, I can clearly understand that the essence of matter is extension. In recognizing this, I see through all 'background' of qualitative properties that are part of my cognitive field. And, as with vision, this takes place as a single cognitive act. I don't construct the idea of matter anymore than I construct the tree. This analogy is not perfect; no analogies are. But, it does give an understandable picture of what he means by intuition.

Descartes' idea of deduction is a normal one. It is "the inference of something as following necessarily from some other propositions." (AT X, 69; CSM I, 15) Before discussing either in detail Descartes introduces mathematics as the model for certainty in Rule II. The rule begins with the claim that knowledge must be 'evident and certain cognition.' Mathematical reasoning is the model of deduction he favors. He gives the following reason for his choice. Its objects are simple, thus intuitively known and each step in the reasoning follows necessarily from the preceding ones. (AT X, 365; CSM I, 12) As we saw in the simple geometric proof above (p. 4), if we accept the premises, the conclusion follows with certainty. There is another derivative reason for his choice. In the *Rules* he is dealing with natural science and the reduction of the material world to

[14] This is my example. Descartes does not give one in any detail.

moving extension. Thus the material world is, in essence, mathematical; it is subject to the principles of arithmetic and geometry so mathematics is reasoning about that world. The consequence of this connection is: limiting our investigations to the mathematical properties of the material world yields certain knowledge of it.

The Objects of Knowledge: Material Natures

The *Rules* is devoted to a recasting of the ontology of the material world and the method that follows from that. So, Descartes concentrates on material natures and the mathematical method. Nonetheless, he gives a full catalogue of natures: material, intellectual and common. The last are those properties and relations that apply to both material and intellectual natures. The base for this exhaustive list is found in Rule XII. There he defines matter as 'shape', 'extension' and 'motion'; intellect as 'knowledge', 'doubt' and 'volition'; and common as 'existence', 'unity' and 'duration'. (AT X, 419; CSM I, 44-45) Each of these is what he calls a 'simple nature'. They are simple because we can intuit the meaning of the concepts. They need no further explanation. Using them and other simples from the text that I will catalogue in the next chapter, we can deduce a body of knowledge about both the material and mental world. But it is the ontological role of the material natures in simplifying and mathematizing the physical world that is their most important contribution.

Descartes' break with the scholastic view rests on this; his world is divided into two kinds: knowers and things known. This is why I have begun with an understanding of the knowing self. Without that we cannot have confidence in our understanding of the world. This distinction and the reason for it are important for understanding Descartes'

mature thought. It would be too strong to equate this priority with the *cogito* of the *Discourse* and the *Meditations* but it does foreshadow it in that, knowledge of the knowing self is the foundation of all other knowledge. Already in the *Rules* the physical shows a dependence on the metaphysical. In this he shares in a tradition that is fundamentally different from Aristotelian based scholasticism.

The *Rules* is an early attempt at systematizing a new perspective and, as such it is usually considered tentative and incomplete. An investigation of the major themes shows that it is more tentative than incomplete. By this I mean that nearly all of the elements that appear in his more mature work are already present in the *Rules*, although their interrelationships are not fully spelled out. The themes of the early work are an adumbration of the concepts and principles that will be organized and extended in the *Meditations*. In the next chapter I will return to the two major themes: method and the simple natures. A fuller examination of them will lay the groundwork for the developed ontology of Descartes' later thought and shed light on some of the apparent confusion that arise there.

CHAPTER II

THE *RULES*: METHOD AND THE SIMPLE NATURES

The *Rules* marks Descartes' break with the scholastic tradition. It is this break with the scholastic picture, of the physical world especially, that is revolutionary. The method he develops in the *Rules* is a consequence of his shift away from the qualitative forms of scholasticism. His purpose in developing this position is the establishment of a systematic basis for the new science. That science gives a much different picture of the material world than that of scholasticism. For Descartes, that world is now limited to the quantitative properties of scholastic matter. Because of this change a new method for its analysis is required and the reduction to a quantitative model is the clue. If matter is essentially quantity, then we understand it through the application of mathematical method, mathematics being the science of quantity.

My thesis is that the method of the *Rules* and simple natures that the method operates on are not a dead end in his thought. While it is developed in that work as essentially a scientific method it does not stop there. I argue that it carries over into the more ambitious task of establishing a complete ontology in the *Meditations*. In the first part of this chapter I examine the method as Descartes presents it in the *Rules*: a way of doing science, specifically solving scientific problems. I then argue that method *per se* need not be tied to the material and mathematical sciences. It has a form that can be applied to the broader task of his mature work: formulating a complete ontology that he believes can be known with certainty. In the second part of this chapter I show that a careful reading yields all of the simple natures material and mental, conceptual and

propositional, that are needed to construct that ontology as it is developed in the *Meditations*.

Before examining the method and full range of simple natures found in the *Rules* we must first understand the two foundational concepts that the method is based on. Along with the simple natures there is another concept that underlies Descartes' new method: intuition. It is important to understand these concepts at the start because his whole treatment of method is built on them. Intuition is the main tool of the method and the simple natures are the matter that the method is built on. In effect, a simple nature is anything that can be known intuitively and intuition is an immediate cognitive act; one that requires nothing else, either before or after the act, to justify it. In the context of the material world they are basic concepts like extension, shape, triangle and number along with elementary propositions about them like 'a triangle has three sides.' They are the foundation of the method as he presents it in the *Rules*. When we examine the method we will see that there is a difference between the intuition of a concept like extension and intuition of a basic proposition about it.

Since he introduces simple natures in the context of a method for solving problems in science, he sees their simplicity as primarily epistemological. It lies in how they are known and understood rather than their conceptual simplicity. We may be able to understand a concept directly by intuition even though it is not the most basic simple nature. For instance, he considers a triangle a simple nature but it is composed of the concepts 'angle' and 'three'.

This epistemological focus means that Descartes says little about the ontological status of the natures. But, given the shift in understanding the material world that lies behind the *Rules*, it seems clear that they are real elements or aspects of the world. The medieval view was primarily realistic, i.e. it viewed the categories that we reason about as being derived from the objects in the world through a rather complicated epistemological process. This is only one of three ways to understand the ontological status of essences or universals. The other two were Platonism and nominalism. Platonism explained universal essences as real. They are ontological entities that transcend the world of particulars. The particulars share somehow in these entities but are ontologically distinct from them. Nominalism says that these universals are just handy concepts that we use to aid our understanding but have no real counterpart in extra-mental reality. They are only 'names' that reflect similarities between particulars and have no extra-mental existence. Descartes' language in the *Rules* suggests that he shared the primary scholastic view; natures or essences are part of the world but not separate from the particulars. It was their scholastic content that he opposes not their status as elements of a mind independent world.

The question of the ontological status of the simple natures is just a Cartesian re-statement of the problem of universals. The objects of first intuition are essences: concepts like extension and thought. So, the question becomes that of the ontological status of universals. We need to look to Descartes' later work to get a clear picture of this ontological status. There skepticism leads to a distinction between ideas (the immediate objects of mental perception) and a possible physical world. It is true that when we get to the *Meditations* the simple natures are innate ideas that are awakened by

the intellectual consideration of other ideas. For example, in Meditation III Descartes proves God's existence from his idea of himself as imperfect, basing that judgment on an innate idea of perfection. (AT, VII, 45-46; CSM II, 31) The adequacy of Descartes' proof is not important here. The important point is that some natures are innate rather than derived from any kind of experience. His mature theory is that all of the simple natures are innate. But, he is neither a nominalist nor a proto-Kantian. They are not just labels that act as useful tools for analyzing the nature of the external world. Neither are they categories that serve as constitutive additions to our experience of the world. They instead, reflect it. Whatever else he guarantees, God serves for Descartes as the guarantor of the existence of a material world that mirrors our ideas of it. (Meditation VI – AT VII, 79-80; CMS II, 55) The model is one of parallel systems: the material world and the world of our ideas.[15] The natures are found in the world, not just in our minds. Because of this, I will examine their ontological status in the mind independent world.

The *Rules* is a pre-skeptical work. His language there is that of a realist; we perceive the objects of the world. While the natures are in the world one can still ask 'how are they' in the world. Since he is committed to establishing science as a sure and certain discipline he is not a nominalist. If the simple nature of matter as Euclidian extension is not a unifying property of all matter, there could be no Cartesian certainty to the science of physics. To get a clearer picture of his view on the reality of simple natures, we need to look once again, at his mature work.

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[15] It is actually a three-fold model if you include the 'patterns' in God's mind.

Descartes would have known all of the standard positions on the ontological status of universals. His formative years were spent at La Fléche a Jesuit school. Study there was been dominated by 17th century Thomism since the Jesuits took Aquinas as their theological-philosophical guide.[16] He would also be familiar with nominalism and scotism both of which had wide exposure at the time. As I said, nominalism is out of the mix and so is Platonic realism. In Part I of the *Principles of Philosophy* he makes one of his few comments about the status of universals in the body of a published work; there he indirectly rejects the extreme realist position. "(N)umber, when it is considered simply in the abstract or in general, *and not in any created things*, is merely a mode of thinking; and the same applies to all the other *universals*, as we call them.´(AT VIIIA, 27; CSM I, 212 – emphasis added) Universals then have no existence outside of the particulars that embody them. The elimination of the two extremes and the rider 'considered…not in any created things' tells us what the natures are not. What then are they? If we go with the general scholastic scheme we are left with only one alternative: the moderate realism that I explained in the previous chapter.

Descartes' reply to Caterus contains a nod to scotism. Scotus was a moderate realist. He held that only particular substances are fully real entities, i.e. entities that can be ontologically separated, like this tree and that tree. He calls the essences or natures of these substances diminutive entities that have a secondary or lesser existence as common natures in particulars. 'Treeness' is found in every tree but it cannot be separated, except

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[16] His connection to Thomism did not end with his formal education at La Fléche. In a letter to Mersenne dated 25 December 1639 he says "I am not so short of books as you think; I have here a *Summa* of St. Thomas and a Bible." {AT II, 630; CSMK III, 142)

in thought, from the particular trees in which it exists. On the other hand, it is not the same as a particular existing tree nor are the colors and shapes of the leaves the same thing. There is, what he calls, a formal distinction within every tree between the universal nature and the individuality of each specific tree and between the different properties of the tree.

This example serves to explain the notion of a distinction that figures greatly in Descartes' understanding of the ontological status of the simple natures. In the *Principles* Descartes talks about two general types of distinctions. There are real distinctions, which are distinctions between substances which can be fully separated and formal distinctions which are distinctions between formally distinct but unseparable aspects of substances. He calls them modal distinctions not formal distinctions. Modes are the different ways in which a substance exists: round and hard or square and soft for instance. They are the properties of the substance and as such, essences or natures. There are two kinds of modal distinction, the distinction between a mode and the substance it inheres in and the distinction between one mode and another. In both cases the distinctness is epistemologically based; they are distinct because we can conceive of each apart from the other. (AT VIIIA, 29-30; CSM I, 213-214) While these formally distinct aspects cannot be separated from the substances they inhere in, Descartes does not treat them in any sense as mental constructs. All distinctions we can recognize have a basis in reality.[17]

Descartes' position on the question of universals is scotist moderate realism. This is made clear in his mature work when he replies to Caterus. In the First Objections

[17] AT IV, 349-350; CSMK III, 280

Caterus questions Descartes' argument that the soul is a distinct substance by quoting Scotus.[18] Scotus says that a distinction that is real and can be understood intellectually does not guarantee that the distinguished element exists apart from that from which it is distinguished. The force of their arguments is not important here; the content of Descartes' reply is. He says that the scotist formal distinction is the same as his modal distinction.[19] The things that are distinguished under this category have a lesser degree of reality than substances: the ontologically simple units of the world. They do, however, have some reality. In his Second Reply Descartes makes this clear by saying that "there are varying degrees of reality or being: a substance has more reality than…a mode." (AT VII, 165; CSM II, 117) Modes then, are Scotus' diminutive entities.

With this basic understanding of a simple nature we can look at his notion of intuition. It is the basis of all our knowledge and the way simple natures are known. He defines intuition as "the 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." (AT X, 368; CSM I, 14) This is not particularly helpful. It does tell us that intuition yields certain and indubitable knowledge but that does not tell us what intuition itself is. Fortunately Descartes does say something more informative about intuition later in the text. In Rule IX he likens it to ordinary vision.[20] In a visual experience, if there is sufficient light and we are not troubled by any problems with our eyes, we simply see the object within our visual field, a book for instance. The experience is clear, direct and

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[18] *Opus Oxoniense* I.8.4

[19] AT VII, 120; CSM II, 85

[20] AT X, 400-401; CSM I, 33

unquestioned. Intuition is the cognitive equivalent of sight. When we know something intuitively our knowledge is similarly clear, direct and unquestioned. To intuit the nature of a triangle is to directly understand its essence. I will examine intuition and its role in the method in more detail in the next section of this chapter.

1) Method

Descartes takes mathematics as his model for method and so in it we can see how the simple natures and intuition operate. Geometry is a system comprised of basic concepts like point, line circle and angle. They and their basic relations are described in a short set of postulates such as "to draw a straight line between any two points" and "all right angles are equal". Along with the postulates there are a number of common notions (Euclid calls them axioms) that state general relations between the concepts such as 'equals added to equals are equal'. All of these are considered simple natures – the concepts, the postulates and the axioms – because all of them are taken to be understood directly without any further explanation; they are intuited.

From these all of the other truths of the system are proven in a series of theorems: statements like "The opposite angles formed by intersecting straight lines are equal". The proof procedure in the system gives a thumbnail of Descartes' method. These theorems are proven by reference to the basic concepts and postulates sometimes using the common notions.[21] There are three steps in that procedure. The statement of the theorem is reduced (analysis) to one or more of the postulates (intuition) and then

[21] I explained this process in the preceding chapter (p. 4) using the Euclid's first theorem – to construct an equilateral triangle on a given line segment

established as true on the basis of the truth of the postulates (synthesis) sometimes using the common notions. As the theorems become more complex the analytic step seldom goes all the way back to the postulates but stops at previously proven theorems. This is acceptable because the previously proven theorems can be traced back to the original postulates and thus the new theorem is dependent on them as well. The postulates then contain the whole system of plane geometry. Proving the theorems is just the working out what is implicit in the postulates.

Descartes adopts this method as the paradigm in the *Rules* for another reason. He sees the material world as defined by its quantitative properties and it is material or physical science that he wants to establish on a firm basis. So, it is not just that mathematics gives a simple and apparently certain method for establishing truth but the physical world is mathematical. He envisions a world that is structured like a geometric system. There are simple natures that define it and all knowledge is built on them. Since the structure of the world is mathematical, truths about it can then be discovered by applying the method to the simple material natures. By doing this he draws a sharp line between the material and the mental world, as we will see when we examine Rule XII. There he gives a set of mental simple natures also.

I will begin by examining the method as Descartes presents it in the *Rules*; laying out the three steps of analysis, intuition and synthesis. I will illustrate it with one of his few examples from physical science: the *anaclastic*. I will then argue that the method has a general form not limited to a physical or mathematical application. Finally I will examine two misunderstandings about the method.

The method as given in Rule V is presented as a method devised to solve problems in the sciences. It is not aimed at system building. Here the system, a physics defined by quantitative properties, is taken for granted by Descartes. The preceding rule praises mathematics and its dependence on order and this will be equally true of the method. Knowledge must be organized like a mathematical system. It begins with simple principles or truths; the rest is built up on these simples. So, the method is aimed at answering specific questions or solving specific problems. As a problem-solving procedure, it has three stages. It begins as an analytic process that reduces a complex problem to simpler terms until we reach those perfectly understood through intuition. This process is then reversed in a synthetic reconstruction using the simple terms to produce a solution to the problem. To understand this more clearly we need to understand it as a result of the particular way Descartes is committed to the new science. He retains the scholastic idea that there is a fixed nature to matter and the behavior of material objects follows from this nature; natural laws follow from natures. He differs from scholasticism in attributing only extension and motion to physical objects. Finally, since these objects occupy and move in space they are subject to Euclidean geometry and arithmetic. The whole package is, in its early development, a *mathesis universalis*. With this understanding of method we can now examine the steps in more detail.

Method: Intuition& Deduction the Guarantors of Certainty

The two fundamental tools in his method are intuition and deduction. They appear throughout the *Rules* whenever he talks about performing the method. We need to first understand what he means by these terms in order to understand how they operate in the method. In Rule III he introduces intuition and deduction as the only sure ways of

obtaining knowledge that is certain. His explanation of intuition is fairly simple. To intuit something is to have an immediate piece of knowledge that requires no further justification. It is the self-evident apprehension of a 'clear and attentive mind'. (AT X, 368; CSM I, 14) The notion of intuition resembles what Russell later called knowledge by acquaintance. It works, Descartes tells us in Rule IX, like vision. Just as we directly see an object like a tree before our eyes, we directly intuit a piece of knowledge before our minds. And just as we cannot clearly see the tree if we are distracted by the whole complex landscape, we can only intuit knowledge if we concentrate on the simple object. Initial intuition is a two-place relationship between a conscious being and some kind of entity. (Fumerton, 1-2) It is the immediate awareness of the content of a concept. Just as we intuitively understand the basic concepts of geometry – point, line and the like – we intuitively understand the physical notion of extension as the essence of matter. The immediacy of intuited knowledge makes it the foundation of the method. This is the first level of intuition, the basis for all further knowledge, but Descartes continues to appeal to intuition on a more complex level.

While we first intuit concepts or essences such as sphericality we also intuit certain truths about those essences, for example that a sphere has a single surface. (AT X, 368; CSM I, 14) These basic propositional truths are directly and immediately known, following from a consideration of the nature. We can also compare two or more intuited natures such as a line and a point. These comparisons can yield simple propositional truths that are known intuitively. Descartes calls all of these simple natures although only the first intuited essences are actually natures. All the rest are propositions describing those natures and their relationships.

The truths that will make up our body of certain knowledge are all derivable from these intuited truths which themselves follow directly from our knowledge of the essences that they describe. The simple natures that we will examine in the next section are the objects of intuition. They are simple essences and truths whose simplicity is grounded in their intuitiveness.

Intuition has a second application. It is not only the second step of the method; it also provides the basis for the certainty of deduction. Descartes view of deduction is the standard one. It is the necessary inference of a truth from previously known truths and it allows the apprehension of remote truths acquired through a long series of deductive steps. It is not a step in the method but the way in which the method proceeds through analysis and synthesis. He does not treat it as a purely logical notion. His model is mathematical type proofs which depend on the particular relationships established by the postulates. They may involve many premises and a long line of intermediate conclusions before the truth sought is reached. This is where intuition comes in to play. Often the connection between the premises and the final conclusion cannot be seen clearly. So, we must be able to intuit each transitional step. We can get an idea of what Descartes means if we look back at the example I gave in the previous chapter: to construct an equilateral triangle on a given line segment AB. The first step is to draw two circles, one with center at A and the other with center at B with radii equal to AB. To move from the given line segment to constructing circles requires intuiting the fact that all the radii of a circle are equal. We directly understand that constructing a circle with a given radius will yield a figure all of whose radii are equal. This application of intuition differs from the basic one in that the two propositions in the deductive step do not have to be simple. It is only

the immediate inference that must be intuitively clear, i.e. the move from s_n to s_{n+1}. Intuition then is extended beyond simple concepts and truths. It also applies to connections between these simples (since all the steps in a proof will ultimately be traced back to the simple natures). Both applications of intuition are summed up in his definition of deduction. It is "the inference of something as following necessarily from some other propositions which are known with certainty." (AT X, 369; CSM I, 15 – emphasis added) He does not think in terms just of the validity of an argument. Because his model for method depends on content, the arguments or proofs must be sound; i.e. valid inference from true premises. Logic is of no use in obtaining certain knowledge unless its starting point is already certain; intuition of the basics is necessary for the method to solve the problems encountered in our examination of the world.

The idea of intuiting each step of an investigation works well in formalized mathematical proofs. It becomes less clear when applied to finding the answer to a physical problem. We will see this below when we look at one of the few examples Descartes gives of the method in action: the discovery of the *anaclastic*.[22] No step is formally linked to its predecessor by reference to a clearly stated postulate and/or common notion. This is a result of the fact that physics, while its primary properties are mathematical, is more complicated than pure mathematics. So, it has not been set up with the simplicity and precision that an abstract mathematical system has. We intuit the moves but in a less formally stated way.

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[22] "the line from which parallel rays are so refracted that they intersect at a single point." (Rule VIII - AT X, 394; CSM I, 28-29)

Method: Analysis, Intuition and Synthesis

Let us now look at the three stages of the method: analysis, intuition and synthesis. Deduction moves from one step in the method to the next. As it is used in the *Rules*, the method begins with some complex statement to be proven or question to be answered. We then move through each of the stages.

Analysis is the simplification of the complex proposition into one or more simple propositions whose truth is intuited. Most of the examples Descartes gives are mathematical so the analysis is just a conceptual simplification. It could be something as basic as analyzing a triangle into the concepts of three, line and angle. (AT X, 422; CSM I, 46) In physics we might reduce a physical object to the concepts of a subject, extension and shape. (AT X, 418; CSM I, 44) We will see that the one detailed example from physics he gives – the *anaclastic* – needs additional information from sense experience. In both kinds of problems analysis continues until we reach a set of propositions sufficient to understand exactly what is being asked in the initial question. This is important because it tells us that simple natures are being treated as epistemologically simple. In analysis we break the complex down only to the level of intuitive simplicity which explain the problem; that is their purpose. The simple natures arrived at could themselves be subject to further simplification. For example we might reach a point in a geometric proof where the figure can be understood as a triangle with all of its attendant properties and this is sufficient to prove the theorem without further reduction to the concepts of angle and three.

The second stage, intuition, is, in a sense, not a separate stage at all, but the final step in the analytic process. It differs from both analysis and synthesis in that it is static. It is the cognitive act of seeing essences and their simple propositional descriptions directly. If they completely cover all of the concepts and relations in the beginning complex, then the problem can be solved. The other stages are processes; we move from complex to simple in analysis and vice-versa in synthesis.

The final stage, synthesis, is the re-construction of the problem in terms of the simple natures that will explain and solve it. That is, we start from the intuited simple natures and work our way back to the original question/problem re-phrasing each step in terms of the simples. So, the steps of the two movements, analysis and synthesis mirror each other. With this intuited knowledge we answer the next to the last question, then we answer the questions preceding it until we arrive back at the answer to the original problem. Seeing the method at work will clarify its operation.

In Rule VIII Descartes gives an example of the method applied to a question in physics: discovering the *anaclastic*.[23] It is less formal than a geometric proof since physics had not been developed into a formal system like geometry (and, presumably could not be since some empirical knowledge would be necessary to fully characterize the issue in question). Descartes description of the method follows with my annotations in italics. I cite all of Descartes' passages by AT page number. 'Q' is the question, 'A' is an analytic step and 'I' is the basic intuition.

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[23] AT X, 394-395; CSM I, 28-29

Q. Find the line called the 'anaclastic' in optics – the line from which parallel rays are so refracted that they intersect at a single point. (AT X, 394; CSM I, 28-29)

The 'line' here is a lens through which the light passes. The question is about the shape of the lens. Parallel rays hit the lens at different points. What shape allows the different rays to converge to a single point at the lens?

While we do not have the answer to the question, we can intuit that since we are talking about light rays going from one medium to another and they are bent by doing so the next step is (this is an example of applying intuition to deduction, just as are all of the following moves);

A1. The determination of this line depends on the ratio of the angles of refraction (*the angle at which the ray is bent when passing through the lens*) to the angles of incidence (*the angle at which the ray hits the lens*). (AT X, 394; CSM I, 29)

A2. The ratio between the angles of incidence and the angles of refraction depends upon the changes in these angles brought about by differences in the media.

This is where experience enters the method. For instance, different media have different densities (water, air, etc.) and these affect how the rays hit the lens.

Its linear direction is altered by the change in the density of the media so the next step is;

A3. These changes depend on the manner in which a ray passes through the entire transparent body.

It flows through the subtle matter that exists throughout the material world Descartes' Optics (AT VI, 87; CSM I, 154)

A4. (This) presupposes also knowledge of the nature of the action of light.

Light is a natural power

A5. He must know what a natural power in general is.

A natural power is…*a power which moves physical objects, even particles. The transfer from the initial application of force to its destination is linear and instantaneous.*[24] *(Rule IX – AT X, 402; CSM I, 34) This is the final intuition, not*

[24] This not, perhaps the best definition but Descartes only gives explanatory examples that involve some force traveling from one point to another; for example, moving one end of a stick and having the other end

connected to deductive moves but the one that gives the conceptual understanding (of the movement of light) which will allow the question to be answered.

Descartes concludes the analytic portion of the method saying that the investigator "must know what a natural power in general is – this last being the most absolute term in this whole series. Once he has clearly ascertained this through mental intuition, he will, in accordance with Rule Five, retrace his course through the same steps." (AT X, 395; CSM I) The re-construction would begin by answering A4 as, light is a power that moves from its source to its termination instantaneously and linearly. I am not an expert in optics so I will not attempt to carry the re-construction any further. But the method in operation can be clearly seen from this example.

The example tells us something important about Descartes' understanding of intuition. It may be a cognitive act the results of which are self-evident but it does not occur as an isolated event. We must have some knowledge of the entire system in which intuited truths reside in order to intuit them. We do not simply know, for example, what a natural power is but must, in this case, know the way in which the whole system of matter moves. Interestingly, this would be gained through sense experience of various kinds of movement: for instance, how one end of a stick moves when the other end is moved or how light is transmitted from its source to the eye.

The second point has to do with the level of development of a science of the material world. In mathematics, geometry for example, the system had been organized with precision for nearly two thousand years. The basic concepts, postulates and axioms (common notions) were all set out in a clear and systematic order. This is not true of the

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move at the same time. The force at one end is transmitted along the stick to the other end instantaneously. (Rule IX – AT X, 402; CSM I, 34)

physical sciences. The quantitative view of the world was new and the interaction of the parts was still being investigated. Descartes does have a clear understanding of the general concept of matter as Euclidian extension but the science is not yet laid out in a systematic order. So, the result is an application of the method that is not as systematically precise as in pure mathematics. The *anaclastic* example reduces the problem to notions that Descartes thinks are intuitively known but their place in the full systematic account of physics is not clear.

A third point is this. In mathematics, the analytic stage is straightforward as I demonstrated with the geometric proof in Chapter I (the construction of an equilateral triangle on a given line segment). Mathematics deals with ideal entities, lines, angles, circles and the like, all of which are static. So, the entities involved are wholly determined by the axioms, definitions and rules of the system. But we are not dealing with ideal entities alone in science. In the case of the *anaclastic* the analytic steps 1 and 2 raise the empirical question of the different media through which the light rays travel. These will vary and must be identified through experimentation. We must take this into account in order to solve the problem. This is so because in physics we are dealing both with (a) portions of matter that may only approximate the ideal shapes of geometric objects and (b) complex movements of various sized and shaped particles influenced by various forces. Descartes recognizes this and criticizes philosophers, "who take no account of experience and think that truth will spring from their brains like Minerva from the head of Jupiter." (AT X, 380, 13-14; CSM I, 21) Although the overall character of the method is *a priori*, some experimentation is often required in the analytic stage of its application to the natural world. The general structure of the method remains the same as

one used in a mathematical system: reduction of a complex to simples, intuitive grasp of these simples and synthetic re-construction of the complex in terms of the intuited simples. But, the analytic is no longer limited to mere conceptual analysis; in physics it also requires experience of the actual world to fully understand the simples that provide the re-construction of the particular problem.

The Method as a General Procedure

In the *Rules* Descartes presents the method as the way to discover truth in mathematics and physics. In physics we understand certain simple propositions about the natures of the material world and so can use them to prove more complex propositions about that world. Every true proposition about it is a simple proposition or is reducible to one or more simple propositions just as in mathematics. In that discipline we are dealing with ideal entities. This keeps the system and its method reasonably simple, for example, any circle inscribed in any square. In physics we have large numbers of moving particles of various shapes and sizes so we do not always have straightforward statements about their interrelationships. Instead questions about them. So, here the starting point is of the form "How do we identify the *anaclastic*?" rather than "The sum of the interior angles of a triangle equals a straight angle." in mathematics. The three-fold structure of the method – analysis, intuition and synthesis – is the same but its initial complex is different in physics and mathematics.

The last two stages are straightforward uses of the tools intuition and deduction but in a scientific application analysis is a more open process. It will involve deduction and some conceptual analysis since we always start with a complex that needs to be

reduced to simples. Beyond that the investigator may use extra-methodic tools to fully perform the analysis: e.g. experience, as we saw in the *anaclastic*, and doubt, as we will see in the *Meditations*. These are not tools of the method itself. They will appear in some applications of the method while not in others. For example, pure mathematics (arithmetic & geometry) requires only reductive conceptual analysis to reach the simple natures that solve the problems. Questions in physics may require immediate experience to provide some factors necessary to understanding the problem. Doubt may also be used in evaluating the factors relevant to solving a problem. If for example, in reductive analysis, one or more factors are found to be uncertain, i.e. open to non-frivolous doubt, then they are jettisoned. (Rule VIII – AT X, 392; CSM I, 28)

We have seen that the method is based on mathematical reasoning because the physical world is mathematical in character. Descartes also takes mathematics as a model because "arithmetic and geometry prove to be much more certain than other disciplines; they alone are concerned with an object…pure and simple." (AT X, 365; CSM I, 12) He then moves on to redefine the material world in quantitative rather than qualitative terms. We have seen that this move, while it still embraces mathematics, may require something new – experience. He broadens the scope of the basic method to apply to physics but this does not mean that it must be limited to mathematics and a mathematical physics. In Rule IV Descartes already says that it is a universal method. While he talks mostly about figures and numbers he also says that the method "should contain the primary rudiments of human reason and *extend to the discovery of truths in any field whatever*." (AT X, 374; CSM I, 17 – emphasis added) So, the method should be applicable to any field of inquiry insofar as that field has simple intuitive natures to

base the method on. If we remove the particular mathematical and mathematically interpreted physics from the method we are left with a general form. As a method divorced from any particular content it can be reduced to the three stages; analytic reduction, certain understanding and synthetic reconstruction, using intuition and deduction. This means that any complex proposition or question that meets the criteria is a proper subject for the method. It must be analyzable into simple natures and be synthetically re-constructed or rejected.[25] What started as a very precise method, as seen in Euclidian geometry, has become a general procedure. This is all that the method *per se*, says.

As the method is applied to a broader field of study it becomes a less formal procedure. Proofs in mathematics (in this case geometry) have a strict structure while answering questions in physical science is less formal since it involves non-ideal entities and, often, moving particles. The pattern of widening scope and reduced formality shows up in the *Meditations* when the task is to construct a full ontology but the basic process of the method remains. To be applicable to the broader study of a full ontology that will appear in the *Meditations*, all that is needed is a fuller set of simple natures.

2) The Simple Natures

In the *Rules* Descartes presents a comprehensive catalogue of simple natures. These are the most important ideas in the *Rules*. They are the basic objects of intuition and so they occupy the pivot point of the method. As I said at the beginning of this chapter Descartes uses the term simple natures for both concepts and simple propositions

[25] It will be rejected if the needed simple natures cannot be reached.

which follow from them. In this section I will first examine the natures as he gives them in the key section of Rule XII using systematic geometry as a guide. (AT X, 418-420; CSM I, 44-45) This rule is the last of the purely philosophic rules. It is nonetheless the best place to start an examination of the simple natures. He says of the rule, it "sums up everything that has been said above." (AT X, 411; CSM I, 39) Second I will identify and arrange the additional simple natures in the text, again using geometry as a guide; dealing first with those in Rule VI which are sometimes read as different in kind from those of XII. Then I complete the list with simples that appear in Rule III and later sections of Rule XII. This examination has to do with their content. As I said above, he does not directly address their ontological status.

Descartes says Rule XII is a definitive categorization of the conceptual natures. There are three: (a) mind with its attendant properties of "knowledge or doubt or ignorance or…volition, and the like"; (b) matter with its properties, "shape, extension and motion, etc."; (c) those properties that both mind and matter have in common, "existence, unity, duration and the like." (AT X, 419; CSM I, 44-45) While this list covers the whole of Descartes' world, it is not a complete list in the sense of stating every simple nature. It is complete in the sense that Descartes can derive the rest of them natures from it. Without them no problem could be solved with certainty. This is their epistemological role and it is what makes them all simple natures; they can be intuitively known. They also have an important ontological role; the natures replace Aristotelian substantial forms in understanding the structure of the natural world. Descartes' adoption of the mechanical science required a new simpler definition of matter. One that was subject to

mathematical analysis: Euclidian matter in motion. The material natures met the requirement. This is the first key to understanding his theory of simple natures.

He concentrates on material natures, but they are not the only ones he gives. He also identifies intellectual or mental natures. Because the reduction of matter to extension comprised a closed system, the activity of the mind receives a completely different explanation; the intellectual natures. The essence of mind, for him, is thought and its behavior is not subject to the same kind of explanation. For example, from a phenomenological perspective the experience of working out the Pythagorean Theorem (intellectual act) has no clear connection with 'billiard balls' displacing each other (physical act). Thus, we have two distinct sets of natures resulting in the complete separation of mental from physical properties and explanation. Separation of the mental from the physical yields well-known problems but it is understandable.

He even suggests the primacy of mental natures over the material natures but, this is as far as it goes.[26] He does not develop this primacy; we must wait for the *Discourse* and subsequent writings to see it worked out. Even in the *Meditations* and *Principles*, where mind plays a larger role, whenever he wishes to make a point about natures he chooses the material. Nonetheless, the early work does present a varied collection of natures.

Descartes introduces the term 'simple nature' in Rule VI. This rule along with Rule XII is the main source of the natures. He begins Rule VI by repeating his point that the method is essentially the ordering of things in terms of their degree of complication

[26] AT X, 398; CSM I, 31-32

so that we arrive at the simplest. This is the second key to understanding both his choice of natures and his explanation of them. Along with replacing qualitative natures by quantitative ones his project is to provide the tools for the serial ordering that gives sure and certain solutions. To satisfy both of these goals the natures will vary in type and complexity. Those of Rule VI are a mixed bag of concepts: general ontological (independent, simple, universal), relational (cause, equal, similar) and material (straight). The natures here are united by each one's "possible usefulness to our project." (AT X, 381, 16; CSM I, 21)

That project is the recasting of the physical world and the physical science that explains it. So Rule VI's natures are applied to the physical and their usefulness lies in their intuitive certainty as the basic elements on which the structure and change in the material world rests. For a complete understanding of Descartes' theory, the ordering natures of Rule VI must be integrated into categories of Rule XII; so, we will now examine that rule.

The Catalogue of Simple Natures: Rule XII (AT X, 418-419)

Rule XII is the last of the philosophic rules and the most important. It is a summary rule but concentrates on the simple natures that are the objects of the intuitive step. In that concentration he does summarize what was 'said above' and, in the process, gives a full ontology. He begins the rule with the division between the knower and the objects of knowledge; this is the division that structures the first twelve rules and is explicitly made in Rule VIII. If we understand these two factors, then we have the foundation for obtaining knowledge that is certain. And, we can best understand them by setting them in geometric order.

AT X, 417-420 are the key pages in understanding Descartes' theory of simple natures. He repeats the categorization of the simple natures into material, intellectual and common and the claim that the list is complete. He gives the intellectual natures first: knowledge, doubt, ignorance and volition. These are all examples of conscious thought. They are not open to any corporeal image and are known by reflection on the rational activity of the intellect. Descartes' connection with the past is most clearly seen here. The knowing intellect is not just an epistemological 'point' outside of its field of knowledge. It remains a part of nature, a bifurcated nature to be sure but still a part of it. Next he lists the material natures: shape, extension and motion. These natures are present only in bodies. The final category those that are common to both intellectual and material natures, are of two kinds. The first are things like existence and duration along with their privations (nothingness and instant). These are similar in type to the limited natures; they are conceptual attributes of all things, material and intellectual. They fall into two distinct systems, material and mental, but all of the conceptual natures parallel the basic concepts like point and line that the geometric system is built on.

In addition to the conceptual natures, Descartes says there are common notions that 'link' the essential natures together. "Examples of these are: 'Things that are the same as a third thing are the same as each other.'; 'Things that cannot be related in the same way to a third thing are different in some respect.'" (AT X, 419; CSM I, 45) They fit neatly into the geometry model as more general forms of equality axioms and in fact, Descartes only uses them in their quantitative form. In his arithmetic example from Rule III he says proving "2+2 = 3+1" takes three steps to reach the conclusion. The first two are that each of the sums equals four. The third step is based on the linking principle

'things that are same as a third thing are the same as each other.' The common notions show the kinds of relationships holding between any substances and/or properties which we can use to solve a problem.

Those natures complete the usual list of simple natures recognized by subsequent commentators as the basic ones. It is important to begin here because of his claim that the three categories of natures – intellectual, material and common – give a complete inventory. There are other natures in the *Rules* that are either dismissed or go unmentioned by contemporary commentators. If we are to include them, they should fit into the general pattern of the model that emerges here. It is one of substances, their properties and principles or truths about them and the common notions that state general relations between the fundamental natures. This catalogue follows the structure of the geometric system: basic concepts (defined and/or undefined terms), basic statements about them (postulates) and common notions (general statements of equality and similarity between the basic concepts). We have not yet seen the second type – postulates – but they follow directly from the basic conceptual natures as statements of the properties and connections between them.

While I have described the model as centered on the term 'substance' that term does not appear in the *Rules*. It seems clear though, that when he talks of body or intellect he is referring to a substance that holds the properties in question. In the case of body, at least, he specifically identifies it as a simple nature, distinct from its properties, when writing about the difference between ontological and epistemological simplicity. There he uses a body that is extended and shaped as an example of an ontological simple

in the sense that in reality, "those constituents have never existed in isolation from each other." (AT X, 418; CSM I, 44) There cannot be a material substance (body) that is not extended and shaped. And, in the same way neither general extension nor particular shape exists except in an actual body. It is "with respect to our intellect", i.e. epistemologically, that each of these concepts can be understood in isolation from one another. This idea of a body as a subject holding properties is just the traditional idea of a substance, which Descartes holds is the simplest fully *real* simple.

The picture we have here is of substance in general. This category is divided into two types each with fundamental properties that define them: material and mental. The whole ontology of the *Meditations* is present in seminal form. It includes everything that will later be organized and developed more fully. In the *Rules* Descartes even includes God as a simple nature. He does this later in Rule XII when talking about necessary connections between 'simple things'. In this he gives the barest skeleton of the second argument for God's existence in Meditation III; "I am therefore God exists." (AT X, 422; CSM I, 46) The simple things in this statement are the concept of God and of the ego. He says nothing more about God in the *Rules* but at least his 'presence' is alluded to.

Fitting the Methodological Natures of Rule VI into the Order of Rule XII

Rule VI is the other rule in which Descartes specifically introduces a wide set of simple natures, identified as such. He does this in the context of their role in the method. In the rule he gives two lists of opposing natures absolute and relative. These are the absolute natures: independent, cause, simple, universal, single, equal, similar and straight. The relative natures are in a corresponding order: dependent, effect, composite,

particular, many, unequal, dissimilar and oblique. We must first identify the difference between absolute and relative. He defines absolute natures as "whatever has within it the pure and simple nature in question." (AT X, 381; CSM I, 21) This is not particularly informative since presumably the relative natures also include the 'pure and simple' nature. Given his limited application of the terms we can get a clearer picture of the difference. There are two factors, at least one of which makes a nature absolute, either (a) it is simpler than its relative counterpart or (b) it is the basis on which that relative nature is understood. In the first case (a) Descartes gives an example; the universal is more absolute than the particular because it is simpler. A universal property, roundness for example is simpler than a round particular since particulars, along with being round, can be of different sizes, occupy different portions of space and so on. In the second case (b) he says that we can only know an effect by knowing its cause. Here he seems to mean that since an effect is the result of a cause we can only fully understand it when we know what caused it. To better see the relationship between absolute ad relative natures let us consider two examples where both characteristics of the absolute are present. (i) In going from point A to point B a straight line is simpler than getting there by way of a series of oblique movements. And an oblique path is understood in terms of divergence from a straight one. (ii) A unit (one) is simpler than the many of which it is a part. Further, a complex (many) is made up of units (one). The rest of the pairs can be explained using one or the other characteristic. A cause, for instance, is not obviously simpler than an effect but it is the source of the effect and would enter into a full understanding of the effect.

Most commentators treat the natures of Rule VI as different in kind from the basic natures of Rule XII. They are seen as tools of the method while the natures of Rule XII constitute the material the method operates on. This may be true of some of them; take causality again. It is used to explain a certain relationship between two particles of matter, say the change in direction that follows collision of the two. They do not seem to fit with the definitive list of simple natures in XII; those are substances with properties. So, they are ignored and the natures of XII are considered the only important ones because they mirror the system of his late thought. But, if we turn to the geometric model, we see that many of the natures of Rule VI (cause, equal and similar) fall into the category of common notions. Equality and similarity are already part of the system of mathematics itself. Causality falls into this category when we move to physics (and later metaphysics); change becomes important and the concept of causality is necessary to explain change.

There is one specific point from Rule VI that bears looking at; the inclusion of 'simple' as a simple nature. Contrasting it with composite identifies it as logical or conceptual simplicity and is a common notion. It is the notion that a complex entity or idea can be broken down into simpler ideas and the opposite notion that complex ideas can be constructed out of simple ones. In Rule XII Descartes gives the example of a triangle, which is a compound nature but can be broken down into the ideas of line, three and so on. Conversely, unicorn natures can be constructed by combining the simpler ideas of horses and spiral horns. This sense of simple is closest to what Locke means when he speaks of simple ideas in the *Essay*. For example, he says the idea of the sun is a collection of various simple ideas: bright, hot, a certain motion, round and, some others.

(Locke, 270-271) For Descartes, this is the core idea of the method; reduce a question about a complex conceptual nature to a collection of simpler ones. A logical simple is just that, simple; but simples combine in a variety of ways to form different composites some of which may be epistemological simples and others not. The nature 'single' is a special case of this. It is the notion of a unit and the many can be understood as a collection of units.

The problem that arises with many commentators is carrying this idea to an extreme. Hartland-Swann and Wilson do this and mistakenly treat simplicity as identifying the final irreducible natures. This leads Hartland-Swann to reject the simple natures in Descartes' later work and Wilson to question his treatment of true and immutable natures in the *Meditations*.[27] The basic procedure of the method is reduction from complex to simple but Descartes says we stop when we reach the intuitively knowable simples that solve the problem. For example, we do not need to go to line and three if a triangle gives us the understanding that we need to solve the problem; this is epistemological simplicity. Descartes never explicitly says what the final irreducible simples are in either mental or material natures. He does, as I noted earlier say that the more general a concept is the more simple it is but it is not clear where the analytic reduction ends.

Critics: the Natures of Rule VI and Those of Rule XII are Different in Kind

Integrating the natures of Rule VI with those of Rule XII is the only internal problem that later commentators identify as important. They generally dismiss the

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[27] I discuss Wilson's critique in Chapter V.

natures of VI and limit their analysis to those of XII. As we have seen Descartes is quite explicit in Rule XII that the three categories give a complete enumeration of the kinds of natures. It seems reasonable then, to suppose that the natures of VI should be able to fit the model of the later rule. They are misled by focusing only on the substance-property model of the list of natures in AT X, 418-419. That list is only part of Descartes' theory in the *Rules*. They fail to recognize the importance of the geometric model to Descartes.

The commentators who have written about this apparent incompatibility do so from the same basic point of view; they are different in kind. Those of Rule XII are substantive, descriptive of Descartes' ontology and those of Rule VI are seen as tools for analysis of the material portion of the ontology. Beck, Hartland-Swann and Brian O'Neil all address this issue. They each concentrate on the natures of Rule XII for reasons connected with the particular focus of their writing. But, in doing so, they remove the natures of VI from any importance.

a) Hartland-Swann's paper is concerned with the 'atomic' simplicity of the natures in the *Rules* and their presumed ontological adequacy. He argues that they do not support the more complex metaphysics of the *Meditations* and *Principles*. (Hartland-Swann, 140 & 151) This is what leads him to concentrate on those of Rule XII. He dismisses the natures of Rule VI at the beginning of his paper in a footnote. He identifies those natures as epistemological – related to the operation of the method – while the natures of XII are given by Descartes as ontologically simple.[28]

[28] p. 139, n.2

b) Beck's work is a general commentary on the *Rules* but focuses on the method and its departure from scholastic syllogistic. As a result he devotes one short chapter to the simple natures. He emphasizes their deviation from scholastic genus-species classification that underlies the syllogism. (Beck 1952, 65-82) So, his emphasis too is on the obvious ontological natures of Rule XII. He recognizes that Rule VI gives an additional set of natures, apparently different in kind, but then proceeds to concentrate only on the ontological natures of Rule XII.

c) O'Neil treats them in an argument for direct epistemological realism in Descartes' early thought. His main concern is also the natures of Rule XII, the obviously ontological ones. (O'Neil, 167ff) His critique is not so much about the incompatibility of the two sets of natures as it is about the difference between the material/intellectual natures and the common natures under which he subsumes the natures of Rule VI. The first two are real elements in the world while the last is not. Most of my examination will center on O'Neil's critique since it is the most elaborately developed.

Given their respective purposes, it is reasonable for all three commentators to focus on the natures of Rule XII but those reasons are not important for my purpose. I want, instead to consider the discrepancy found by them in the two sets of natures. Hartland-Swann and Beck do little more than dismiss the first set of natures from Rule VI because they see them as different in kind from those of Rule XII. The natures of AT X, 418-419 are clearly ontological in character. They consist of a set of substances, minds and matter, with certain properties. As we have seen the natures of Rule VI are not

explained in the same way. Some such as 'cause' and 'similar' are relational, others like 'universal' and 'simple' are intellectual tools for analyzing problems; that is, their role is functional rather than descriptive. They do not identify properties of the real world but are "ultimate limits of formal analysis…in the context of Descartes' methodology." (Hartland-Swann, 140, n.2) O'Neil sees them in the same way but then does something different. Hartland-Swann and Beck see a clear distinction between the two sets of natures; there is a sharp line of demarcation between those of VI and those of XII. Rule VI shows the operation of the method; Rule XII shows the structure of the world. O'Neil makes the same distinction but then assimilates the methodological natures into the common natures of Rule XII. For him there is a different dividing line. We have the mental and material natures on one side and the methodological and common natures on the other.

O'Neil first explains the difference in the two sets of natures by referring to the goal of Rule VI. He says that in the early portion of the *Rules* Descartes is deep in his explanation of method and that rule is at the heart of the explanation. The natures Descartes lists there are chosen because they identify concepts that pertain to the working of the method in solving particular problems. Using the example of causality, O'Neil says that rule tells us, for example, to understand a particular event we might look for the cause of the event. This then would identify the simple nature that will explain that particular event. Rule VI gives the tools for the "operation of the method" and Rule XII gives the "elements: over which the method operates." (O'Neil, 165)

O'Neil calls these tools – independent, cause, simple, universal, single, equal, similar and straight – conceptual natures. He then goes on to say that "most of the terms

listed in Rule VI could, without strain, be included in the third or "common" category mentioned in Rule XII." (O'Neil, 163) He does not list which of these natures can be assimilated this way but I take it that they are the same ones I identify: independent, cause, equality and similarity. His reasoning seems to be that the last two, equality and similarity, are concepts that correlate with common notions. Most of the rest fall into the same type as the common concepts like unity and duration. [29] This leaves us with just three sets of natures: material, mental and common/methodological.

O'Neil wants to show that some of the simple natures are elements of the extra-mental world: 'those over which the method operates'. It will not, however, be all of the simple natures of Rule XII. Only the material and mental natures meet his criterion for extra-mental reality. First, there are the material natures. O'Neil takes the three basic material natures as independent; "My central contention is that at least three simple natures are constituent of the physical world: figure, extension and motion." (O'Neil, 167) He argues that when Descartes talks about physical questions he uses realist language, using the example of the magnet in Rule XII to show this.[30] To determine the nature of the magnet the inquirer must gather observable data before analysis can reach a conclusion. It is the motion and figure of the extended particles, not the ideas of them that explain the nature of the magnet. When speaking of Descartes' mental natures – thought, doubt and volition – O'Neil says that "introspection brings one quickly face to face with the irreducible elements of the mind's nature." (O'Neil, 168) His argument

[29] Although O'Neil thinks that equality along with straight might fall into the material natures, he also notes that 'things equal to a third' is one of the common notions and so hesitates to treat equality as a material nature. He does nothing with straight. (O'Neil, 163 nt.)

[30] AT X, 127; CSM I, 49

here is similar to the preceding one. Descartes does not, for example, appeal to the idea of volition but to the act of volition to talk about what introspection reveals. The language here is also realist. This concludes O'Neil's positive arguments for natures with ontological status.

The last thing to consider in examining the connection between the two sets of natures is to understand where Descartes situates the methodological natures. This will include the common natures of Rule XII since they have been combined with the methodological ones. Do they reside in extra-mental reality or are they just schema for arranging the world as we experience it? In other words do they tell us how the world is ordered or how we order the world? O'Neil does not directly deny ontological status to the methodological natures. But, if we look at his two main arguments, the answer seems to be that they are how we order the world.

His first argument distinguishes material and mental natures with those he identifies as conceptual, "e.g. "independent," "cause," and "universal."" (O'Neil, 164) He never says what he means by the term 'conceptual' but it is not a contrast between concepts and propositions. It seems rather to be a contrast between ideas and real things. O'Neil calls them tools and this suggests that they are supplied by the mind rather than being independent aspects of reality. The second major argument is for the reality of material and mental natures only. Putting the two arguments together, we are left with an understanding of Descartes that accepts only the material and intellectual natures as ontologically real. For O'Neil most of the natures of Rule VI along with the common natures of Rule XII are mind dependent ideas.

I agree with O'Neil that the purpose of Rule VI is an important factor in Descartes' choice of natures in that rule. They are set out there in terms that are clearly methodological. The simple natures that Descartes gives in that rule are there for that purpose. Admittedly, they are not obviously the same as the key natures in XII; from the ontological perspective most of the natures are not properties of individuals in the usual sense of 'red' or 'colored' or 'rational'. But, they are, as O'Neil admits, quite similar to the common natures and I have already argued Descartes must see those as descriptive of the world in order to achieve the certain knowledge that he seeks. Take the notion of cause. What value would there be in using the concept of cause to develop a sure science about the world if causality does not actually occur in the world? The same can be said about all of the other common simples and notions. If the common natures and notions were not in the world there would be no connections between the parts of the world and thus no science. This is totally foreign to Descartes' project and there is no textual evidence that he understood these natures to be different in kind. So, the natures of Rule VI and the common natures of Rule XII are elements of the world; they are not constructive but descriptive.

Rules III & XII: Completing the List of Simple Natures

There are a number of simple natures that generally go unrecognized. Descartes does not use the term simple nature when he introduces them but he refers to them as either intuited (III) or as simple things (XII) so they fit the definition. These additions make a more interesting collection in four ways.

1) More specific conceptual natures are introduced.

2) They complete the mathematical model that serves as template for the method. They do not give a complete catalogue of all the concepts that make up the material/intellectual world. But they do provide the one thing that is missing in the main lists: postulates. The natures of Rule VI and Rule XII, AT X, 418-419 give basic conceptual natures and some common notions (axioms) but they do not give any propositions expressing the essences or the connections between them. The additional propositions from Rule's III and XII do not follow immediately from the basic concepts of matter and intellect. There are, instead, propositions about specific natures like triangle.

3) They make an existential claim for one mental nature, the *ego*. This is important because all of the other natures have to do with essences and their interrelations.

4) Finally, they introduce a special mental nature, the idea of God.

Most of the additional simple natures are presented in Rule III. With one short passage (a less than three line sentence) Descartes adds a great deal to the catalogue of natures given in Rules VI and XII. "Thus, everyone can mentally intuit that he exits, that he is thinking, that a triangle is bounded by just three lines and a sphere by a single surface, and the like." (AT X, 368; CSM I, 14) Let us look at the last two intuitions first. They are propositions that ascribe properties to subjects. So, we finally have examples of the second elements of a geometric-like system: postulates. What is most interesting about them is that they introduce two new substantive natures: triangles and spheres. The particular geometric examples are not important; he follows them with, 'and the like.' What is important is that these natures show a new level of specificity for the material

simples. We do not just intuitively understand the general properties of body like shape and motion. He says the essences of the basic figures of geometry are also known on the most fundamental level - intuition. In addition, we have an intuited understanding of propositions that describe the essences. As I said earlier, these intuitions are not primary ones. They follow from the first intuitions of the essences themselves. But, they are not discursive. To reach them we need only examine the essences to 'see' the truth of certain basic propositions about them.

In the first part of the quoted passage Descartes gives what will be the focal point of his mature thought: the thinking self. Though it does not add to the list of the core natures of Rule XII the bare statement of the intuition "he is thinking" is the first expression of the essence of the *ego*. The final novelty that Descartes introduces in this rule is the first 'simple matter'; he says "everyone can mentally intuit that he exists." (AT X, 368, 21-22; CSM I, 14) The intuited existence of the I in Rule III is the most unique intuition in the *Rules.* All of the others are natures/essences, propositional truths about essences or common notions that show relations between essences. Only the *ego*, a specific substance is known with intuitive certainty to exist. Already in the *Rules* the world is being constructed on the basis of the self's self-knowledge. It is suggestive that Descartes places the two facts about the *ego*, it exists and it thinks, one next to the other. As Jean-Luc Marion says, all that remains is "the necessary link between these two simple natures – nothing, in other words, but the act of putting them in the right order." (Marion, 1991, 50) Descartes does not make the connection between the two in the *Rules*. That will appear nine years later in the *Discourse* but they are already seen together as fundamental intuitions. This is our first contact with the Cartesian *ego*, as an

example of reflexive self-consciousness. In the *Discourse* and *Meditations* the two intuitions of the *Rules* are collapsed into one; the connection between thought and existence is not deduced but immediately intuited. Intuition is a form of thinking so a simple act of intuition reveals the agent as a thinking thing; *cogito ergo sum*. We turn now to Rule XII to see the last addition to Descartes' simple natures.

In a later passage of Rule XII Descartes brings in the final unique essence that completes his mature ontology. We already have matter and minds (Descartes', at least). God is the final piece; he is the creator of a dependent world and the guarantor of certainty. Although God falls under the heading of mental natures, he is a special case because of his defining properties. He is unextended thought, but it is power and perfection that define God. He introduces the issue as, "the conjunction between these simple things." (AT X, 421, 4; CSM I, 45) The 'simple things' in question are given in the following proposition, "'I am, therefore God exists'" (AT X, 422; CSM I) It is the component propositions not the full proposition that are claimed to be simple. This is not, strictly speaking correct because the consequent is not a simple intuited truth but the conclusion drawn from an argument in the *Meditations*.

Descartes says the conjunction is a necessary connection. My intuitive knowledge of my existence leads, necessarily to knowledge of God's existence. God's existence follows from the Cartesian *ego* but is a result of deduction rather than intuition. This proposition from the *Rules* illustrates Descartes' legacy from scholasticism. It is the barest outline of the second causal proof in Meditation III. That proof is based on the *cogito* but, it also depends on the essential nature of God as a perfect being. God is mentioned just this one time in the *Rules* and Descartes says nothing about what God's

nature is. But, for this claim to make sense, God's essence (a perfect being) must be taken as a simple nature since that is the basis of the proof. Since his existence is deduced it does not meet the intuition test that defines simple natures for Descartes; only his essence does.

Putting all of these together with the simple natures of the early section of Rule XII and those of Rule VI gives a catalogue of material for the construction of the later ontology of the *Meditations* and *Principles*. We have: a) the general notion of substance with properties, two basic substances, minds and body with their defining properties and certain specific material substances with intuited properties, b) various propositional simples that state connections and relationships between substances and properties and c) two unique simples: the existence of one mental substance, Descartes' *ego* and a particular mental essence, 'God'. These are all of the elements that appear in Descartes' fully developed ontology which we will examine in the following chapters.

CHAPTER III

METHOD IN THE *MEDITATIONS*

The *Meditations on First Philosophy* is generally considered, I think rightly so, as the canonical Cartesian philosophic text. It was written between 1638 and 1640[31] and first published in 1641 with six sets of objections and replies. The second edition, published in 1642 contained an additional set of objections by a Jesuit, Pierre Bourdin, with Descartes' replies. The work itself presents his mature epistemology and ontology and is written in the mode of discovery rather than exposition. (*CwB*, 17) Thus, it shows method working in his later thought, not in the solution of individual problems, but in the construction of a whole system of knowledge.[32] That there is method operating in the *Meditations* is not disputed but, those who consider questions of method see a new one based on hyperbolic doubt, replacing the earlier method.

In this chapter I examine Descartes' mature work in light of the principles set out in the *Rules* in order to show the continuity between the early and later work. In the previous chapters I examined the *Rules* in terms of his departure from scholastic philosophy (Chapter I) and the presentation of a method and the simple natures that underlie that method (Chapter II). The main discussion in this chapter carries that reading forward into the *Meditations*. I argue that the principles presented in the *Rules* continue, with appropriate development, into his mature philosophy. There are commentators who see a new method but the evidence they appeal to does not support

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[31] See various letters between 1638 and 1640, esp. two to Mersenne: 27 May 1638 (AT II, 141 ff; CSMK III, 103) and 30 July 1640 (AT III, 126ff; CSMK III, 149)

[32] Most of Descartes examples are mathematical but at least one – discovery of the *anaclastic* – is a problem of physics requiring more than just mathematical reasoning.

this. Thus there is no reason to conclude that his overall method has changed from that of the *Rules*. So, just as he did in the *Discourse* seven years earlier, he is to apply the same method to an overall construction of the metaphysical foundations of his physics.[33]

As with the preceding chapters I begin with method and then examine in Chapter IV, the presence of the simple natures in the *Meditations*. In the case of the *Rules*, I followed this pattern because that work was ostensibly about method and the simple natures were introduced in terms of their role in the method. In the *Meditations* the epistemological question of certainty, in the light of skepticism, becomes the focus. So, in the later work method is once again the pivot on which the discussion hinges. The chapter has four main sections.

1) I begin with a brief outline of the major factors that led to the skepticism of the 17th century. I will not examine this movement in detail since my main interest is its role in fostering Descartes' development rather than replacement of the method of the *Rules*.

2) After giving the case for skepticism I outline the *Meditations*.

3) Next I examine hyperbolic doubt, clarity and distinctness and God as guarantor of certainty taking into account what he says about method in his introductory remarks.

These three factors are considered the basis of the new method employed by Descartes in his mature philosophy. He does give them greater prominence in the *Meditations* but, I argue, they are present in the method of the *Rules*. Their dominant role in his mature thought is a refinement of the earlier method in response to his recognition of the power of skepticism.

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[33] Part IV – AT VI, 31-40; CSM I, 126-131

4) Finally I discuss Curley.[34] I will address his criticisms after I explain the way in which the *Meditations* refines rather than replaces the method of the *Rules*.

1) 17th Century Skepticism: Its Sources

Scholastic thought offered a basic way of understanding the world that was accepted by the intellectual and scientific community for five centuries. During the Renaissance and early modern period it lost this universality. Competing 'pictures' of the world emerged, with no obvious criteria for adjudicating among them. This led to a growing skepticism in the 16th and 17th centuries. A number of factors contributed to this: cultural, religious, scientific and philosophic. On the cultural front, the explorations of new lands opened Europe to different ways of seeing the world and man's place in it. Religiously, the Reformation presented new ways of understanding the relationships between believers and God, authority and salvation. It also brought distaste for scholastic thought among many Protestant thinkers since scholasticism was associated with the Roman church. I will not pursue these general trends any further since the many sources for the new perspectives are not important to my project.[35]

The most important change is found on the scientific and philosophic fronts. The adoption of the new mechanical physics was the most important factor in his development. It led to the wholesale rejection of Aristotelian qualitative forms and the re-definition of the physical world as quantifiable matter in motion.

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[34] Hartland-Swann, an earlier critic, explicitly rejects the simple natures and I will consider his criticism in the next chapter.

[35] For a fuller account of the intellectual context at the start of the 17th century see Stephen Menn, "The intellectual setting" in Garber & Ayers, pp. 33-86

The change in perspective began with nominalism in the 14th century. This position was still expressed in scholastic terms but it too found no ontological place for the forms. All that existed were individual substances; the formal aspects of the substance (universals) came to be treated as just names with a wider reference (*suppositio*) than individual names. The next step came in the Renaissance proper. Just as the appearance of Aristotle's work in the twelfth century had reshaped western thought in the thirteenth and fourteenth centuries, new texts of classical philosophy – Plato, atomism and skepticism, itself – did the same for late fifteenth century thought.

Fourteenth Century: Nominalism

Nominalism was a recurring theme in medieval thought but only gained prominence in the 14th century. That was a transitional period when European thought began to move away from traditional scholasticism and evolve into the Renaissance. Nominalism developed in that century and provided a somewhat different picture of the natural world. One of the basic tenets of Aristotelian scholasticism was that the primary existents are individual substances. The form does not exist independent of the individual but, it was claimed by most, to have both an intentional existence (as an object of thought) and an ontological status as a shared property among a number of individuals. The abstracted form does not exist in the way substances do but it was a distinguishable component of the individual substance. Nominalism denied this and took the idea that only primary substances (individuals) exist to its extreme conclusion. It denied any real existence to the universal form.

The nominalist treatment of universals was predicated on the logical analysis of reference. Universal terms are names of things just as individual names are. But they do

not name any distinct entities; they name the same things that individual names do. The difference is that individual names apply to only one individual, while universal names apply to more than one. In the sentence, "Socrates is wise." 'Socrates' refers to the individual Socrates and so does 'wise.' The former cannot truthfully name any other individual but the latter can; e.g. in the sentence, "Plato is wise.'

The result was that, if the only things that exist are individuals then, they are the only things that can be directly known. This variation on the scholastic ontology and epistemology helped set the stage for the new science of the Renaissance. By denying any ontological status to a knowable universal, nominalism fostered the view that observation of the individual is the source of knowledge.[36]

Renaissance: Revival of Platonism and Atomism

Platonism appeared in the Latin west during the 15th century. It had never been absent from scholastic thought due to the continuing influence of Augustinian neo-Platonism. But, the only original Platonic text throughout the medieval period was the *Timaeus* and its combination of a 'creator' and ideal patterns he used to create the world played directly into Christian philosophical theology. Increased contact between Western Europe and the Byzantine Empire brought Plato's writing to the attention of Italian scholars and by the middle of the 15th century they had all been translated into Latin.

Various strains in Plato's thought contributed to the newly developing world-view of the Renaissance and early modern period. Plato, of course, was a rationalist; the

[36] There are many important issues connected with this all-to brief summary that are beyond the scope of this paper. In particular, nominalism raises the question of how we can have scientific knowledge at all. If the only things that actually exist and can be known are individuals, then there seems to be no basis in reality to support any theories about how it works. My concern with nominalism here is only its role in fostering observation rather than rational deduction in science.

theory of Forms was meant to provide stable objects of knowledge. At the same time, his distrust of the senses offered support to skepticism's rejection of sense experience as a source of knowledge. The greatest impact though was his emphasis on the value of mathematics in our pursuit of knowledge. While not the final level of unshakable knowledge, Plato places mathematics in the realm of the intelligible as the penultimate stage.[37] All that is needed to complete a systematic alternative to the scholastic model is a 'material' ontology.

Atomism provided that ontology. A world-view that appeared about the same time that Socrates flourished; atomism was the heir of Ionian cosmology. It offered atoms moving in the void as the model of both the natural and the supernatural. So, when the west regained classical Greek thought in the Renaissance, the notion of matter as the essential property of the physical world was one of the new models available.

With the exception of philosophic skepticism none of these novelties contributed directly to a skeptical view. The newly discovered cultures and newly minted versions of Christianity were all seen by their adherents as the right way. They were all, in their own way, as dogmatic as the position they challenged. The same is true of the revived philosophic theories; nominalists, Platonists and atomists were as sure of their views as the scholastics. What they did do was provide alternatives to the basic social and intellectual systems of the time. By doing this, they opened the door to skepticism since there were now a variety of explanatory schemes with no clear way to adjudicate among them.

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[37] *Republic*, 509d-513e

Rediscovery of Philosophic Skepticism

Skepticism, as a philosophy, is the final factor that came into prominence during the Renaissance. Along with atomism, this was another fortunate re-appearance of a classical philosophy. Just when scholasticism was called into question across the whole of society, religious, scientific and cultural, a philosophically skeptical position became available. In science, the experimental method in itself, no longer guarantees certainty in its results. If we are limited to nominalistic individuals with no shared essence the apparent basis for any general science is more difficult to establish. One position to take, on this question, is skepticism. Science, like any body of knowledge, is never more than provisional. There are only probable conclusions about the behavior of individuals. Continued observation was necessary to qualify and adjust our theories as the new data indicates. We will never arrive at a guaranteed knowledge of how the world operates because we have no criteria for establishing that guarantee.

Skepticism reappeared, as a philosophy, with publication of Sextus Empiricus in 1562. The main force of classical skepticism's argument is that neither sense experience nor reason can tell us what the world of appearance is really like. Sense experience itself is unreliable; square towers appear round at a distance, a sound can be jarring when one has a headache but pleasant when one feels well and so on. Neither can reasoning give a guaranteed answer. It will either involve a vicious circle (the conclusion of a syllogism is already contained in the premises) or a *regressus in infinitum* (any claim used to justify an explanation of phenomena must itself be subject to justification.) For the Pyrrhonist or extreme skeptic, even the skeptical claim itself is open to skeptical doubt. All that we

are left with, according to them, are the appearances and one's familiar social laws and customs.[38]

In the late Renaissance period Michel de Montaigne (1533-1592) was skepticism's best known adherent. He makes his most famous case for skepticism in the "Apology for Raymond Sebond" (Frame, 318-457) This is a reluctant defense of a late 15th century natural theology. He defends Sebond's arguments against the claim that they are weak and uncertain by pointing out that all human reason is weak and uncertain. So, Sebond is no worse than anyone else in his reasoning. A passage from the Apology best sums up the skepticism of the Renaissance and early modern period. There Montaigne says that for thousands of years it was believed that the earth was stationary and that only the heavens moved but this view is now challenged. Reading each theory on its own, Montaigne finds it compelling and suggests that a thousand years from then a new theory might be presented that sounds equally compelling. (Frame, 429) He makes and even stronger point a page later. There he says that reasoned theories about the world of experience offer different and sometimes absurd explanations of the phenomena and he 'would rather follow facts than reason.'[39] But, 'facts' alone do not give us certainty about the way the world works; they only tell us what we experience. So, we are left

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[38] It is interesting that Descartes, although arguing against skepticism, continues to hold some of its positions. In the *Rules*, for instance, he offers the same criticism of the syllogism. (Rule XI) In the *Discourse* (Part III) he adopts the same conventionalist point of view regarding cultural and moral matters. This latter claim shows the limitations of his philosophy in its application to moral and social questions.

[39] For example, "the Pyrrhonians use their arguments and their reason only to ruin the apparent facts of experience…they demonstrate that we do not move, that we do not speak…with the same force of arguments with which we prove more likely things." (Montaigne, 430)

with skepticism, the position that Descartes is so concerned to refute in the *Meditations*: a refutation centered on the skeptics own tool – the method of doubt.

2) The *Meditations*: A New Start

Descartes does not mention skepticism in the *Rules* and it is not certain when he recognized the need to directly confront it. He does say in the *Discourse* that he began indulging in metaphysical meditations shortly after stopping work on the *Rules* in 1628 and moving to Holland. In any event, by the publication of the *Discourse* in 1637, he has made clear his position on skepticism. (AT VI, 30-31; CSM I, 126)[40] It needs to be refuted and he can do it. His method of refutation, in Part IV of that work, is to assume the most extreme skepticism and show that it leads to an absurdity, to doubt my existence proves my existence: the *cogito* argument. (AT VI, 33; CSM I, 127) This is the starting point of the *Meditations*.

The *Meditations* was Descartes' attempt to build a system that was not subject to skeptical doubt. It is written, as its title suggests, in the form of a meditation. This form is important in itself since it calls us to shut ourselves off from all the ordinary things that can distract us and look within to discover truth. We are called, in effect, to disconnect ourselves from the world of sense experience and rely on reason alone.

The *Meditations* consists of six chapters or meditations. The following is not a critical evaluation of the arguments but a synopsis meant to show where methodological novelties appear. In Meditation I he begins with the idea that once in his lifetime he should review all that he thought he knew and establish a firm foundation for the pursuit

[40] Also, see Letter to Mersenne, 15 April 1630 – AT I, 144; CSMK III, 22

of knowledge in science. This sounds remarkably like the program he prescribes in Rule VIII of the *Rules* but does not pursue there. "(W)e ought once in our life carefully to inquire as to what kind of knowledge human reason is capable of attaining, before we set about acquiring knowledge of things in particular." (AT X, 196-197, CSM I, 30) In the *Meditations* Descartes does this through the application of hyperbolic or exaggerated doubt in Meditation I. He systematically rejects the accuracy of our senses, the existence of a material world (dream argument) and the certainty of mathematical reasoning (evil demon argument). The last argument – that there may be an evil demon of infinite power who deceives us even in something as simple as the accuracy of adding 'two and three' – also calls into question Descartes' long held belief in a benevolent God. He is left then at the end of the meditation with no apparent foundation on which to build certain knowledge.

Meditation II gives Descartes his Archimedean fulcrum, the one certainty that can serve as the basis for building a system of sure knowledge. This is the famous *cogito*. No matter what he can put forward as a reason to doubt his own existence, including the deception of the 'deceiver of supreme power', he must exist in order to do this. (AT VII, 25; CSM II, 16-17) Doubt has led him to a belief that he cannot doubt. This one fact is not as bare as it at first seems. Not only does he have his own existence, one of the simple natures of the *Rules*, he has the entire content and activity of his conscious mind. Through introspection he knows the essence of mind. "But what then am I? A thing that doubts, understands, affirms, denies, is willing, is unwilling, and also, imagines and has sensory perceptions." (AT VII, 28; CSM II, 19) He also knows the essence of his idea of

matter as identified through the wax experiment.[41] After subjecting a piece of wax to heat it melts and either loses or changes all of its qualitative properties, those included in scholastic form-matter explanations, and remains just something 'extended, flexible and changeable'. These are just some of the things Descartes has to work with in the remaining meditations. He has put aside and treated as false almost all of his prior beliefs about the world but he still has all of his ideas about it and he can now re-assess them in light of the few certainties that emerged in Meditation II.

The rest of the *Meditations* is devoted to re-instating most of beliefs that were initially found to be doubtful. An all-powerful, good and perfect God returns in Meditation III. There has been considerable commentary about the difference between and relationship of the two types of reality of his ideas, formal (its nature as a cognitive act) and objective (its content as representing something). The important point is the argument is a standard example of a causal argument. Here is a simple statement of the argument. The content of our ideas must come from some source. Descartes cannot derive this content (perfection) from his imperfect self so there must be something perfect which provides the content. Thus a perfect being – God – must exist.

Meditation IV is a sort of sidebar. That is to say, it is not concerned with establishing the certainty of previously held beliefs. It is instead, directed toward clear and distinct perceptions as the criteria of true and certain knowledge plus Descartes' explanation of how error occurs. He begins by saying that God cannot be a deceiver since he is perfect and the will to deceive is malicious and an indication of weakness

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[41] AT VII, 30-31; CSM II,20

which is incompatible with the nature of God. This eliminates the somewhat artificial notion of the evil demon of Meditation I which was the ultimate source of error. We are left with the possibility of error lying solely in ourselves. Now, whatever we clearly and distinctly perceive is true. Error occurs when we make judgments about those things that we do not so perceive. If we limit ourselves to judging only about what is clear and distinct we cannot go wrong. Error then is tied to the will not reason for judgment is an act of will. With the evil demon gone and this understanding of error we can return to examining our previous beliefs

Meditations V and VI bring back the material world. Descartes has already determined that it is the mathematical properties of matter which constitutes its essence. Meditation V rehabilitates mathematics as a sure science since he clearly and distinctly perceives certain true and immutable natures, the essence of geometric shapes for instance, which he does not create but discovers within him. They are not dependent on him since there are facts about them, the sum of the interior angles of a triangle equals a straight angle for example, that can be proven whether he wishes it or not. Descartes now returns to his pre-skeptical view; mathematics, the essential structure of matter, is certain and true knowledge. The only thing left is to bring back a mind independent material world that corresponds to his understanding. He does this in Meditation VI.

God plays his most important role in retrieving the material world. Descartes' argument, in brief is the following. He has a clear and distinct idea of the essence of matter as extension in Euclidian space. God is certainly capable of creating anything that has a clear and distinct nature so, a material world is possible. Many of his sense experiences, which are still understood as acts of the intellect, are forced on him. They

must come then from something other than his understanding. So, either they come directly from God or from substances that have the formal reality corresponding to the objective reality of his ideas. His belief is and has always been that these experiences come from material objects and since God is his creator, he does "not see how God could be understood to be anything but a deceiver if the ideas were transmitted from a source other than corporeal things." (AT VII, 80; CSM II, 55)

The circle is now almost complete. Descartes began to examine all of his beliefs through the application of doubt. He eliminated the dependability of sense experience, the material world, mathematics and God. He arrives at his own existence and from there he gets God back and determines that clear and distinct perceptions are to be trusted. With both of these he gets mathematics and a mathematically structured material world. The one gap in the circle is the object of Descartes' first step into the method of doubt. All the inhabitants of the world, mind (himself) matter and God are now set on, what he believes to be, a sure foundation but the senses are never vindicated. He has a clear and distinct picture of the essence of matter. However, "in many cases the grasp of the senses is very obscure and confused." (Meditation VI – AT VII, 80; CSM II, 55) The senses provide a wide range of qualities but it is reason that separates the essential ones from secondary qualities like color, sound and the like. This brief outline shows the three elements that are generally considered to constitute the new method of the *Meditations* required by skepticism: doubt, clarity and distinctness and God.

3) The Effect of Skepticism on Method

The *Meditations* was written by Descartes as a response to skepticism and its calling into question of the possibility of a guaranteed physical science. He does not

mention skepticism in the body of the work but makes its anti-skeptical stance clear in the Seventh Reply. The objections were written by a Jesuit Pierre Bourdin who, to Descartes dismay wrote a highly critical set of objections. Bourdin accused him of taking a skeptical stance by using exaggerated doubt. Descartes takes him to task for failing to see that the skeptics own weapon is used to counter skepticism; this is the whole tenor of the *Meditations*.[42] Doubt, along with clarity and distinctness and God are the three tool Descartes uses in his methodological search for certainty.

a) Hyperbolic Doubt: this is seen as the basis of Descartes' new method to meet the demands of ontology and skepticism; the other two elements follow from his use of doubt. I will argue that it is already present in the original method of the *Rules* and is refined and strengthened in the *Meditations*.

b) Clear and Distinct Perceptions: these are taken to be a new criterion for certain truth. I will argue that reaching clear and distinct perceptions is not significantly different than the intuition of the *Rules*.

c) God's Role: God appears to be added by Descartes to validate our clear and distinct perceptions. I accept this in a qualified sense. I will argue that he is present, albeit briefly, in the *Rules* as the ground of existence .[43] His role in the *Meditations* is an extension of his fundamental status in the early work.

While the emphasis on these new elements is inarguable, to see them as wholly new in Descartes' work is to ignore the text. There are passages in both the *Discourse*

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[42] AT VII, 548-549; CSM II, 374-375

[43] Rule XII – AT X, 422; CMS I, 46

and the *Meditations* that indicate the method of the *Rules* has not been left behind. They are not just remarks which could be construed as momentary lapses that can be ignored; they are clear statements about method.[44] The *Discourse* is his least important philosophic work, since it was written in the vernacular for the general public. It is important because it bridges the gap between methodological concerns of the *Rules* and ontological issues of the *Meditations*. Descartes titled it as *Discourse on the Method* and it is generally conceded that the method referred to in the title is that of the *Rules* in brief. He gives his brief summary of method in Part II: divide a difficulty into simples, use the 'simplest and most easily known' to demonstrate complex truths. (AT VI, 18-21; CSM I, 120-121) Then, in a letter to Mersenne, discussing the *Discourse*, he ties the method to the ontological issues of his later work. He says that he has included "a certain amount of metaphysics…to show that *my method extends to topics of all kinds*". (Letter to Mersenne, 27 February 1637 – AT I, 349; CSMK III, 53 – emphasis added) He does this in Part IV which is an abbreviated version of his argument in the *Meditations*.[45] Finally, in the dedicatory letter to the Faculty of Theology at the Sorbonne, Descartes says that several people urged him to write the *Meditations* because he had "developed a method for resolving certain difficulties in the sciences…and I therefore thought it my duty to make some attempt to apply it to the matter at hand." (AT VII, 3; CSM II, 4) That matter is the development of a sure and certain metaphysical foundation for his physics. This

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[44] Descartes is sometimes guilty of what we might call sloppy thinking. For example, in Meditation III he includes his existence (as long as he thinks) as subject to 'slight and metaphysical doubt' (because of the demon's deception). (AT VII, 36; CSM II, 25) This question is beyond the scope of my paper but I would just note that that particular issue cannot be subject to demonic deception since the *cogito* uses deception to show its impossibility in the case of its own existence.

[45] AT VI, 31-40; CSM I, 126-131

shows that in his own mind at least, the method used in the construction of a complete ontology, based on an unshakeable foundation is the same method developed for physics in the *Rules*. What is new then is a development of that method and the range of questions to which it is applied.

Descartes' text seems to support a continuity of method all the way through the *Meditations*. Why then, do most commentators either ignore the early work or dismiss it as not sufficient for the task of construction in his mature thought? Objections to the claim to continuity take two basic forms. First, the early and later works are devoted to different projects. The *Rules* is a document devoted to problem solving in the sciences: mathematics and physics. In the later work (*Discourse, Meditations, and Principles*) Descartes has a much larger goal: the creation of an entire system of certain knowledge, based on the integration of metaphysics and physics. Second, Descartes' recognition the destructive force of skepticism shortly after he stopped working on the *Rules*, led him to the rejection of intuition as a sufficient criterion for certainty. It is insufficient to counter skepticism's ability to call into question the most basic claims. Certainty, for Descartes, now requires that even the most basic intuitions of the early work need additional support. That support comes in the form of hyperbolic doubt, clear and distinct perceptions and God as guarantor of certainty. I will address both of these critiques in detail when I examine the critics, Curley and Cottingham, but it is important to keep them in mind when showing the connection between the methods of the *Rules* and *Meditations*.

After examining the relationship between the three novelties and the method of the *Rules* I will examine the question of skepticism in Curley and Cottingham's critiques. My focus will be primarily on Curley's analysis since it addresses the relationship with

skepticism most fully. I recognize that Descartes takes that issue much more seriously in his later work, especially the *Meditations* but it is not wholly absent in the *Rules*. He does not refer to skepticism directly but, does recognize it as an issue. In Rule II he writes that we must limit ourselves to, "only what is perfectly known and incapable of being doubted." (AT X, 362; CSM I, 10 – emphasis added) At the very least, it seems in the earlier work Descartes already sees that the dubitability of a claim gives us grounds for its rejection. Let us now look at the new elements of the *Meditations*.

Hyperbolic Doubt: Elimination of the Uncertain

The method of the *Rules* is a three stage process. In its most abstract sense it is (a) the analysis of a complex (in that work a complex mathematical or physical problem/question) into simpler elements, (b) the intuitive apprehension of those simples and (c) the reversal of the analytic steps in terms of the discovered simples. The method of the *Meditations* is to apply hyperbolic doubt to a complex belief system, rejecting any belief that is open to the slightest doubt. On the face of it, these two methods appear to have little in common.

The use of doubt is a major factor in Descartes' later thought. It is the guiding principle in the *Meditations* but it is not the result of a skeptical epiphany. It did not appear as a single recognition. While he began metaphysical speculation by 1628 he had already started down the skeptical route in the *Rules* by denying the certainty of our understanding of the complex world given by sensory experience. In Rule XII he makes the point that conditions like jaundice or depression can lead us to believe that our 'disordered images represent real things'; similar to the skeptic's claim about sounds and

the state of the hearer. (AT X, 423; CSM I, 47) The senses can be misleading and the images they provide may not be an accurate picture of the actual material objects.

In Rule II Descartes makes his most direct statement about the role of doubt in his early work. There he says that we should only accept beliefs that are 'incapable of being doubted.'[46] He does not talk about using doubt as a new method as he does in the *Meditations* but if we look at Rule VIII, we can see the role of doubt in the early work. This rule says that when we reach a point in our examination where we cannot clearly intuit something we abandon the process. This can only occur in the analytic stage of the early method since it rules out those things that cannot be intuited clearly while the second stage is just clear intuition and the third stage is based solely on those intuitions. In the *Rules* then dubitability clears away whatever we cannot be certain of leaving only that which is certain.

Descartes uses doubt in the *Meditations* to do the same thing. It is much more detailed and complex than the simple idea of discarding the dubitable but it is not different in kind from what he says in the *Rules*. The arguments follow the traditional skeptical questioning of our senses and our reason. His first attack involves our sense knowledge but goes farther than the traditional epistemological skepticism. He does argue that sense knowledge is uncertain (objects at a distance appear different than on closer inspection) and thus discards the senses as a source of certainty.[47] The Dream Argument, his next step, takes doubt to a new ontological level. He argues that we have

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[46] AT X, 362; CSM I, 10

[47] AT VII, 18; CSM II, 12

no sure criteria for distinguishing the dream state (where the objects exist only as content of consciousness) from the waking state (where they exist independently). This calls into question the independent existence of the world of ordinary sense experience thus using doubt to cast aside anything to do with the senses.

The dream argument eliminated the normal experienced objects of the material world. Descartes' next step is further confirmation of the similarity between the earlier and later works. He uses doubt to reduce a complex of physical properties to a few simple ones. Whether or not the material world exists independently of his thought, he still has ideas of these things. He analyzes his ideas of sensible objects – earth, air, hands, fire and so on – and reduces them to geometric extension.[48] "(E)yes, head, hands and so on – could be imaginary, it must at least be admitted that certain other even simpler and more universal things are real…this class appears to include corporeal nature, in general, and its extension."[49] The actual physical complexes, in whatever sense this phrase is understood, are composed just of the simpler and more universal nature of extension and its essential properties. This is the standard essentialist reduction of the *Rules*.

The final analytic step takes doubt to its most extreme level, with the introduction of the malicious demon. (AT VII, 21-23; CSM II, 14-15) Demon doubt is generally taken to reject mathematics, what Descartes describes in the *Rules* as those "disciplines…concerned with an object so pure and simple that they make no assumptions that experience might render uncertain." (Rule II – AT X, 365; CSM I, 12)

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[48] AT VII, 19-20; CSM II; 13-14 AT VII, 19-20; CSM II; 13-14

[49] Meditation I – AT VII, 20; CSM II, 13-14; Descartes performs this same kind of reductive analysis in the wax experiment of Meditation II with the same results (AT VII, 30-31; CSM II, 20-21)

The most interesting aspect of this application is the way in which it calls mathematics into question; it parallels the first two uses of doubt. There it was applied to the senses and the objects of sense; here it will be applied to reason and the objects of reason. The all-powerful but deceiving God might do two things: one epistemological and the other ontological.

The epistemological deception has to do with his ability to obtain certain knowledge using his limited capacities. Just as sense experience is seen to be faulty so Descartes may be led by the demon to "go wrong every time *I add* two and three or count the sides of a square." (AT VII, 21; CSM I, 14 – emphasis added) The deficiency is not presented, strictly speaking, as an uncertainty about the correctness of geometric and arithmetic systems but as weakness of his powers. Just as the concept of matter, in its purified form as extension is not called into question. What the demon can do is lead him to do mathematics wrong.

The ontological deception takes the dream argument a step farther. That argument eliminated the normal experienced objects of the material world. The evil demon argument eliminates extension itself. Descartes has led into the malicious demon argument by saying that the normal objects of sense experience might all be a function of his subjective experiencing. But, those simple objects that are the "real colours from which we form all the images of things" must exist to provide us with the material for constructing those images.[50] The simple objects are extension and its general properties:

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[50] Meditation I – AT VII, 20; CSM II, 14

shape, location, temporal endurance and quantity.[51] For example, one might have the idea (image) of a round traffic sign which does not actually exist outside of the mental act of imagining. Nevertheless, the idea has content and that content – a circle, certain colors and shapes – must exist in order to form the image. He then argues that the demon could have made it so that not even these things exist while deceiving him into believing that they do.[52]

Exactly what all of this means is not clear. What is extension in general as an object? Descartes cannot mean just the innate idea of extension since he has the idea as a content of consciousness. It would make no sense to say that God makes it so that the concept he is thinking, at the moment he is thinking it, does not exist. One plausible possibility is just homogenous space in which properties like shape are contained as ideal portions of that space.

Doubt in the *Meditations* then can be seen to do exactly what it is said to do in the *Rules*. It determines what must be discarded as uncertain in order to reach what is certain and this is one half of the analytic process. The overall structure of the analytic from the *Rules* then is present in the *Meditations*. In the *Rules*, analysis ends with the unquestioned simple natures; they are seen as indubitable. His recognition of the extent of skepticism led Descartes to refine doubt and extend it to the status and relationships of the simples themselves. In the larger project, the search for foundations, the final stage of the overall analysis is reached in the *cogito*. With the intuition of that one certain existent the synthetic stage begins.

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[51] The same properties that characterize matter in the *Rules* (AT X, 420-421; CSM I, 45)

[52] AT VII, 21; CSM II, 14

Clarity and Distinctness: Discovery of the Certain

Clarity and distinctness constitute the second novelty found in the *Meditations*; it is a criterion for truth. Descartes does not talk about clarity and distinctness until Meditation III where he says "So, I now seem able to lay it down as a general rule that whatever I perceive very clearly and distinctly is true." (AT VII, 35; CSM II, 24) He is referring back to what he arrived at in Meditation II: the *cogito* and the conceptual definitions of mind as a thinking thing and matter as 'something extended, flexible and changeable'. These are the sorts of things that he clearly and distinctly perceives.

Although he uses clarity and distinctness extensively in the *Meditations* he does not offer a definition of it until the *Principles* (1644). There he says, "I call a perception 'clear' when it is present and accessible to the attentive mind …I call a perception 'distinct' if, as well as being clear, it is so sharply separated from all other perceptions that it contains within itself only what is clear." (I, 45 – AT VIIIA, 22; CSM I, 207-208) The *Rules* uses similar language to describe intuition. In Rule III he explains it in terms of clarity and distinctness. There he uses the term 'conception' rather than 'perception' but otherwise intuitions follow the same pattern as the perceptions of his later thought. He refers to an intuition as the result of a 'clear and attentive' mind, which is so distinct that it cannot be doubted.[53] Both of these explanations gives the picture of grasping the 'essence' of the object, be it a nature or proposition, fully and including only that which is fully grasped.

[53] AT X, 368; CSM I, 14

An appeal to a sensible experience might help to clarify this notion. Consider a 'phantom limb'. Someone who has lost his lower left leg may still experience a sharp pain in his left ankle. The pain itself is a clear perception immediate and not open to doubt. But, its location in the ankle is not, since the person no longer has a left ankle. As a result, the sensible perception is clear but not distinct. If one limits oneself to the undifferentiated pain then the perception is both clear and distinct since it contains nothing that is not clear. Similarly, if we limit ourselves to those rational perceptions that contain only clear content it is safe to accept them.

If we look back we find there is little to distinguish clarity and distinctness from intuition in the *Rules*. We see first, that intuition applies to the same objects as does clarity and distinctness. The list of simple natures from Rule XII includes the concepts matter, mind and their properties. He also takes as certain intuitions his own existence in Rule III and God later in Rule XII.[54] As I noted above, in the later work he clearly and distinctly perceives the same things. There are concepts (natures) matter and mind: his existence and its nature as a thinking thing (Meditation II), the nature of matter as extension (Meditation II) and the nature and existence of God (Meditation III). The two works differ in that there is more elaboration and organization of these objects in the *Meditations*. In the *Rules* they are mentioned as intuitive certainties: we can intuit that we exist, that we think, that thought consists of knowledge, doubt and volition and that God exists. In the *Meditations* our thought and our existence are linked in the *cogito*. An entire meditation is devoted to the relationship between knowledge and volition in an

[54] God comes up when he talks about necessary connections between simples. He says that from his own existence he can conclude that God exists. (AT X, 422; CSM I, 46)

explanation of human error. God's existence and essence (perfection) are elaborated twice from two very different perspectives. One of them, the causal proof in Meditation III is a full development of Rule XII's 'I am, therefore God exists'. So, while the later treatments are much more involved, the basic notions are the same, reached in the *Rules* by intuition and in the *Meditations* by clear and distinct perceptions.

Descartes' explanation of these two cognitive acts is similar both in the *Rules* and in his later thought. He uses the same language to describe them in both his early and late writings. We have already seen his definition of clarity and distinctness from the *Principles*. In the *Rules* he defines intuition as "the indubitable conception of a clear and attentive mind" (AT X, 368; CSM I, 14) He then says in Rule XI, that mental intuition must be clear and distinct. This suggests a close connection between the two cognitive acts but using the term 'clear and distinct' to characterize intuition is not enough to show them to be the same act.

Descartes' use of the simile of sight clarifies the similarity between intuition and clear and distinct perceptions. He focuses on different aspects but uses the same model to explain both intuition and clear and distinct perceptions. He does this directly in the definition of clear and distinct perceptions in the *Principles*. There he says to have a clear intellectual perception is like visually seeing something clearly.[55] On the basic phenomenological level, to have a sharply outlined visual experience of a trunk with branches and leaves is to see a tree. There may not, in fact, be a tree there but that is beside the point. I see what I see; it is immediate and incontrovertible. Descartes makes

[55] I, 45 – AT VIIIA, 22; CSM I, 207

the same kind of connection in the *Rules*. He introduces intuition in Rule III and uses it extensively throughout the following rules. In Rule IX he says that it is best understood "by comparing it with ordinary vision". (AT X, 401; CSM I, 33) When looking at something, to guarantee that we see it clearly we must focus on it rather than merely glancing at many objects at a time. Consider the tree; we will not see it clearly if we let our vision be taken up with the rest of the forest. We must focus on that tree. In the same way, our cognitive act of intuition must be focused on a simple matter rather than a great number of objects at once. In both cases the act is like a clear focused visual experience.

This similarity reinforces the primary sense of simplicity: epistemological. It is not irreducibility that matters to Descartes but the immediate grasping of content. From the point of view of the object rather than the subject this plays out as self-evidence. To intuit a nature or proposition I need nothing but to have the nature or proposition before my conscious mind. It may or may not be a simple that cannot be further analyzed; that does not matter. It is simple in the sense that I apprehend its certainty without having to appeal to any other data nor do I need to reduce it to simpler notions. In Rule III Descartes says this himself; "the self-evidence and certainty of intuition is required…for apprehending single propositions." (AT X, 369; CSM I, 14) He says as much about clarity and distinctness in correspondence about the *Meditations*; clearly and distinctly understood axioms are 'self-evident'.[56] For example, all I need is the perception of myself as thinking to clearly and distinctly perceive that I must exist. Self-evidence is the

[56] Letter to Regius, 24 May 1640 – AT III, 64, CSMK III, 147

essential character of both the early and later ideas. Immediacy of the intuition/perception makes our knowledge *scientia*; degrees of logical simplicity merely provide the structure.

All of this points to the conclusion that the clarity and distinctness criterion is just an elaboration of intuition. As I said at the outset, this issue is not the major difference between Descartes' early and later thought on method; that is hyperbolic doubt. But, it develops from the same source. Skepticism means that the new problems that are taken up in the later work have to do not with the structure of our basic cognitive act (intuition) but with what we can safely intuit and what provides that safety (clarity and distinctness).

Neither of these novelties from the *Meditations* is seen to be wholly new. The skepticism that led to them did not result in a fundamental change in the doctrine of the *Rules*, just a development of it. This leaves only God and his role in guaranteeing certainty to be examined. That role is the most substantially new theme in mature Cartesian thought.

<u>God as Transition from Ideas to Things</u>

God's active role is an addition to the later system. That system is grounded in doubt and the clarity and distinctness criterion, which, themselves are much more active in the *Meditations*. God's role in the *Meditations* is a major one. On the notion of God (omnipotent and omniscient but not necessarily all-good) the door is opened to the possibility of an even stronger skepticism, thus the introduction of the evil genius. If he is omnipotent, then he could actually deceive me about those things that I perceive clearly and distinctly. From this we arrive at the one simple that is not subject to even this most powerful doubt: the *cogito*. At the *cogito* we have only the thinking self and the

content of that thought. Now we come to what I think is the fundamental role of God in the *Meditations*. There is no guarantee of any knowledge, or for that matter any existence, outside of the self. The only way Descartes can get out of his own mind is show that there is an omnipotent being who does not deceive. Using himself as an imperfect existent, and certain content of his thought (concept of God as a perfect being and the formal-objective reality distinction) he gives the proofs of Meditation III. He now has a perfect, non-deceiving God who will, in Meditation VI, bridge the gap between his ideas and the external world. These proofs of God's existence and goodness solve this problem to Descartes' satisfaction if not, as history shows, to anyone else's.

One of the reasons this is found unsatisfactory is that God is also taken to be the guarantor of clarity and distinctness as a criterion of truth which leads to the Cartesian circle – the idea that we cannot prove anything, including the existence of God without knowing that our clear and distinct perceptions yield certainty while Descartes uses his clear and distinct idea of himself and God to construct that proof. I will not attempt to argue against the accusation of circularity but will just note that neither his own existence as a mental essence nor the essence of body is ever questioned by hyperbolic doubt. The first, his existence as a thinking thing with certain ideas as impervious to doubt, is especially important because both of his causal proofs are based on this. However, none of this affects God's role as guarantor of the external material world.

As I have said both doubt and clarity and distinctness are present in the *Rules*, God's role as guarantor of certainty and existence has no counterpart there. He is not, however, absent from that work. In Rule XII Descartes briefly notes that God's existence

is certain given his own existence.[57] This is a bare statement of the second proof in Meditation III that proceeds from Descartes' own imperfect existence, a variation on the traditional causal proofs.[58] As such, it suggests that he recognizes the role of God in the full scheme of things from the beginning. If Descartes' existence as imperfect requires something perfect as its source, then that source would be equally necessary to all changing, imperfect things. It is not too much of a stretch to go from God as the ground of all being to him as the ground of truth and certainty.

He says nothing more about God in the early work since in 1629 he has not yet realized the need to extend doubt to the foundations. He is writing about science and the material simple natures are all that are needed to ground it in the anti-scholastic, mechanistic form of the seventeenth century. His one excursion into metaphysics in the *Rules* takes him only as far as the knowing self. As the investigator of the material world, this is the only relevant non-material thing. God's relationship to the rest of existence is not worked out in the early work because there it does not need to be.

4) Curley: The method of the *Rules* is not adequate for the *Meditations*
Skepticism, Hyperbolic Doubt and Clarity & Distinctness

Curley compares the two methods in *Descartes Against the Skeptics*. He sees Descartes' later thought as having a different goal than the *Rules*. This is the basis for his dismissal of the early method. As the title suggests, skepticism is the core of Curley's reading of Descartes. The *Rules* was aimed at criticizing scholastic thought and replacing it with a method of mathematical certainty. (a) Curley's basic claim is that the power of

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[57] AT X, 422; CSM I, 46

[58] AT VII, 48-51; CSM II, 33-35

skepticism led Descartes to see that even mathematics was subject to doubt. So, the philosophy of the *Discourse* and the *Meditations* was directed at discovering first principles that would guarantee the simple natures against the most extreme skepticism. This leads to Curley's two main claims; (b) the method of doubt replaces the earlier method and (c) the later work introduces a criterion of truth (clear and distinct perceptions) that is not present in the *Rules*.

a) Skepticism & Intuition – Curley first sees skepticism's influence on Descartes in the *Discourse*. He argues that sometime between 1629 and the publication of the *Discourse* (1637) Descartes realized that the method and simple natures of the *Rules* were not adequate. Curley bases this assessment on the fact that intuition of simple natures is no longer appealed to but in the *Discourse* even those simples (mathematical natures) are subject to doubt. The result is the new method of exaggerated doubt to evaluate even the most basic intuitions. He does not pinpoint when this realization occurred but says that Descartes says two things in his letter to Mersenne of 15 April 1630. First, metaphysical knowledge (of himself and God) gives the foundation of physics. Second, these metaphysical truths are more certain than mathematical ones.[59] Curley takes these two points to show that Descartes believes physics and mathematics are open to doubt and need support to guarantee their certainty. The metaphysical principles (knowledge of God and the self) must be certain, if they are to support physics. Curley says the principles must be subject to doubt in order to find those that are immune from it;

[59] AT I, 144; CSMK III, 22

skepticism led Descartes to distance his later thought from the *Rules*. In the early work the simple natures are not doubted; intuition is sufficient for certainty.

b) Hyperbolic Doubt – Since skepticism can cast doubt on the most basic intuitions, Curley says that Descartes realized that they must be justified. Extreme or hyperbolic doubt is the vehicle Descartes uses to prove these fundamental truths. "The key feature of Descartes' mature method is its attempt to justify first principles by turning the skeptic's own weapons against him and showing that some propositions are immune to any reasonable doubt." (Curley, ix) Curley says the one thing Descartes finds 'immune to any reasonable doubt' is a metaphysical truth; the existence of the thinking self. Subjecting the self to hyperbolic doubt leads to the *cogito*. The *ego* cannot be doubted because the act of doubting its existence shows that it must exist. Hyperbolic doubt is not present in the early work because at that point Descartes does not realize that the simple natures are vulnerable to skepticism.

Curley acknowledges that doubt is not completely absent from the *Rules*. He refers to Descartes' admonition in Rule II to, "reject all such merely probable cognition and resolve to believe only what is perfectly known and incapable of being doubted." (AT X, 362; CSM I, 10 – emphasis added) Curley says this is not the method of doubt that we find in the later work. According to him, this single mention of doubt is directed toward a negative problem. Skepticism is adept at showing insufficiency of reasons for most beliefs. So, we should not waste our time investigating issues we are 'incapable of solving'; stick to the areas where we can be certain. Curley understands the *Meditations* as engaged in a more fundamental project. Descartes' later work is not aimed at eliminating what we cannot know but to determine what we can know.

c) Clarity & Distinctness – This is the second major element that Curley says is only present in Descartes' later thought. Since immunity from doubt is the goal of the *Meditations*, Curley argues that requires a criterion of truth – clarity and distinctness. No such requirement is present or needed in the *Rules* since certain truth there is reached primarily through intuition.[60] Curley says clear and distinct perceptions are those which we can know with certainty as true. In the *Meditations* this is the foundation of Descartes' theory of truth.[61] Clarity and distinctness then, identifies the principles we can confidently judge to be true. According to Curley, this makes Descartes' theory of truth dependent on the theory of judgment he develops in Meditation IV: an act of will exercised or withheld depending on the clarity and distinctness of our perception. He says that in the *Rules* Descartes has yet to develop his theory of judgment as an act of will. So, the theory of truth is tied to the theory of judgment. Without a theory of judgment in the *Rules*, a theory of truth (clarity and distinctness in the *Meditations*) is also absent. (Curley, 44-45)

a) Some of what I have to say about Curley is treated in more detail in the next chapter but a brief statement of it will throw light on the inadequacy of is criticisms. His entire treatment of Descartes revolves around the role of skeptical doubt in his work. Curley is right that Descartes' recognition of skepticism led him to emphasize doubt in his later work. The problem with his position lies in what he says about the *Rules*. There are two things to consider in his view. His view of the content of that work is too restricted. First, Descartes does concentrate on replacing the scholastic ontology with a

[60] Rule IV – AT X, 372; CSM I, 16

[61] Meditation III – AT VII, 35; CSM II, 24

mathematically structured physics and so mathematics is at the foundation of his physics. But, *contra* Curley, Descartes does not question all of mathematics: just our reasoning about it.[62] Nowhere in the *Meditations* does he say that the system of geometry, for instance, is possibly wrong. He only says that "I (may) go wrong every time I … count the sides of a square." (AT VII, 21; CSM II, 14 – emphasis added) What this means is not clear but it does fit with one of the two arms of the skeptic's position: our reasoning ability. It may be that he can accept the basic postulates but question our ability to draw consequences from them given the evil demon. This idea has some support from the second limitation of Curley's views on the *Rules*.

While the emphasis of the *Rules* is on the mathematizing of matter Descartes gives two general, basic simple natures in Rule XII. There is mind with its properties of knowledge, doubt, ignorance and volition and matter whose properties are shape, extension and motion.[63] The second of these – matter – is the basis of his mathematical interpretation. Nonetheless, it is given in this general form alongside the nature of mind. And, it is, in this general form, carried directly to the *Meditations* along with the nature of mind. One only has to look at the wax experiment in Meditation II to see that he holds the material simple nature without ever applying doubt to it. The piece of wax, as known by the mind alone, is an extended, flexible and changeable body. What was called into

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[62] Curley, p. 42

[63] AT X, 419; CSM I, 44-45

question in Meditation I was not the essence of matter but the existence of a material world that corresponds to our idea of matter.[64]

In the same way the essence of mind is simply asserted in Meditation II. After the *cogito* that proves his existence, Descartes goes on to define the *ego* as a thinking thing; one that doubts, understands, affirms, wills, imagines and has sense perceptions.[65] He has reached the existence of the mind by playing as the supreme skeptic. He gets to its essence by simple unquestioned introspection. He examines what he has been doing to each this point and ascribes those functions to his *ego* as a pure thinking thing. So, while mathematics may be subject to doubt, the two most important intuited simple natures are carried over unskeptically into the *Meditations* as well.

b) The importance of skepticism makes doubt one of the key notions in Descartes' mature philosophy and in this Curley sees a new method. The method of doubt in Meditation I sets the stage for the development of that mature philosophy. Doubt, however, is not absent from the *Rules* and, as we have seen, Curley recognizes this. He says that it does not operate in the same way in the earlier and late texts. In Rule VIII the use of doubt just directs us to avoid useless speculation about insoluble problems. In the *Meditations* its purpose is to discover what we can know. First we can ask how we determine a problem's insolubility in the *Rules*. Descartes' answer is that we examine the problem and attempt to reduce it to one or more simple propositions, i.e. propositions

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[64] see Meditation I – AT VII, 18; CSM II, 17 and Meditation II – AT VII, 24; CSM II, 16

[65] AT VII, 28; CSM II, 19

that are intuitively known without doubt to be true.[66] If we cannot do this, i.e. reach principles that are not open to doubt, then the problem itself is abandoned. If we do reach indubitable simple natures, then we can solve the problem. So, we may be weeding out those problems that are insoluble but we also find those for which there is a solution.

When we look at the *Meditations* we see the same sort of things being done. In the *Rules* doubt is applied to a complex physical problem or question which is reduced to one or more simple natures. If it cannot, then the problem is discarded as unanswerable. In the *Meditations* it is applied to Descartes' whole set of beliefs about the physical world. All those beliefs which are doubtful are discarded until we reach an indubitable simple nature. Admittedly, the *cogito* is not physical but it is a simple truth from which Descartes believes he can re-build the physical world. If he had not reached this simple he would have had to discard the material world as uncertain. This reduction process is directed to the two aspects of skepticism. Skepticism calls two things into doubt. One is our abilities to know and the other is the subsequent problem of getting to reality behind the appearance. Descartes first questions our sense experience as a source of certain knowledge. The discrepancies in sense experience leads him to doubt its veracity so, it is the first to be discarded. He then treats the second skeptical question in a unique way. He does not use the uncertainty of sense experience to argue that, because of it, we cannot know if the world is as we experience it. Instead, he uses the dream argument to call into question the existence of a reality independent of our experiences (appearance). An actual world is now discarded. He does the same thing with our mathematical

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[66] "Intuition is the <u>indubitable conception</u> of a clear and attentive mind." (AT X, 368; CSM I, 14 – emphasis added)

reasoning and the ideal world of Euclidian space when he introduces the evil genius. Because of its assumed power the evil genius can mislead us into thinking that our mathematical reasoning is correct when it is not. The genius also deludes us into thinking that the ideal space exists when it does not. With these arguments Descartes disposes of any certainties about a material world. It appears that the entire pre-philosophical world must be discarded.

The principle of Rule VIII has been successfully employed but Descartes is not finished. In the beginning of Meditation II he makes one last analysis using the tool of doubt. In this case it is not directed to the content of our thought but to the procedure of doubting itself; the evil genius's delusion of the doubting agent. He argues that he must exist in order to doubt; the uncertainty stops when he reaches the one unshakeable point, the existence of the *ego*. From this he has the foundation to reconstruct the world of our pre-philosophic beliefs.

Doubting and rejection of the dubitable is a more complicated procedure in the *Meditations* than it was in the *Rules* but it does not mark a wholesale change. We have seen that doubt was present in the early work leading to both the rejection and acceptance of basic certainties. It plays a more active role in the *Meditations* because it examines the whole range of beliefs about the structure of the world rather than one question at a time. With doubt as a continuous thread throughout all of Descartes' work, we can now consider the connection between the two ways to achieve certainty: intuition in the *Rules* and clear and distinct perceptions in the *Meditations*.

c) We have seen that doubt, the tool of skepticism, is found in both works. Its scope is widened but its role not changed in the mature work. Doubt divides the certain

from the uncertain. By weeding out the questionable, skeptical doubt sets the stage for indubitable certainty. Certainty is the last thing Curley talks about when comparing the earlier and later methods. He says, in the later work clear and distinct perceptions are certainties, those that can be rightly judged as true. The theory of truth rests on them. There is, he says, no theory of judgment in the *Rules*; it depends on straightforward intuition. As we have seen, without the theory of judgment, there is no need for a criterion of truth. He is right that there is not an explicit theory of judgment in the early work; it is, however, implied there. We intuit the truth of elementary propositions as well as the natures they are about. Let us return to geometry to make this clear; we intuit both concepts like point and line and the postulates that describe their basic relationships. To intuit the concept of point is to see clearly what a point is. To intuit "the shortest distance between two points is a straight line" is to see its meaning and judge its veracity. Considering intuition's relation to simple propositions, it seems strange then to suggest that it is not a criterion of truth. In the *Rules* the simple natures that are intuitively known "are all self-evident and never contain any falsity." (AT X, 420; CSM I, 45) It is their intuitive self-evidence that guarantees their truth.

There is then both a theory of truth and of judgment in the *Rules* and the *Meditations*. Does the extensive use of skeptical doubt make a difference in these theories? Intuition and clear and distinct perceptions are not significantly different. They are both applied to the same simple natures. In Meditation III Descartes says that everything he so far knows or is certain of lies in having a clear and distinct perception of what he asserted. Looking back to Meditation II he has asserted three things: his existence as a thinking thing, the nature of mind and the nature of matter. In the *Rules*

these are the three most important simples he intuits. Rule III gives his existence and his thought while Rule XII gives the other two. So the two bases of certainty focus on the same objects, so the difference must lie in the cognitive acts themselves. For there to be a real difference, clarity and distinctness must bring something to the table that intuition lacks. If we look at them carefully this does not seem to be the case.

Once again, there is not any real difference between the two. As I pointed out above, Descartes talks about intuitions and clarity and distinctness in the same language. In the *Principles* he explains clarity and distinctness as perceptions that are directly present to the perceiver and not clouded by anything that is not directly present.[67] Intuition in the *Rules* is described in much the same way; intuitions are clearly present to an 'attentive mind' and are so distinct that they cannot be doubted.[68] The similarity of both is strengthened when he describes them as a kind of immediate insight comparable to direct vision.[69] Just as an object in normal vision is seen directly and unqualifiedly as that object so too is an intuition or clear and distinct perception 'seen' to be what it is. As long as one does not make unjustified claims (judgments) about it one is justified in accepting it as given. If I see a tree, I see a tree. If I intuit a triangle or have a clear and distinct perception of a triangle, I know a triangle. Curley's claim that clear and distinct perceptions are new criteria of truth then does not hold. Not only are their objects the same but the acts themselves are shown by Descartes to be the same: a direct cognitive grasp of the essence of a nature or the truth of a proposition.

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[67] AT VIIIA, 22; CSM I, 207-208

[68] AT X, 368; CSM I, 14

[69] *Rules* – AT X, 401; CSM I, 33 and *Principles* – AT VIIIA, 22; CSM I, 207

Curley's criticisms do not cast any real doubt on the connection between the *Rules* and *Meditations*. We see that the methodological novelties in Descartes' new method are not, in fact new. Doubt as a way of reaching certainty, and clarity and distinctness as a criterion of certainty are all present in seminal form in the *Rules*. Although the *Meditations* introduces new terminology and seemingly new ideas its principles are grounded in the early work. These principles expand and refine the doctrines already present in the *Rules*. It is the broader purpose of the later writings that require the development and extension of the principles of the *Rules*. That work sought to replace the science of the schools with a new mathematics based physics, yielding a new ontology (simple natures) and method to accommodate that ontology. Descartes' heightened awareness of skepticism's destructive force required a new perspective in the *Meditations* but it is an expanded scope for the method not a wholesale replacement of it. The method employed in system building is the same one used for solving problems in the new science.

CHAPTER IV

THE SIMPLE NATURES IN THE *MEDITATIONS*

This chapter will examine the presence of the simple natures in the *Meditations*. In the previous chapter I gave a brief summary of the *Meditations* and then argued that, although the later work has a different goal than the *Rules*, the methodological novelties in it were not different from the method of the earlier work, just developments of it. In a similar way, the simple natures that are the linchpin of the early method are carried over into the *Meditations*, where they are arranged in a unique order of dependence. The early ontology is made up of two substances: matter (extension) and mind (thought); these are the core simple natures.[70] Connected to them are the propositions that express facts about those substances and are derived directly from them. This is the same ontology that he begins and ends with in the *Meditations*. This chapter has two main sections; the first dealing with their presence, the second with their order.

The first will identify the simple natures of the *Rules* as present in the *Meditations*. If we look at Rule XII, Descartes there gives the two substances – mind and matter – as the full complement of simple natures; that is, all existence is to be explained in terms of one or the other of them. I will argue that in the *Meditations* and *Principles* he does just that. Hartland-Swann, the main critic of this thesis argues that the ontology of Descartes' later work, consisting solely of the two substances, is too complex to accommodate the simple natures of the *Rules*. He says this because he understands the simple natures of the *Rules* as universals either abstracted from experience or innate

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[70] Classifying God, the third major player in Descartes' mature thought, as a special mind.

ideas. (Hartland-Swann, 143) I will argue that these two complex substances are already present in the early work and that the relationship between them and the universal properties is the same in both the *Rules* and the *Meditations*.

In the second section I will examine what is new in the *Meditations*. Just as the method of the *Rules* underwent expansion and development so too do the simple natures. In the later work Descartes orders the simple natures in the construction of a full ontology that ultimately guarantees there is a physical world matching our ideas of it. In Rule XII of the early work, the simple natures, material and mental, are listed side by side. Skepticism led Descartes to the view that the mental or metaphysical natures are more fundamental and the material ones rest on them. The *Meditations* is written in response to the problems of skepticism. In the previous chapter I argued that the method of the *Meditations* was the method of the *Rules* augmented by hyperbolic doubt in the analytic step. Here I will argue that the method is applied to a different kind of question than those of the *Rules*. In that early work the questions were ones of clarifying essences by analytic simplification in order to discover facts about the world. The simple natures there were concepts that we intuitively understand and were used to explain complicated relationships. The problems to which Descartes applied the method were ones of physical science.

In the *Meditations* the two essences of Rule XII (mind as thought and matter as extension) are never taken to be doubtful.[71] Descartes uses the method of doubt to probe a deeper and potentially more troublesome issue. Does the material world actually exist

[71] Meditation I is all about doubting the existence of the material world and in Meditation II the mind as a thinking thing is simply stated as an introspective experience while matter, in the wax experiment, is described as extension.

independent of our ideas? His answer is that it does but we can only be certain of that if we are first certain that the metaphysical world (the *ego* and God) exist. The material natures rest on the intellectual ones but not in an ontological sense; the existence of the material is not dependent on the existence of the mental. The dependency is an epistemological one. Our certainty that the material world exists is dependent on our certainty that the mental world does.

We have seen that the structure of the *Meditations* follows the general pattern of the method of the *Rules*. Descartes begins the *Meditations* with belief in a complex world of material objects, God and self. In Meditation I he analyzes this complex world by first applying hyperbolic doubt to the accuracy of the senses and then to the actual existence of a material world. The original good and all powerful God is also found doubtful and so Descartes is left with the feeling that he has "fallen unexpectedly into a deep whirlpool which tumbles (him) around so that (he) can neither stand on the bottom nor swim up to the top." (AT VII, 24; CSM II, 16) Meditation II establishes the one certain metaphysical nature: his own existence as a thinking substance. From this the rest of the *Meditations* (III through VI) reconstructs the entire pre-philosophic world that doubt made uncertain.

It is strange to call the existence of the self a simple nature but if we go back to the original criterion, a simple nature is anything that we can know by intuition. This led Descartes to use the same language in talking about concepts (the true simple natures), basic propositions about them and even, in Rule III, the existence of the self. Applying intuition and simple nature to an existential claim is an example of the interrelationship of epistemology and ontology in Descartes' thought. We will see the complex relationship

between the ontological and epistemological more clearly in the last section of this chapter.

1) The Presence of the Simple Natures in the *Meditations*

The term 'simple natures' does not appear in the *Meditations*. In fact, Descartes only uses it once in his writing after the *Rules*. The *Conversation with Burman* makes a passing reference to them in discussing God's absolute omnipotence. "His will is the cause…of what is possible and of the simple natures." (*CwB*, 33) But, the simple natures that constitute reality are still present. Comparing the second half of Rule XII with Meditation II it seems clear that the basic ontological structure presented in both is the same. We have the intellect recognizing its properties 'knowledge', 'doubt' and 'volition' plus body and its properties 'shape', 'extension', 'motion' in the *Rules*.[72] The *Meditations* first gives us mind that 'thinks', 'doubts' and is 'willing'.[73] Then, the wax experiment defines body as 'extended' and 'changeable'.[74] There is more in the texts; 'existence' is a basic concept in both and, as I noted in the last chapter, they both see God as the ontological foundation for the existence of the *ego*. It seems that the same ontology informs all of Descartes' thought. In spite of the continuity of ontological elements in the two works, Hartland-Swann believes that the simple natures are abandoned in Descartes' mature ontology.

Hartland-Swann: Natures of the *Rules* are too Simple for the *Meditations*

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[72] Rule XII – AT X, 419; CSM II, 44-45

[73] Meditation II – AT VII, 27; CSM I8

[74] AT VII, 31; CSM II, 20

Hartland-Swann's argument rests on the ontological status of the natures in the *Rules* and the substance-mode model in the *Meditations*. That is to say, what are the simplest things the real world can be reduced to? This is the ontological simplicity of Chapter II, the simplest things that actually exist as opposed to the simplest things that can be conceived. In the *Rules* the natures provide an ontological scheme for understanding the material world in terms that support the new mechanical science. Hartland-Swann reads Descartes in the *Rules* as a realist so he sees the simple natures listed in Rule XII as real entities. The ontological consequence of this gives a world of irreducible simples like "figure, extension, motion, existence, unity, duration, etc." (Hartland-Swann, 143) In the ontology of the *Meditations* and *Principles*, on the other hand, there are only three real existents, all of them complex substances: matter, finite minds and God. The strength of the argument rests on reading the early work as "an entification of simple natures in an extra-mental world". (Hartland-Swann, 142) This notion of entification gives Hartland-Swann two reasons to reject the simple natures as elements in the 'complex' ontology of the *Meditations*. The first reads the simple natures of Rule XII as irreducible atomic elements. The second grows out of selected simple natures in the early work that appear to be universals. Since he takes Descartes to be a realist in both stages of his thought, entification appears to make Descartes a Platonist in the *Rules*. The universal properties, extension, motion and so on, are taken to be full realities in the world. For Hartland-Swann, neither of these supports the ontology of the *Meditations*.

His <u>first argument</u> is based on the two notions of ontological and logical simplicity, claiming that the simple natures are too simple to fit the system of the later

work; it takes the following form. The ontology of the *Meditations* has only three components and they are all substances: finite minds, God and matter. Simple natures in the *Rules* are primarily tools for scientific study. To serve this purpose they are atomically simple, that is basic components of matter that cannot be broken down into simpler parts. He cites natures like extension, shape and unity as examples. Hartland-Swann sees them as atomic because they are properties rather than substances which cannot be reduced to anything simpler. But the ontology of the *Mediations* is not the same as that implied by the simple natures of the *Rules*. This new ontology – finite minds, matter and God – is one of "*essences* that, complex as they might appear to us to-day, must themselves be irreducible." (Hartland-Swann, 151) According to him, these components are too complex to be understood in terms of the atomically simple natures of the early work. Because of skepticism, Descartes' focus has shifted to the problem of the correspondence of our ideas with the world they represent. For this he needs the complex essences that describe the actual world of the three substances. Extension, shape, doubt, duration and the like, then have no ontological status in the later thought. Those natures are, at best, reduced to innate ideas of the *Meditations* and *Principles*. Even this move will not let them 'fit unambiguously' into the order of those works because they are still too simple to satisfy that order. Descartes' arguments in the later work rely on the complex natures. For instance, the argument for the existence of an extra-mental material world in Meditation VI uses the natures of God (his veracity) and the self (involuntary sense perception). There is no appeal to the various simples of the *Rules*. (Hartland-Swann, 149)

His second argument also rests on the question of ontological simplicity but not on a contrast with logical simplicity; it refers to a different aspect of the simple natures. The natures of the *Rules* are different in type from the natures as they appear in the *Meditations*. His argument runs like this. The simples of the early work, whether material, intellectual or common natures, are general properties or universals, e.g. figure, extension, thought, unity and duration, all of which are properties rather than substances. Turning to the *Meditations*, the basic ontological entities are, as we have seen, three substances plus their modes: God, minds and matter. In other words, Descartes' official ontology consists only in individual entities that are ontologically irreducible. These are the only things that actually exist. So, the simple natures of the *Rules* cannot be the basis of the later ontology since they are not individuals but universals. (Hartland-Swann, 143-144) He continues his argument by saying earlier natures are the properties of the individual substances or modes of them as Descartes says later in the *Principles*.[75] That does not confer any reality to them since they are totally dependent on the substances that they modify. (Hartland-Swann, 152) Modes, in their broadest sense, are just the ways in which individual substances exist. There is no such thing as an unmodified substance. But a substance can exist without a specific mode. A mind, for instance, can exist without the modification of extension but no mode can exist without a substance to inhere in. To put it simply, there is no such thing as thought in itself; there are only thinking substances. So, the natures of the *Rules* have no place in Descartes' later thought and

[75]I, 56 – AT VIIIA, 26; CSM I, 211-212

"there is quite a lot to be said for giving the simple natures a wide berth." (Hartland-Swann, 152)

The Natures of the *Rules* are Present in the *Meditations*

Two things call Hartland-Swann's arguments into question. The first is what Descartes says about simple natures in Rule XII. He not only gives a complete catalogue of them but presents them in substance-property form. That rule sets up the two main sets of properties: the intellectual, thought and doubt for example, and the material, extension, shape and the like. That these are properties of substances is clear when Descartes talks about the common natures like existence, unity and duration. "Lastly, these simples are to be termed 'common' which are ascribed indifferently, now to corporal things, now to spirits." (AT X, 419; CSM I, 45 – emphasis added) Second, Hartland-Swann makes much of the sense of ontological simplicity, but he does not take into account the more important sense in the *Rules*: epistemological simplicity. It is this, their ability to be known by a single act of intuition that makes them useful in understanding the structure of the material world. This simplicity allows Descartes to present various levels of logical or conceptual simplicity as candidates for the epistemological.

Let us begin with the basis on which Hartland-Swann formulates his argument: different ontologies. He understands the natures of the early work as absolutely simple universals or essences. These are perceived as the basic elements of the early ontology. Sometime after 1628 Descartes established his ontology of individual complex substances. Since these are the basic ontological elements of the *Meditations* they replace the natures of the *Rules* as ultimate realities.

The first thing we should note in assessing Hartland-Swann's critique is the structure of the ontology of the *Rules*. Rule XII gives the simple natures in substantive form: minds with their properties and bodies with theirs. Descartes does not use the term here and, in fact, 'substance' does not appear in the *Rules* at all. But, as we saw above, he talks about simple natures as properties of bodies and spirits. He also speaks of material properties as those we find in bodies, implying bodies as substances holding qualities.[76] God would enter the picture as a special mind even though Descartes does not, at this point, so characterize him. We can also find him mentioned once in the same rule as the conclusion of a simple insight; 'I am, therefore God exists.' (AT X, 421; CSM I, 46) Disregarding the propositional natures, which follow from and are dependent on the conceptual-substantive natures, the whole ontology of the *Meditations* is found in three pages of the *Rules*.

We have then, the same ontology in both the *Rules* and the *Meditations* but Hartland-Swann has another reason to reject the simple natures of the *Rules*. He sees those natures (e.g. figure, extension, and motion) as fully existing entities. In the *Meditations* the only things that actually exist are individual substances (minds and body). This is a misunderstanding of Descartes' position in the *Rules*. In Rule XII Descartes says that in reality, i.e. the way things actually exist, body, a substance, is 'one single and simple entity'. Its constituents, extension and shape, do not exist independently but only as components of the composite whole, what Descartes later calls modes of the substance. They are, however, perceived as distinct by the understanding.

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[76] AT X, 419; CSM I, 44-45

(AT X, 418; CSM I, 44) For example, being extended, i.e. taking up space is different from being shaped, i.e. having a specific limit to the extension. Neither the general notions of extension and shape nor any property natures have independent reality and nowhere does Descartes suggest that they do; only the substances do. In the early work properties are presented as depending on the substance of which they are a property and similarly, they are explained as modes of a substance in Descartes' later thought. Their reality lies in their being real distinguishable elements in the substance, not in having independent existence. The simplest thing in the ontological sense is the same in the *Rules* as in the *Meditations*.

In the *Rules* the ontological import of the simple natures follows from Descartes' realistic perspective. At that point in his development innate ideas are just a possible suggestion.[77] The world the natures portray is the real physical world. Descartes has a picture of the material world as particles in motion in Euclidian space; extension as the essence of matter. The gap between our ideas and the external world will not take the stage until he recognizes the severity of skepticism. The skeptic calls into question the existence of a material world with its properties. So, when Descartes deals with skepticism, he is not calling into question the essence of matter as he perceives it. His idea of matter is extension in Euclidian space. What he does question instead is how adequately does it represent reality; is there a mind-independent material world that matches his ideas? The simple material natures then, are not certain. They can no longer play the foundational role that they did in the method of the *Rules* since their extra-

[77] See Rule IV where he says the human mind has within it 'the first seeds of useful ways of thinking.' (AT X, 373, CSM I, 17)

mental existence is not certain. Something additional is required, a perfect creating God. But this goes beyond the physical into the metaphysical. A re-examination of all the simple natures is called for but this will only come later in the *Discourse* and beyond.

As we have seen, Hartland-Swann' second argument rests on the apparent difference in kind between the basic elements of reality in the *Rules* and in the *Meditations*. He says the early work reduces reality to universal properties like thought, doubt, extension and shape and the mature work limits reality to the three substances of minds, body and God. As real existing substances they are still the bottom line; the simplest things that actually exist. Universal properties like duration, order and number "in no way differ from things that endure, are ordered or numbered, i.e. do not represent separate entities." (Hartland-Swann, 145) This is the classic question of the existence of universals.

When we look to Descartes' history his position on the reality and interrelationship of properties and substances emerges. As I argued in Chapter II, his Scotistic treatment of the simple natures places Descartes in line with moderate realism. He was educated in a Jesuit school and the Jesuits of the 17th century were still committed to scholastic philosophy. Their position on the relationship between substances and the universal properties that define them was that the individual substance is the only existent in the natural world. It is composed of form and matter. In the particular the form is individual. A horse is *this* horse. That essence did not exist independent of the individuals. The individual horses alone were considered real. Abstracting the form from the matter meant an intellectual 'separating' of it from the

individuating matter. Thus, in the understanding but only in the understanding is the form fully universal.

Descartes' treatment of properties like extension and thought (universals) and the substances that hold them is similar to this scholastic view throughout his writing. At the beginning of his career he says in Rule VI that the universal, "depends upon particulars for its existence." (AT X, 382; CSM I, 22) In *Principles*, I, 58 16 years later, it remains the same; "number (and all universals), when it is considered simply in the abstract or in general, and not in any created things, is merely a mode of thinking." (AT VIIIA, 27; CSM I, 212) The relationship between simple natures as objects of knowledge and as ontological constituents remains the same. The actual extra-mental existence of the universal is only as an instantiated example of it in each individually existing substance; what Descartes, in his later works, calls a mode of the substance. Its universality consists of it being instantiated in a number of individuals and more directly, in the mind's capacity to abstract and understand the general idea, as general. Throughout his career Descartes' treatment of the simple natures is a legacy of his scholastic predecessors.

. The implied realism of the *Rules* supports this claim in 1628; the distinct natures we perceive are distinct in things. By abstraction as explained in Rule XII, we can clearly perceive a simple nature like shape that is a component of an existing substance. So, it can be understood as properly constitutive of the substance and so, does have some reality but only as a formal element in the substance not an independent existent. As late as 1646 Descartes still holds this view. In a letter of that year to an anonymous correspondent, he talks about distinguishing modes of a substance like shape and motion (body) or, affirmation and doubt (mind). He says about them, that he recognizes only

distinctions *ratio ratiocinate*, i.e. distinctions with a foundation in reality. (AT IV, 349-350; CSMK III, 280) In both his early and later writing he treats the simple natures as real components of things. They cannot exist independent of their respective substances but are nevertheless real distinct elements of things.

Interestingly, Hartland-Swann does reach one correct conclusion about the simple natures. He does this despite misinterpreting the degree of reality of them in the *Rules*. They have two statuses in Descartes' mature work; they are innate ideas and modes of extra-mental substances.[78] Skepticism plus his commitment to an exclusive mechanism in the physical world drew a sharp line between the mind with its ideas, and matter with its properties. This meant that the naïve realism of the early work could no longer stand. With a purely mechanical physics and a completely non-mechanical mind there is no longer a natural way for them to interact. Consequently the natures slide, for Descartes into both branches of the ontological tree. They must reside in the mind of the knowing subject since the mind and its ideas are the only certainties at the beginning of his journey from doubt to the guaranteed world of physical science. At the same time, Descartes is no Kantian constructivist. Naïve realism may be gone but realism is not. The natures describe the world as it is; they are the actual properties of extra-mental reality, existing as real substances and their modes. That is why it takes nothing less than God to bridge the gap.

The simple natures then are not just an idea that Descartes had which did not work and so discarded, nor are they merely an anachronistic carry-over from his early

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[78] Hartland-Swann, 143-144

thought. They are an integral part of his mature ontology and epistemology. As with the method, the *Meditations* takes simple natures which are present in the *Rules* and develops them into a full theory. Now that we have the natures firmly planted in Descartes' later thought we can examine how he structures them to counter skepticism.

2) The Ordering of the Simple Natures in the Meditations

The same simple natures appear in both the *Rules* and *Meditations*. What is new in the *Meditations* is the arranging of them in an order of dependence. It is not an order of ontological dependence but one of certainty.[79] The *Rules* presents the two general natures – matter and mind – with their properties and propositions about them. As the basic components of reality they have equal status; the existence of one does not depend on the existence of the other. The method as developed in the *Rules* deals in all cases with scientific application: how the material world is structured. It involves reducing complex combinations of concepts (usually expressed as a question) to simpler ones which are intuitively known. The initial question is then restated in terms of the simple natures and the answer known. This scientific application tells us what the world is like. Its use leads to understanding the essence of the material world.

In the *Meditations* method is applied to a different question; does an actual world exist that corresponds to our ideas? It finds a use for the intellectual or spiritual natures that are mentioned but never developed in the early work. As a result of extreme skepticism Descartes seeks to show that we can only be certain the material world exists, if we are first certain that the intellectual world (the *ego* and God) exists. He does this in

[79] Once we have God everything else depends on him for existence but this is not what Descartes is trying to prove. He shows that we must be certain of the existence of the *ego* and God to be certain of the existence of an external material world.

the analytic part of the method, using hyperbolic doubt, in Meditation I by doubting the existence of matter and the beginning of Meditation II when he reaches the certainty of the thinking self. This is the complex relationship between epistemology and ontology that marks the *Meditations* as an advance over the *Rules*. Method is no longer limited to questions of essence but to the question of the actual existence of these things. The simple natures then are placed in an epistemological order to establish the existence of an ontological one.

Using the criterion of hyperbolic doubt, the *Meditations* places the metaphysical, i.e. the intellectual natures, at the foundation. They are the first certainties and he builds the certainty of the material on them. This ordering of the simple natures is achieved through the application of the method in its pure form: analysis, intuition and synthesis. Through analysis the complex pre-philosophic world is reduced to three simples: the *ego* and its ideas, the nature of mind as thought and the nature of matter as extension. All three are found in Meditation II. From this Descartes re-builds the pre-philosophic world on what he considers a firm foundation.

This reading of the *Meditations* is broken down into three sections. (1) I look at Descartes' introductory remarks in the Dedicatory Letter where he talks about method and go on to Garber's rejection of the use of the early method. (2) I examine Descartes' outline in the Preface which presents an ontological rather than epistemological goal. (3) Finally I examine the ordering of the simple natures in terms of the three stages of the method: analysis in Med. I, intuition in Med. II, and synthetic reconstruction in Med. III to Med. VI.

Descartes' Dedicatory Letter

As I noted in the previous chapter, in his dedicatory letter to the Theology Faculty of the Sorbonne, Descartes says that he is using his method to demonstrate metaphysical truths: the existence of God and the distinction between mind and body. I am returning to the method here because it is through the application of method to foundational questions that Descartes structures the simple natures in the order of metaphysical then physical. In the *Meditations* he says that this is a method he used "for resolving certain difficulties in the sciences." (AT VII, 3; CSM II, 4) This explicit claim, that it is the scientific method, already suggests that he doesn't recognize anything significantly different in his application of method nor, should there be; scientific problems *per se* have not changed. They would still be specific questions that the method of the *Rules*, analysis, intuition and synthesis, are still competent to answer. It was the shift to foundational issues that Garber takes to be the cause of Descartes' introduction of a new method. That, the critics claim, was the project requiring something new; not any change in Descartes' approach to scientific inquiry.

Garber's argument is more restricted than Curley's in chapter III. It is more about why the method changed than about comparing the new method with that of the *Rules*. He does not, for example, mention doubt which played such an important role in Curley's analysis. Garber's argument is straightforward. The early method of analysis-intuition-synthesis was aimed at answering questions in physical science. This method worked because Descartes believed there was a small group of intuited truths, based on the simple natures that explained all science. A unified science gives rise to a new project, the construction of the whole system rather than the more pedestrian task of answering questions that arise in the science. As a result, the early method, which is based on

starting with a question, is no longer useful to Descartes. In the *Meditations* he starts, instead with the basic intuitions and builds the system from there.

Garber argues in the 1987 paper "Descartes and Method in 1637" that Descartes stopped using the early method. (Garber, 33-51) In the *Rules* Descartes is talking about science in the way Beeckman understood it.[80] That view of science sought the answer to various questions, so the starting point had to be a specific question. The method, analysis-intuition-synthesis then took over. Garber says that this works well when there is a specific question to be answered. The method works down from the complex phenomena of experience or theoretical speculation to the roots of that complex: the simple natures. There is a basic set of natures that underlie the complex. This is the idea of a single physical science; a single set of explanatory principles for any scientific question. Garber says this notion led Descartes to the realization that the important project was to construct the scientific system; an upward movement from the simple natures to the complex world in which the questions arise. In the system building of Descartes' later thought there is no initial question so the method cannot be applied there.

Garber supports his argument by appealing to the apparent absence of the method in the later work. He recognizes that the *Discourse* is a simplified version of the method of the *Rules* but argues the method plays no role in the attendant essays.[81] There is one

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[80] Isaac Beeckman was a Dutch philosopher and scientist that Descartes met in 1618. He introduced Descartes to the idea of a mechanical physics.

[81] Descartes makes this claim himself in a letter to Mersenne of 27 February 1637 (AT I, 349; CSMK III, 53) The *Meteorology, Optics Geometry* were three essays published jointly with the *Discourse* in 1637. There he says that he is not teaching the method, just discussing it. The essays, as results of its use, show the method's importance but not how it works. And, in a letter to Vatier of 22 February 1638 he says that he is not demonstrating the method in the essays. (AT I, 559; CSMK III, 85)

exception to this, Descartes' discussion of the rainbow in the *Meteorology* where he says he is "demonstrating how, with the *method I am using*, we can arrive at knowledge not possessed at all by those whose writings are available to us." (Olscamp, 332 – emphasis added) Garber rejects this on the assumption that the solution to the question 'what causes the rainbow?' may have been discovered by Descartes as early as 1629 just after he stopped work on the *Rules*.[82]

More importantly, Garber sees no example of the early method in the *Meditations* where Descartes is engaged in the new project of constructing the system from the top down. He sees a method there but not the method of the *Rules*. The crucial first step of the early method, a specific question to be answered, is missing and so then is the step-by-step analytic simplification to the relevant simple natures. What is done instead, in Meditation I, is clearing away prejudices and identifying the need for a good God to validate the true and immutable natures. This allows the first intuited certainty – the *cogito* – to be established. As a system builder in the later works Descartes will now, "start at the beginning, with the intuitively graspable first principles that ground the rest, and progress step by step." (Garber, p. 49)

I recognize that the project is not the same as he proposed in the *Rules*. In the *Meditations* Descartes is not applying the method to the solution of one or more 'certain difficulties' in the sciences. He is instead seeking to establish not only a metaphysics but to show how it serves as the necessary basis for the physics that he embraces.[83] On the face of it, Garber's criticism seems legitimate. The *Meditations* does not start with a

[82] Garber, p. 43

[83] See *Conversation with Burman*, 48

question of some complexity and systematically analyze, intuit and synthesize the answer. Instead, it is system building and that means "constructing the complete system of knowledge, the interconnected body of knowledge that starts from intuition and comes to encompass everything capable of being known." (Garber, 48) The simple natures are still there but they are now the starting point rather than the transition step.

As Garber concedes, Descartes does not start with the 'intuitively grasped first principles'. That is, he does not start with Meditation II; he starts with Meditation I. The pure method stripped of the specific content relevant to the purpose of the *Rules* becomes a general set of directions. We analyze a complex into its simple, intuitively understood components and reconstruct the complex in their terms. Even in the early work Descartes gives examples of its application in a number of different contexts.

There are mathematical problems where the system of simples is already structured and constant, such as the question of mean proportionals in Rule VI. Problems of physics, such as the *anaclastic* in Rule VIII, will require more than this. For them we need experience to provide specific information about the problem at hand. It is not simple logical analysis. Finally in Rule VIII he first says that knowledge of the intellect must precede any other knowledge. This issue is much broader than a specific question in physics. It is an investigation into the basis of all knowledge. In briefly outlining this investigation he uses various aspects of the method. One will enumerate all the faculties of the intellect, analyze them in terms of the degree of certainty they provide and disregard what does not guarantee absolute certainty. (AT X, 395-396; CSM I, 30) We see in these cases the application of the method to three different kinds of situations: a specific problem in mathematics, one in physics and a general epistemological question.

In each the analysis reveals different simples for constructing the resolution. So, it does not matter what the complex is; all the pure method requires is a complex to be analyzed and some simple intuitions into which that complex is analyzable.

If we read Meditation I in terms of the general form of the method we get a somewhat different picture than Garber's brief treatment. It does not begin with a specific question but begins with a complex to be analyzed. Descartes begins with a pre-philosophic complex of belief about the structure of the world. He systematically analyses that structure using the main elements of the analytic as he describes it in the *Rules*. In the *Meditations* it is a more complicated argument because it has to do with the existence of the material world. Applications of the method in the *Rules* were directed to reduction of essence to simple natures that were known by intuition. In the *anaclastic* example, for instance, the existence of light rays and the various media are never questioned. We just analyze and reduce the initial concepts to essences that we understand. But, even with the shift to the existence of an extra-mental world, the two main elements of the analytic are present in Meditation I: the reduction of complexity to simpler concepts and the rejection of the dubitable.

Meditation I is devoted to an examination of the material world and the overall structure of Descartes' argument is the rejection of the dubitable. This is a major principle of the method of the *Rules*. In Rule VIII he says we should stop the process if we reach a point where we cannot find certainty. This is what he appears to do in Meditation I but the completion of the analytic reduction is not reached until the beginning of Meditation II when he reaches the *cogito*. Descartes begins with a world of complex physical objects: hands, the fire and the like. The rejection of the objects in this

world is accomplished in two steps. The dream argument calls the existence of these objects into question so he rejects them as we normally experience them but he does not stop there. He turns to the more formal procedure of the analytic and reduces them to simpler concept: geometric shapes and quantities. Descartes argues that he still has the ideas of the material objects and they are composed of those elements; "eyes, head, hands and so on – could be imaginary, it must at least be admitted that certain other even simpler and more universal things are real… from which we form all the images of things... corporeal nature in general and its extension." (AT VII, 20; CSM II, 13-14) The evil demon argument completes the elimination of the material world. As real as these simpler things might appear, it is possible that a being as powerful as he understands God to be might not be good but bent on deceiving him into thinking they are real. So, they too are rejected since they are open to reasonable doubt.

At the end of Meditation I Descartes is seemingly left with nothing certain and says he will at least be certain of not accepting anything false. This conclusion echoes Rule VIII where he says that discovery of the insolubility of a problem is just as much knowledge as is a solution. It is understandable that the investigation has come to a dead end since he was dealing with the material world and its existence has been shown to be uncertain. But, the process does not stop there. Meditation II opens with the discovery of a non-material existent. Descartes shifts from the object of knowledge to the subject. While none of what he thought about, i.e. the whole material world, were certain to exist outside of his thought, he must exist to think about them. Not even the malicious demon can trick him without him existing to be tricked. He finally has the one intuited certainty

that will allow him to start building the system. It is not a material thing and so the physical is shown to rest on the metaphysical.

The construction of a complete system of knowledge and reality already utilizes, according to Garber, the second and third steps in the early method: building the system on intuited simples. The main difference between the steps in this method and the early one lies in its scope. We are not re-constructing a particular state within the system as was done in the *Rules*.[84] Instead, we are taking all of the natures and, through identifying their interrelationships, constructing the ordered system.[85] Since Meditation I contains a form of analysis then the work would seem to be a general application of the early method. The next step will be to examine the subject matter to which the method is applied.

The *Meditations* as a Work in First Philosophy: The Preface

Most commentators on Descartes focus on epistemological questions. Yet in the Preface of the *Meditations* he says that he is dealing with First Philosophy, but he does it in an unusual way. First Philosophy as understood in the scholastic tradition is the study of being in its most abstract sense. It looks at the phenomena and offers the best way to understand the structure of what is. In other words, it begins with the world and explains its order. Descartes argues from a different perspective. He begins with himself as the knower rather than what is known, the world. He does this because he takes skepticism

[84] Such as the path of light through various media as in the *anaclastic*.

[85] And the order among the simples can be relevant. Descartes has said in the *Rules* that sometimes a nature may be absolute and sometimes relative. (Rule VI – AT X, 382; CSM I, 21-22) This, as I explained in Chapter II means that a nature may sometimes be sufficient to explain or solve the problem and sometimes not. In the latter case, it is necessary to further analyze the nature until we reach what will give the solution. This is possible because he is talking about epistemological simplicity.

seriously. The skeptical model puts reality on one side and appearance, i.e. our experience of reality, on the other. Traditional skeptics then argue that we cannot know whether appearance accurately describes reality; we cannot bridge the gap. Descartes' solution to the skeptic's argument is unique. He initially accepts their argument and then takes it a step further. He calls the existence of extra-mental reality into question. The appearances are not questioned; we see what we see, hear what we here and so on. They are reduced to the mathematical properties of matter but remain appearance. From the suitably simplified appearances, he argues for a reality that matches the appearances. Descartes accepts the order of appearance and argues for the existence of a world ordered in the same way. He does this based what he can be certain of. This is an ontological study (First Philosophy) using epistemological tools.

Besides being certain of the appearances (the simple natures as essences) Descartes needs at least one existing thing. Otherwise, he could only arrange and organize the appearances and never get to a corresponding world. The solution lies in the *cogito*: his own existence as a thinking thing. Starting with the existence of the self sets the way in which the re-construction proceeds. The *Meditations* inherited a set of simple natures from the *Rules*, both physical and metaphysical. The skeptical doubt of Meditation I was mostly applied to the physical world. When he reaches the *cogito* in Meditation II, he establishes a metaphysical existent. This is the first thing he can be certain exists independent of his thought. Then, by examining the content of his thought he argues for a second metaphysical entity: God. With both of these he shows that a physical world exists that mirrors his refined idea of physical nature. The unordered natures of the *Rules* are arranged in an order of dependency with the metaphysical

supporting the physical. What makes this whole argument unique is that the dependence of the physical on the metaphysical is not ontological but epistemological. The existence of the metaphysical natures is what can be first known with certainty. Knowledge of the existence of the physical is based on that certainty.[86]

Descartes makes it clear that the purpose of the *Meditations* is to establish the existence of all of these things. In the Preface he says the following. "In the Third Meditation I have explained quite fully…my principle argument for proving the existence of God…in the Sixth Meditation…there is a presentation of all the arguments which enable the existence of material things to be inferred." (AT VII, 14-15; CSM II, 10-11) The movement in the *Meditations* goes from a complex and poorly understood world to a few basic intuitions. That world is then re-constructed on a clear and distinct understanding of the intuited simples. The epistemological turn is taken but it is in service to the establishment of a sure ontology.

This reconstruction is the whole purpose of the *Meditations*. In this project doubt is the central tool of the analytic, actively applied to the situation at hand: the discovery of foundational principles. As I have noted above, it is not their essence that is doubted; the essence of both mind and matter are given not argued for in Meditation II. It is their extra-mental existence that is uncertain. Ultimately he recognizes that he must establish the certainty of the metaphysical principles before he can guarantee the physical ones. This hierarchical structure of dependence is implicit in the *Rules*. Immediately following the direction to investigate the foundations of our knowledge, Descartes says that

[86] Descartes also holds that the physical world has an ontological dependence on God; he created it. And, his argument for God's existence in Meditation III is a causal one. But, it is not a world of dependent entities that must be supported but certain of Descartes' ideas.

following the Rules will make it clear that all other knowledge follows upon knowledge of the intellect.[87] But, he does not elaborate nor show how this is to be accomplished; that must wait for the *Meditations*.

We have seen that the simple natures are present in the *Meditations* as is the original method. I argued in the previous chapter that everything taken as Descartes' new method – doubt, clarity and distinctness and God – was just a development of the basic method he presents in the *Rules*. Here the method is applied to a larger and more fundamental task than in the *Rules*. There it served as a tool for doing science; here Descartes intends it to establish the certainty of science itself. In Rule VIII Descartes presents intellectual and material natures as a complete description of the world.[88] Mind and matter were treated as two distinct substances with the intellectual natures describing mind and the material natures matter. In the *Meditations* Descartes uses the method to show first that the existence of the intellectual natures are immune from doubt and thus, can serve as a sure foundation for the material natures that are the subject of science.

The pattern of the method from the *Rules* is to start with a complex, analyze it into simple natures that are then intuited and use them to reconstruct the original complex. In the *Meditations* Descartes applies analysis to a complex pre-philosophic world of matter, minds and God calling the existence of all the elements into doubt. The whole material world and God are rejected through application of hyperbolic doubt in Meditation I. Meditation II reaches the first certainty: the existence of the *ego* as a thinking thing. From this starting point he uses his existence and the ideas the *ego* has as

[87] Rule VIII – AT X, 395; CSM I, 30

[88] AT X, 399; CSM I, 32

the material to re-construct the rest of the pre-philosophic world in Meditations III through VI.

Let us now look at Descartes' application of the analytic aspect of the method. In Meditation I he begins with a pre-critical world of material objects known through sense experience.[89] He then uses the tool of exaggerated doubt to call this world into question. Two things in his initial analysis show the presence of the early method. First, the overall structure of the argument is the reduction of a complex world with many objects to a single one: the *ego*, which is one of the simple things from the *Rules*.[90] This is not the same kind of reduction as the simple conceptual reduction of that early work. The paradigm there was the reduction of a complex mathematical theorem to the simple postulates that the theorem was built on. This reduction reflects Rule VIII's direction to reject anything that is not known with certainty. The external world is found to be uncertain so it is rejected leaving only the self at the beginning of Meditation II. The second principle from the *Rules* is the reduction of the idea of matter to geometric extension. He does this in both Meditation I and Meditation II (the wax experiment).

Descartes is answering skepticism in the *Meditations* using the skeptic's own arguments. He gives arguments for both of the skeptic's claims: (i) our cognitive ability and (ii) the related possibility of knowing the real structure of reality. Meditation I has four skeptical arguments, two directed at the material world and two directed at mathematics. His initial conclusion is that both the material world and the ideal world of mathematics may not exist.

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[89]Even the soul is initially conceived as an ether spread throughout the body. (AT VII, 26; CSM II, 17)

[90] Rule III – AT X, 368; CSM I,28

Meditation I: Sense Knowledge and the Existence of the Material World

Descartes first argument is straightforward and quite short; just a few lines. It is his standard argument against sense knowledge and a theme that appears throughout Descartes' writing. The senses give us conflicting information about what we assume is the same object and so cannot be trusted. Perspective can make the same object appear differently shaped or different in size.[91] Since this a systemic problem he concludes that we should reject the senses as a source of knowledge.

Descartes' next move goes beyond this argument. Rather than questioning our ability to get to the real nature of reality, he argues that there may be no reality to know. His first step is to hypothesize that the failure of the senses only applies to objects at a distance. Those close, like his body and immediate surroundings, are as they seem. He then employs the dream argument by contrasting dream experiences with normal ones. It does not matter that he has already found sense experience to be undependable. We still have the experiences and it is their source that he examines here. In ordinary experience we believe that the objects experienced are mind independent. But, Descartes says, we have similar experiences in dreams and there, the objects exist only in the experience itself. Since there is no apparent way to distinguish between them, all sense experiences may just be dream images; they may not exist independent of the experience. And so, their existence as the source of our ideas is rejected.

Descartes' next two arguments bear a resemblance to the first two. He has rejected the existence of normal material objects and now moves to the ideal objects of

[91]Descartes does not say this until Meditation VI but it is directed to the same issue, untrustworthy sense knowledge.

mathematics: extension in general, shape, number, place and time. First, he argues that these things exist because they are the material out of which we construct the ideas of physical objects. Mathematics is the science that deals with these objects so it should be a sure science.[92] His skeptical response to this is the famous 'malicious demon' argument. We can hypothesize the existence of a powerful being that deceives us about even this. He may make us believe that all these ideal things are real when in fact they are not. He may just be feeding us the ideas while deceiving us into believing the objects actually exist. The deceiver may also lead us to mistakes in even the simplest mathematical operations like adding two and three or counting the sides of a square. While he does not believe this to be the case, it is a real possibility at this stage of his reasoning.[93]

All of the arguments are Descartes' version of the two main skeptical claims about our intellectual capacities and the connection between appearance and reality. In his case the emphasis is on the existence of the objective source for our ideas. We keep the ideas but lose the world we thought they were about. What are not called into question are the material simple natures. Descartes reduced the structure of the material world to matter as geometric extension and stops there. He does not apply any skeptical arguments against that definition. The material world, as an idea in his mind is understood in the same terms as it was in the *Rules* where it was taken to be a mind independent entity. The existence of matter is not certain but its essence is.

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[92]AT VII, 20, CSM II, 13-14

[93]The evil demon argument also eliminates the other major player in our pre-philosophic world – God. Descartes does not argue for that elimination. He just makes the replacement as a possibility.

Meditation II: Intuition & the First Three Simple Natures

Meditation II is the turning point in Descartes' program. At the beginning of the meditation he seems to have nothing. The entire world outside of his thought is now considered non-existent. In this meditation he establishes the first three simple natures. First he establishes his own existence which is not, strictly speaking, a nature. However, if we go back to the *Rules*, everything that is known with intuitive certainty is a simple nature in the epistemological sense. He then gives the two main essences or natures: mind as thought and body s extension. All three are established through one continuous argument.

Descartes' first move is the *cogito*. He quickly reviews the previous meditation and still seems to be at a standstill. Everything of which he is aware might have no independent existence. Staying with the evil genius, he applies doubt to himself. This is a reflexive application. Descartes is now testing the act (or agent) of awareness rather than its objects. He may be deceived into believing those objects exist but for that to happen he must exist to be deceived. Here is Descartes' first certain intuition, the one thing that he can be certain of: himself.[94] The *cogito* shows the kind of dependence of the material on the mental. Knowledge of the material does not depend on knowledge of the mental nor does the existence of the material depend on the mental.[95] The dependence is one of certainty. Given hyperbolic doubt, we cannot be certain of the physical's existence until

[94] See Descartes Second Reply, where he explicitly says that this is an intuition. (AT VII, 140; CSM II; 100)

[95] Of course, in the final scheme the material's existence does depend on God (mental) but so do all of the other mental existents.

we are certain of the mental's. Descartes' next moves confirm the two basic simple natures from Rule XII: mind as thought and matter as extension.

He takes up the essence or nature of mind first. This is tied to his argument for his own existence. He exists but asks what kind of thing is he. He reviews his past ideas of himself hands, arms, face and so on. These sorts of things were rejected in the previous meditation and so cannot, with certainty, define him. Having eliminated his physicality, Descartes determines that the only thing he certainly is, is a thinker. His argument from Meditation I was that he may have been deceived into thinking the various things that doubt led him to reject. Thought is the vehicle that leads him to the certainty of his existence. That is what the demon was toying with. "At last I have discovered it – thought; this alone is inseparable from me." (AT VII, 27; CSM II, 18)

Descartes is then a thing that thinks. Through introspection he gives a list of things that constitute thinking. "(I am) a thing that doubts, understands, affirms, denies, is willing is unwilling, and also imagines and has sensory perceptions." (AT VII, 28, CSM II, 19) By including sensory perceptions he is already drawing the distinction between the physical act of sensing and mental awareness. In effect, anything that is a case of conscious awareness is thought. This is not limited to Descartes but confirms the simple nature of mind as thought. Any mind (if there are any other) would be subject to the same skeptical arguments and led to the same conclusion regarding its existence and essence.

In the course of the argument Descartes confirms what he said about matter in Meditation I. He is not sure that there are any bodies but he does have a 'distinct perception' of what a body is. When talking about his body he reduces the parts to shape

and location taking up space (extension).[96] He does the same thing later in the meditation with the wax experiment. There he shows that all of the qualitative properties change or disappear under certain circumstances. All that are left are the quantitative properties that are subject to mathematical analysis. [97]

This brief look at the first two mediations shows the ordering of the simple natures with the mental grounding the material. Equally important, it shows that the true simple natures – mind and matter – are not subject to Cartesian doubt. The existence of a material world may be doubtful but we still have the idea of that kind of world and its essence is known as Euclidian extension. The same is true of mind's nature. It is never doubted to be thought; the whole argument leads to it as being such.

Meditations III to VI: Descartes Rebuilds the World

It is clear that the *Meditations* continues the project of the *Rules* under the rubric of skepticism. True and immutable natures now replace simple intuitions but their role is the same. The last four meditations show the synthetic aspect of the early method: the re-construction of the external world. He moves from the self to God to the external material world, the reverse order that he analyzed and doubted in the First Meditation. We can summarize his argument as follows.

Meditation I systematically rejected the material world, the ideal space that mathematics describes and a benevolent God. Reaching the intuitive certainty of the *cogito* Descartes begins the re-construction with his proof of God's existence in

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[96] AT VII, 26; CSM II, 17

[97] AT VII, 30-31; CSM II, 20-21

Meditation III. The argument is a causal one. It proceeds, as do most of his existential arguments, from the question of the source of his ideas. He has an idea of God as a perfect, all-powerful creator. The source of this idea must be as perfect as the content of the idea. He is not perfect so there must be a different source: God. What I have given is the barest bones outline of the proof. It is much more detailed and subtle than this outlined version suggests. And, there are numerous problems with the argument: the adequacy of his idea of God, the need for a perfect source of the idea of perfection and, indeed the causal principle itself that underlies the proof. For now, these questions are not important. This move shows the synthetic portion of the method operating in the re-construction of the pre-philosophic ontology.

Meditation IV is something of a lemma. It is not strictly speaking a direct step in Descartes' re-construction. Instead it examines how certainty can be reached by explaining the relationship between rational perception and will. If we limit ourselves to asserting (an act of will) whatever we clearly and distinctly perceive rationally, we can be certain of its truth.

Meditation V returns to the synthetic stage. Here he introduces true and immutable natures. These natures are essences that we understand but over which we have no control. If we clearly and distinctly perceive them, we recognize that certain properties belong to them and that certain truths follow from them. We cannot change the nature of a triangle as we could the direction of a play we were writing, for instance. These natures limit where we go with them rather than the other way round. Although Descartes uses them in a version of the Ontological Argument every other example he gives of them is taken from the physical world and the only ones that are clearly and

distinctly perceived are those that describe the essence of matter: i.e. mathematics.[98] This does not prove the existence of a mathematically ideal space; their role lies in their independence from the subject that understands them. Whether they reflect an actual material world or not, true and immutable natures are discovered not created.

Finally, in Mediation VI the material world is brought back. He begins with the idea of a nature or essence. The idea of matter as simple extension is a clear and distinct one and thus able to exist independently of thought. God then could create it as independent since his power to produce anything we clearly and distinctly perceive guarantees this. His second step involves our doxastic attitude; we believe matter to exist independently. The benevolent God of Meditation III would not have created us with this strong inclination to believe if it were false. QED – the material world exists as a mind independent entity.

We have seen that the method and simple natures of the *Rules* are carried over into Descartes' mature thought. I believe that what he says about those natures can shed light on some of the apparent conflicts found in his later writing. In the following chapter I will examine one such problem: the use of unforeseen consequences in identifying true and immutable natures in Meditation V and the First Reply.

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[98] AT VII, 67-69; CSM II, 47

CHAPTER V

NATURES: SIMPLE AND TRUE & IMMUTABLE

In the previous chapter I argued that the simple natures of the *Rules* continue into the later ontology of the *Meditations*. In the later work Meditation V introduces true and immutable natures although he mentions some of them (material natures) as early as Meditation II. Many of these are the same as the simple natures of the *Rules*: mind as thought and body as extension.[99] What Descartes says about them in the earlier work can shed light on some confusion in his treatment of true and immutable natures in the *Meditations* and replies. In Meditation V Descartes defines them as ones that have unforeseen consequences. The problem arises when Caterus, a Dutch theologian, offers an example of a complex constructed nature with unforeseen consequences in the First Objections. This suggests that the criterion is not sufficient to define true and immutable natures. There are three steps in developing the problem. First, he says in the meditation that a nature is true and immutable if it has unforeseen consequences. The triangle, for instance, is understood as being a closed figure with three sides. From this we can deduce that the sum of its angles equals a straight angle (180^{o} degrees). This fact is not obvious in the initial consideration of the triangle but is, nonetheless, true of it. Second, Caterus in the First Objections argues against Descartes' version of the Ontological Argument. Descartes has said that we clearly and distinctly understand the concept of God as supremely perfect and existence is a perfection so God must have it and thus exists. To support his criticism, Caterus offers a concept which he thinks shows an

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[99] AT VII, 27, 31; CSM II, 18, 20

unacceptable consequence of Descartes' argument. The concept of an existing lion is also clearly and distinctly understood so, it too must exist.[100] Third, in the First Reply Descartes responds to Caterus by saying the idea of an existing lion is a different kind of nature; it is a constructed one. Caterus has added existence to the nature of a lion which, as constructed, he has put together and thus can take apart. These are not true and immutable natures and by implication, they do not have unforeseen consequences. This does not contradict his earlier definition. We are left with the idea that a true and immutable nature has unforeseen consequences and constructed natures do not. The problem arises when Descartes introduces a mathematical nature that has unforeseen consequences and is constructed. The question of unforeseen consequences is the major issue since it is what later critics focus on. His explanation of the combination of natures is important because it helps to explain when and how unforeseen consequences occur. I will examine this problem in light of the principles of the *Rules* that continue in the *Meditations*. First, I recap Descartes' treatment of simple natures from the *Rules*. Second, I review the text and argue that there is no problem with holding both explanations. Third, I address two critics, Wilson and Cottingham, who say that unforeseen consequences do not adequately identify true and immutable natures.

1) Simple Natures and Their Combination in the *Rules*

The best way to understand simple natures is to return to the model of a mathematical system (geometry). Descartes takes mathematics to be the best conceptual program for understanding the material world. So, he takes mathematics and

[100] As I have already said, I am not concerned with the problem of existence as a predicate but Caterus' use of it is what gives rise to Descartes' reply and the reply's bearing on the question of unforeseen consequences.

mathematical method as the paradigm of knowledge. The system of Euclidian geometry is organized with a basic set of concepts like line and point (at least one of which is undefined). On this set of concepts a series of simple propositions are built (postulates). Both the concepts and the postulates describe extension: the idealized Euclidian space. To this set of spatial descriptions are added general axioms which have an application beyond geometry and are based on more general concepts like equality and similarity. In all cases the postulates and axioms are taken to be true without additional proof.

Descartes transfers the structure of this model to a full ontology in Rule XII. There he adds mental or intellectual natures to the mix. The result is three sets of simple natures: material, intellectual and common. The material natures are concepts like extension, shape and motion. Mental natures are thought, knowledge volition and the like. Examples of common natures are existence and unity. They are applicable to both of the other categories. Finally, there are common propositions having to do with sameness and difference. These are even more general examples of the axioms of geometry and show Descartes' dependence on mathematics as a model. All other concepts and descriptive propositions are built from these basic simple natures. Falsity occurs only in combined natures: never in the simple starting points.[101]

Descartes' use of mathematics as a model is important for another reason. As I said, he believes that the mathematical properties of matter are the only certain ones. He structures the material world on this model but it is not yet organized into a system like geometry or arithmetic. For instance, the density and motion of various portions of the

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[101] Rule VIII – AT X, 399; CSM I, 32

physical world are not all known. So, only the static elements of matter, the purely mathematical, can be known *a priori*. The rest will depend on experimentation as we saw earlier in his example of the *anaclastic*. As a result, it is only in pure mathematics that we can see precisely how simple natures interact. We will see, later, that Descartes does talk about various physical examples but that is because his critics introduce them. When he explains his position on combining natures he appeals to pure mathematics' examples.

The simplicity of these natures has a dual character. Ontologically, they are the basic elements of all that exists: matter, mind and God. Epistemologically, they are the simplest things that allow the solution of problems. Their simplicity lies in being intuited in a single intellectual act. They need not be irreducibly simple but, they must be intuitively grasped as a whole. Descartes' favorite example, the triangle, shows this. A problem or question is analyzed into simpler terms until we reach simple natures that we intuitively understand. When the entire problem is stated in terms of these simples we can determine its solution. It is their ability to be known through a single act of intuition that makes them simple. This results in a hierarchy of simple natures; we can intuitively know some simples which, themselves, are open to further analysis. E.g. Descartes says that we can know the essence of a triangle directly by intuition even though it is composed of the simpler natures: line, angle and three. To solve a problem we do not necessarily need to reach ultimate simplicity; just the simplest that answers the question.

Because of this, Descartes never identifies the ultimate simples; he does not need to.[102] Along with the process of constructing complex natures, the epistemological sense of simplicity is important for understanding the problems of Meditation V.

The last important point about epistemological simplicity is its scope. It initially applies to concepts or natures proper. The intuition of concepts is, strictly speaking, the only fully immediate cognitive act. Descartes says that the basic propositions that come from these natures are also intuitively known to be true. This is a secondary intuition in that it applies to truths that follow from the relationships between the concepts. The postulates and axioms of geometry are examples of propositions whose truth we can intuitively know. These are built up from interrelationships between the different concepts. For instance, 'a straight line is the shortest distance between two points' expresses the relationship between 'point', 'line' and 'straight'.

Along with method and simple natures Descartes talks about the unity of science in the *Rules*. This means that any material nature is part of a whole system. This is what makes the deduction of unforeseen consequences possible. This idea would be true of just about any system, medieval Aristotelianism for instance, but in Descartes' case it is something special. To begin with, he is primarily interested in physical science and, he sees that as explainable in terms of quantity. That is the only category which is shared by all of the qualitatively distinct sciences of scholasticism. Quantity, as extension, is then the single factor that unifies all physical science. And, as we will see in the First Reply,

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[102] He does give a hint of a criterion for ordering the simple natures in Rule VI where he says that the more general a concept is the simpler it is. (AT X, 382; CSM I, 22)

pure mathematics shows the relationship between true and immutable natures and constructed ones most clearly.

With this review we can now look at the problem of unforeseen consequences associated with Meditation V. By the time he reaches that meditation Descartes has established only two existents: himself and God. He also has the essence of himself as mind and God as perfection. Finally, he has the essence of matter as extension. It is important to note that, with regard to matter, Descartes is still operating within his ideas; they are natures which may or may not exist outside of his thought.[103] The material world is the one type of existence that is still uncertain. True and immutable natures appear in Meditation V to further the synthetic re-construction of the material world. Let us examine, in detail, Descartes' discussion of true and immutable natures in light of the principles from the *Rules*.

2) True & Immutable Natures: Meditation V, First Objections and Replies

Meditation V has two purposes. One is the refinement of the nature of matter as extension in Euclidian space which was already introduced in Meditation II. With the exception of God, these and their pure mathematical counterparts are the examples used to explain true and immutable natures. The other purpose in the meditation is his *a priori* proof for the existence of God. It is the first that is most important for my thesis although the theological argument will come into play when we look at Caterus' objection. To fully understand what Descartes says about true and immutable natures we need to look back to Meditation III where he divides his ideas into three categories. All his ideas must

[103]AT VII, 64; CSM II, 44-45

be either innate, adventitious or invented. Innate ideas are those discovered by an investigation of his inner life. Adventitious are those that come from outside of him, if there is anything outside of him. Invented ideas are those that he creates by combining ideas already present to him, whatever their origin. This is the division that he set out in the *Rules*.[104] The threefold division relates to the source of the content of the ideas: their objective reality. He is talking about the natures that constitute that content. In Meditation III Descartes is primarily concerned with the first two kinds of ideas, innate and adventitious as they relate to his idea of God. Their treatment there is ontological insofar as it has to do with their source; can they come from him or from something outside of him? For my purposes that distinction does not matter. It is their status as given, whatever the source, and their contrast with invented ideas that matters. It shows what he means later in Meditation V and the First Reply when he talks about natures that are not true and immutable but are created by him.

The full treatment of true and immutable natures has three steps. **1.** The first step appears in Meditation V. Descartes begins with the categories of ideas from Meditation III but he approaches them in a different way. Unlike the earlier meditation he does not care about their origin but divides them into just two categories. There are ideas that he invents and those that he does not. Those that he does not invent he calls true and immutable natures.[105] They are ideas he finds within himself that are given rather than created. He does not control their content, the natures. He does, on the other hand,

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[104] AT X, 422; CSM I, 46-47

[105] Descartes mixes the terms 'idea' and 'nature' and I use them interchangeably. Strictly speaking natures are the content of ideas but it is an idea's objective reality (i.e. its content) that is under consideration in this meditation.

control created natures because he puts the content together himself. In the meditation he concentrates on true and immutable natures and their unforeseen consequences. **2.** The next step lies in the first set of replies by Caterus a Dutch theologian. His criticism is aimed primarily at the uniqueness of existence as a predicate and thus at Descartes' version of the Ontological Argument. Caterus' objection is important because he gives a compound example – existing lion – which must exist. It does not matter if it shows the flaw in Descartes' argument for God. What it does is give Descartes a springboard for further clarifying the distinction between constructed and true and immutable natures. **3.** Descartes' reply to Caterus is the third step. There he gives an account of constructed natures and how unforeseen consequences can follow from them.

The Problem: Meditation V and Caterus' Objection

In Meditation V Descartes introduces the notion of true and immutable to support his argument for God's existence. This is, as its title says, one of the purposes of the meditation. The argument is well known, having its origin in Anselm's *Proslogion*. (Davies, 82ff.) Descartes draws the idea of existence from the definition of God as a supremely perfect being. Existence may not be immediately recognized as a consequence of perfection but it can be drawn out of the concept just as additional truths can be drawn from a simple geometric nature. For example, from the idea of the triangle we can deduce truths that were not consciously present in the initial idea. The Pythagorean Theorem is not immediately apparent in the definition of a triangle but follows from its nature as a triangle in Euclidian space. The picture of science as a single unified discipline that Descartes gives us in the *Rules* is the background with which he is working. So, when he talks about the definition of a triangle it is not of an isolated figure

but of a figure in Euclidian space. All of the other properties and postulates that comprise the system of Euclidian geometry are part of the system. He did not consciously put the theorem in the concept triangle, but it nevertheless flows from it as an unforeseen consequence of the nature.[106] This is the model of method from the *Rules*. The idea of a triangle that he finds within himself is a simple nature and the consequences that follow are the results of applying the synthetic portion of the method. His explanation is just that of intuition (the nature of the triangle) and deduction of the theorem. Except for the concept of God, the examples he uses to explain true and immutable natures are all material or mathematical and I will concentrate on them.

In the meditation he contrasts true and immutable natures to a nature he invents – a winged horse – but that is all he says. He does not explain invented natures in the meditation other than to say that he puts them together. I will examine them in detail below when we turn to Descartes' first set of replies. For now, invented natures can be understood as natures that Descartes produces rather than discovers. They are not then true and immutable, so would presumably not have unforeseen consequences.[107] This seems clear enough but we will see that it is not quite as simple as that when we look at his expanded treatment of invented natures in the First Reply.

Caterus' objection is to Descartes' argument for God's existence; he criticizes Descartes on standard scholastic grounds. Descartes defines God as the perfect being, which includes existence as a perfection. To include existence in the concept of God is

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[106] AT VII, 64, 17-20; CSM II, 44

[107] AT VII, 64, 10-14; CSM II, 44

just to have the idea of God as existing. It does not translate to the actual existence of God. Caterus gives the example of an existing lion that would, if Descartes is right, guarantee that the lion exists since existence is essential to the compound nature. And, this nature is clearly and distinctly understood by God at least.[108] Since everything that is clearly and distinctly understood is true it follows that existence is an essential part of the concept existing lion. So, the lion in question must exist. But, as Caterus quite reasonably points out, God's supreme knowledge "does not compel either element in the composite to exist." (AT VII, 100; CSM II, 72) Existence as an essential part of a concept only means that it is attached to the concept. Properties generally tell us what a thing is; existence tells us that it is. So it is not a property like all others but the actualization of properties. Descartes does address this criticism of existence as a property but that is a different topic. For my purpose, it is Caterus' example of the constructed nature existing lion that is important. It allows Descartes to clarify the relationship between ideas or natures that are invented and those that are true and immutable.

Descartes' Response: The First Reply

Descartes, in the reply, takes the existing lion example to be an invented nature. He begins by talking about "ideas that do not contain true and immutable natures but merely ones which are…put together by the intellect." (AT VII, 117; CSM II, 83) He is not talking about true and immutable natures but ideas which are not true and immutable. The splitting up refers to invented natures; he is making clear what can be done to them.

[108] AT VII, 97-100; CSM II, 70-72 – This is substantially the same criticism Gaunilon addresses to Anselm with his perfect island.

Since they were put together they can be split up into their components. This is a simple hypothetical: invented nature → split up. Its contrapositive is ~split up → ~invented nature. Strictly speaking, this says nothing about true and immutable natures. What it does give is a necessary condition for an idea to be invented. More important, it is a sufficient condition for a nature to be separable that it be invented, but not a necessary one. He treats Caterus' example as a nature that is not true and immutable but put together by the intellect. Existence is added to the nature of a lion. This is similar to his own example of a winged horse where wings are added to the nature of a horse. In both cases the components can be separated into two distinct natures. This is not the abstraction of the *Rules*. That is just concentrating on a single element in a complex nature while ignoring the rest. Abstraction does not separate the elements. We can, for example, concentrate on the extension of an object while ignoring its shape but the object cannot be extended without a specific shape. On the other hand, we can understand a horse without its having any connection with wings and vice-versa.

Descartes' point in this is that constructed natures like the examples do not have unforeseen consequences because when we put them together we include all of the content. There are no surprises in the constructed nature. They are not so much combined as just tacked onto each other. Everything about wings and horses is there because we put it there in the construction. Constructed natures have no new consequences, but this does not mean that there are no unforeseen consequences. It means that the unforeseen consequences follow from either the nature of horse or wings but not from the combination. The construct may fly but that is because of the wings. They could be attached to a dog or a human, it would not matter. In the same way, it may

graze in open fields but that is because of the horse not the winged horse. It would do the same if it were a unicorn (horse with a spiral horn)

We are left with definitions of both true and immutable natures and constructed ones which seem to be mutually exclusive. When he begins his explanation of invented natures he says that they are not true and immutable, then goes on to say their elements can be separated because they have been put together. His explanation of how consequences follow from them seems to rule them out as ever being true and immutable. This distinction crashes when Descartes introduces a new nature: the triangle-inscribed-in-a-square. He says that this both a constructed nature and one from which new consequences follow.

The Triangle-in-a-Square: A Special Case

Descartes adds this idea and that of a winged horse to Caterus' existing lion as examples of constructed natures. Just as with the winged horse, we can understand triangles and squares without there being any connection between them. Each stands as a complete nature so the triangle-in-a-square is put together by inscribing the one in the other. And, as constructed, it should not have any unforeseen consequences. He then says something at odds with this; we can learn something new from the relationship between the two. The area of the square $\geq$ twice the area of the triangle. We cannot know this from either of the elements but only from their combination. So, this constructed nature has unforeseen consequences that follow from its construction. With this example we have an apparent contradiction.

The contradiction can be eliminated if we can show that there is a difference between this example and the other two that Descartes talks about. He gives a hint when he rejects the first two as natures that are 'not transparently clear'.[109] These are physical examples and what is not transparently clear is how the elements connect in the winged horse and the existing lion. The triangle-in-a-square is an example of pure mathematics. Descartes has reduced the physical world to the single property of quantity and so mathematics is the language of physics. The structure of the physical world is known in general; it is material particles in motion. But, the size and shape of specific particles and their specific motions are discovered through experience. When they are examined completely we will then have the basis for determining if, for example, a winged horse is a true and immutable nature.[110] Only the static mathematical properties are organized into a complete system in which all of the objects are fully defined by the same basic terms.

We can understand this duality more clearly if we look back at what Descartes says in the *Rules* about natures. In Rule XII he says that he may initially know the triangle without it having "occurred to me that this knowledge involves also the knowledge of the angle, the line, the number three." (AT X, 422; CSM I, 46) Both the triangle and the components are simple natures, epistemologically speaking. At the same time, information follows from the triangle that does not follow from any of the simpler natures taken separately. It is the interrelationships between the components that yield

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[109]AT VII, 117, 19-20; CSM II, 84

[110] This shows the need for experience and experiment in Descartes' science. We may know *a priori* the basic structure of matter but not the particular configurations entering into a particular case.

the unforeseen consequences; the same is true of the triangle-in-a-square. It works in this case because all three figures, the complex and each of its components are part of a single unified system: Euclidian geometry. The complex is constructed insofar as it can be broken down into its components. But it too is an identifiable figure in that same space and thus open to deducible consequences. This example underscores Descartes' position on the unity of the sciences. All matter is reduced to a single set of properties in opposition to the scholastic categories based on different substantial forms.

The rejection of the physical examples is provisional. We cannot know whether there is a possible interaction between the components until we know their exact structure. Knowing the structure of both in the same terms allows us to know if wings and horses are compatible. Could wings be attached to horses? Could the interplay of muscle movement in each allow for flight? For now the triangle-in-a-square is a special case but it is within the realm of possibility that winged horses, chimeras and a whole world of 'constructed' beings might be true and immutable natures. But, to assess this we must have full knowledge of each component under the same set of defining properties and principles.

Although the various things said about the two kinds of natures are not incompatible, Descartes does distinguish the two. With the fuller understanding of invented natures we can return to that distinction and see what he means. He says true and immutable natures have consequences we are not initially aware of; invented ones do not. As we have seen, invented natures can be composed of true and immutable natures so, how can they fail the consequence test? The short answer is they do not. In Meditation III all of Descartes' ideas, the content of which are natures, have only two

sources: those discovered through introspection and those that come from outside, if there is anything outside of him. Invented natures or ideas are the result of mental acts: the act of combining already existing ones. When inventing a complex nature he intends that everything in each of the components be included. All of the details and possible consequences are no more immediately apparent in the components than they are in the invented complex. But they are all intended to be present in invented natures just as they are present in true and immutable ones. So, the invented natures contain nothing new insofar as they contain nothing that is not already in their component natures. With the exception of pure mathematical natures, we can draw consequences but only those that already follow from each component separately.

Consider the winged horse again. It can serve as an example of what he means by conscious inclusion of consequences in invented natures. All of the properties of wings and all of the properties of horse are included in the composed idea of a winged horse. He may not have examined either nature completely so there may still be unforeseen consequences in each component and thus also in the composite. For instance there may be aerodynamic principles of the wings and dietary requirements for the horse that are discovered after the composition. But, those consequences are brought to the composite nature by each of the components. At this stage of Cartesian science there is nothing new to be learned from combining the two. This, of course, is why he rejects the example.

3) The Critics: Unforeseen Consequences (Essence)

Despite the compatibility, some critics find apparent difficulties in Descartes' treatment of true and immutable and constructed natures. In this section I will address two critics, Margaret Wilson and John Cottingham. Both use non mathematical examples

but they are nonetheless useful in clarifying aspects of Descartes' position. I will address Wilson first and then Cottingham.

Wilson: Unforeseen Consequences

Wilson criticizes Descartes' treatment of true and immutable natures on the grounds that unforeseen consequences do not adequately distinguish them from constructed ones. Descartes says that only true and immutable natures have unforeseen consequences. The only implications that follow from a fictitious or invented nature are those that I put into it when constructing it. Wilson argues that unforeseen consequences can follow from an invented nature. She uses an invented nature – Onk – to make the argument. Onk is "the first non-terrestrial life form to be discovered by man." (Wilson, 172) This is clearly an invented nature since there are no known non-terrestrial life forms. But, she continues, I could have failed to consider all of the necessary properties of a life form when constructing the nature. For example, when reflecting on the construct I may realize that Onks, as life forms, can reproduce; something which I did not consider in inventing this nature. So, it has an unforeseen consequence just like a true and immutable nature. Unforeseen implications then are apparently not a sufficient criterion for distinguishing true and immutable natures from fictitious ones. Wilson's argument rests on a literal reading of Descartes' claim that everything in a constructed nature put there at its construction. When constructing a complex nature I must be aware of all the specifics of the natures I combine in the complex. If it did not occur to me at the time that reproduction was a necessary function of a life form, then I did not include it in my construction of Onk. I must be conscious of it when I construct the invented idea or I do not include it in the construction. If it was not consciously included, then the

deduced property is an unforeseen consequence and not dependent on the constructor's will. There are two problems with Wilson's argument.

The first problem has to do with the way Descartes understands natures. He does say that we know what follows from the invented nature because, having invented it, we know just what it consists of. But, Wilson's reading is too rigorous. We do not have to be aware of every detail about the nature; in fact we cannot or there would be no unforeseen consequences. To clarify this we should look back to Meditation III. There, Descartes says that the content of ideas, i.e. natures, have only three possible sources. They are either innate, adventitious or constructed. Constructed natures are formed by putting together content we already have. That content can only be innate, adventitious or other constructed natures. But, those other constructed natures must ultimately be traced back to either innate or adventitious. So, the source of all constructed natures is either innate or adventitious and those that we clearly and distinctly perceive are the simple natures of the *Rules*. Meditation V's invented natures are the constructed natures of Meditation III. Every invented nature is just a composite of already available ones. Descartes says that various unforeseen consequences follow from simple, or true and immutable natures. For example, from a triangle (an epistemologically simple nature) we can deduce that the sum of its angles is 180º. It follows from its nature as a type of closed figure in Euclidian space. We do not immediately recognize it from the idea of a triangle, we deduce it.[111]

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[111] The deduction, of course, requires the rest of the axioms, definitions and postulates of geometry. This is also a point that underlies much of Walter Edelberg's paper "Meditation V" in the *Philosophic Review*. The role of natures as part of a formalized system is helpful in understanding Descartes' theory.

Let us go back to Descartes' winged horse. When we construct the idea of a winged horse we put together the ideas of a horse and that of wings. As I have already noted it does not mean that we must have in mind every property of each element when we do so. We do not need to have thought of the exact shape of the wing or the feather size ratio from top to bottom of the wing. We need only to have thought of wings; whatever follows from being a wing is implicit, when we constructed the idea. We can know the nature without perhaps ever knowing everything that follows from it.[112] Descartes' idea seems to be that our intuitive grasp of a nature provides all that is necessary to discover facts about the nature even if they are so numerous that we may never exhaust them. So, any nature, be its source innate or adventitious knowledge, can be the source of unforeseen consequences as long as it is clearly and distinctly perceived. It is the same with 'life form'; reproduction is implicit in that nature and can be drawn out even if I did not consciously think of it when including it in Onk.

This brings us to the second problem with Wilson's argument which follows from the first. Her example fails to recognize the source of the unforeseen consequences in the constructed nature. As constructed, the parts can be wholly separated and will as I said be true and immutable, if clearly and distinctly perceived. From a part unforeseen consequences can be deduced. This is what happens in the constructed concept of Onk. It can be broken down to a 'life-form' with qualifications: 'extra-terrestrial' and 'first example'. It takes the form ' _____ life form'. We can fill in the blank with various substitutions to the constructed nature, for example:

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[112] See Meditation III where he says this about our idea of God – AT VII, 46; CSM II, 32

Second discovered example of extra-terrestrial life-form

Two thousand foot wide extra-terrestrial life-form

Red Antarctic life-form

In each case, the reproductive property is still present but only because it is a life-form. Reproduction has no connection with any of the other elements. We can see this again if we take Wilson's form and make a different substitution. We keep 'first discovered' and 'extra-terrestrial' but substitute 'eating utensil' for 'life form'. It has all of the characteristics of Onk except that life form is replaced by eating utensil. This new constructed nature does not involve reproduction (assuming that forks are not self-replicating.) So, we can deduce the unforeseen consequence from Onk but this does not show it to be true and immutable. The unforeseen consequence follows from the one element life form not from the complex as a whole.

Wilson's example falls short for the same reason as the winged horse. In neither case do we have any fully developed system that underlies each of the components. Wings and horses have not been explained in terms of particles of matter moving in space. Nor is there any clear connection between order, the act of discovery and life. Without those connections there is no way to understand how and if the components interact. So, we can deduce no unforeseen consequences following from the combination of elements.

Cottingham: Existence as a Predicate & Ontological Overload

Cottingham's criticism of Descartes' is not directly about unforeseen consequences. He examines true and immutable natures in terms of the Ontological Argument and what existence as a predicate implies. He argues that if we accept

existence as a perfection (property) then we are faced with the problem of ontological overload. This is the claim that we can construct ideas or natures which include existence and thus commit us to the actual existence of corresponding objects.[113] I am not concerned with existence as a predicate, but with his views on the relationship between true and immutable natures and invented ones. He begins by arguing that Descartes seems to say that anything found in a nature belongs to it necessarily since, were it removed, it would no longer be that nature. He says that Pegasus would not be Pegasus (a *winged* horse) if the wings were removed. It would be just a horse. Wings are logically inseparable from the nature Pegasus. This is true but Cottingham seems to misunderstand Descartes' view of fictitious or invented natures such as Pegasus. It is true that for Descartes, what is found in a nature (or, at least its major properties) is necessary for it to be that nature. In the case of an invented nature like Pegasus, it necessarily contains both a horse's body and wings. But, that is because we put those elements into the construct. He never says that taking one component from a constructed nature leaves the remainder as that construct. It is true that having wings is an essential property of being a Pegasus. Taking that away from the nature and having it remain Pegasus is not possible; what is left is a horse. I have already discussed how put together physical natures possess the properties they do; they have the distinct properties of each of their components. We lack full knowledge of how the components might work together so we cannot infer any new properties from the combination. When they are split up into their components neither remains the compound nature. Neither the wings

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[113] Cottingham 1986, 62-63 – Descartes would reject this since no essence (except God) includes existence.

nor the horse is a Pegasus. Being a horse with wings is a logical necessity for Pegasus only because we put them together. No essential property can be separated from a nature and have it remain the same nature; Pegasus is not Pegasus without wings. But this is irrelevant to the issue. Descartes' point in all of his examples is not that the components are not connected to the construct, but that they can be separated into distinct natures. That is, the component natures are not necessarily connected with each other unless there is a common set of properties. Descartes' example of the triangle-in-a-square made this point. We cannot know how the components might interact to give new consequences unless we can reduce all components to the same set of defining properties. He has reduced all in the physical world to particles of matter in motion but he still lacks the specific knowledge of wings and horses for instance. So, he cannot know if there could be new unforeseen consequences.

This misreading of Descartes leads to the accusation of ontological overload. Cottingham's starting point is the Ontological Argument in which Descartes reasons that a perfect being must include existence as one of its perfections. Cottingham argues that just as God's nature contains existence as an essential property, Superpegasus, defined as Pegasus with the additional property of existing, contains that property essentially. We cannot remove existence from God's nature and have it remain God. Cottingham says that if that argument holds, then the same is true of Superpegasus. Removing that property and having it remain Superpegasus is logically impossible. So, in accepting the Ontological Argument, Descartes is committed to Superpegasus as well. We can then do the same with any object in whose nature we include existence: superrabbit, superoak or superlion. But, as we have seen, that is not to the point. Whatever the problems with the

Ontological Argument, this is not one of them. Existence may very well not be a property. Descartes' assumption that it is still does not lead to Cottingham's overload argument because he holds that the concept of God is not an invented nature while Superpeagsus is. Let us look at Cottingham's argument more closely.

Descartes, like Anselm, takes the idea of God to be a special case. In Meditation III he defines God as an infinitely perfect being and treats it as a simple nature. We do not construct it by extrapolating from our own finite imperfection. Since it is the "supremely perfect" being, it is the only nature that cannot be conceived without existence as part of it because existence is a perfection. Without it God would not be supremely perfect.[114] Existence may very well not be a perfection but Descartes' point here is that the idea of God is one whose content includes all perfections. The most important difference between Descartes' God and Cottingham's Superpegasus is this. Descartes' argument hinges on the nature not being constructed. He starts his argument with God. Cottingham's example starts with Pegasus and adds existence to it. In each case the nature begun with has all the properties that make it that nature. For Descartes existence is part of God's nature and to take it away means we are missing a property so, we no longer have God. We do not have what we started with. To make his argument Cottingham adds existence to Pegasus and calls it Superpegasus.[115] He rightly says to take existence away makes it no longer that nature: Superpegasus, i.e. existing Pegasus. But, it does leave Pegasus with all the properties that make him Pegasus and this is what

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[114] AT VII, 68; CSM II, 47

[115] Pegasus is, itself a constructed nature but we need not concern ourselves with this.

Cottingham started with**.** Superpegasus then, is an invented nature. We have invented it by combining Pegasus with existence; calling it an object and giving it a single name does not alter that fact. The idea of God is not invented. Descartes does not say the nature is a perfect being to which we add existence; it is just a perfect being. If we take existence away from it then, as Cottingham says, it is no longer God. In the case of the 'supers' we have added existence to other complete natures. None of these natures require existence to complete it. Rabbits are herbivores with long ears, oaks are large trees with oval shaped leaves and lions are large carnivores of the genus *panthera*. In these cases we can take existence away because we put it in. Existence adds nothing to the meaning of these natures. The Ontological Argument may fail because existence is not a property; it does not fail because it is an added property.

Cottingham raises a second problem with Descartes' treatment of invented and true and immutable natures. He turns to the *Conversation with Burman* where the question of unforeseen consequences is discussed. Burman brings up the *chimera*.[116] He says that he can demonstrate properties of the *chimera* so it must be a true and immutable nature. Burman offers no examples of these properties so we do not know what he might mean. It could be something like having cloven hooves or the ability to burn down a building but this is speculation. In his response, Descartes treats the *chimera* as an invented nature. He says that we cannot see the link connecting the parts of the *chimera* and so, there are no unforeseen consequences from the complex; only from the parts.[117]

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[116] A *chimera* is a mythical fire breathing monster with a goat's body, lion's head and serpent's tail

[117] *CB*, 23

So, Cottingham says Descartes is saying there must be an analytic link between the parts for unforeseen consequences to follow.

This is an apparent solution to the problem. In neither Superpegasus nor the *chimera* are the components necessarily linked. Cottingham goes on to compare the *chimera* with Descartes' triangle-in-a-square. Like the *chimera* it is constructed (by inscribing a triangle in a square). At the same time, it is true and immutable because we can demonstrate properties depending on both components. The natures would need to be necessarily linked to do this but, they are not. "Descartes seems to be in an impossible dilemma here." (Cottingham 1986, 63) Cottingham says there are only two options. a) Unforeseen consequences follow only from unconstructed natures and the triangle-in-a-square cannot have them. b) It does have them and unforeseen consequences are not limited to unconstructed natures.

I addressed this issue earlier. Constructed natures that are part of a fully defined system like geometry can have new unforeseen consequences. Through the postulates they have the necessary links that allow their connections to be known. Cottingham concludes that Descartes restricts unforeseen consequences to unconstructed natures since constructed ones do not have analytically linked components. Descartes never says this. First, he says that constructed natures have components that can be separated into natures that are clearly and distinctly known separately but he does not say that they cannot have unforeseen consequences. When he rejects winged horses and *chimera*, he is addressing specific natures; we do not know the connections (if any) between <u>their</u> parts so we cannot draw any new consequences. If we understand both components in the same terms we have a way of understanding how they might work together. The

triangle-in-a-square is a special case just because both it and its components are part of a fully developed system which allows a clear and distinct understanding of how they connect. The link lies in the triangle and square both being figures in Euclidian space. Natures that are clearly defined in terms of geometric extension may be true and immutable if they are constructible within the system of Euclidian geometry. It does not matter that the parts can also stand alone in the system. They are linked by the postulates and definitions that define the system. The physical examples do not count as true and immutable natures because he does not yet have a sufficiently developed physics. Only that will allow him to know how the parts may connect and function. Descartes had the skeleton of a physical system which consisted of moving particles in a Euclidian space but he did not have specific information about wings and horses or goat heads and lion bodies. For the examples to be anything but a taxidermy project he needed to know how those collections of moving particles could interact

We end with a more complicated picture than originally thought. Using Descartes' idea of epistemological simplicity we see that natures come in many sizes. There are (a) simple true and immutable natures, (b) constructed true and immutable natures and (c) constructed natures that are not true and immutable. The second category is only possible if all of the components are definable with the same set of terms. Burman's *chimera*, Wilson's Onk and Cottingham's Superpegasus all fail. At this stage of the Cartesian project only ideal Euclidian configurations satisfy that requirement

AFTERWORD

Ostensibly the *Rules for the Direction of the Mind* was a treatise on method. A careful reading of it shows that method was actually a secondary but necessary result. The guiding idea behind it was the rejection of the scholastic view of the physical world. Descartes replaced the *qualia* of scholastic forms with a purely quantitative understanding of the physical. This has two consequences.

The first consequence is the adoption of mathematical proofs (esp. geometry) as the method for reaching certainty in knowledge of the physical world. If that world is just quantitative, then mathematics, the science of quantity, describes it. Geometry has basic terms (point, line and so on), postulates and general axioms; physics is ordered in the same way. It too has basic concepts (extension, shape and the like) and immediate propositions that describe the simple relationships between the concepts. Physics has the same general propositional truths as mathematics stating equality and inequality relations. Complex theorems in mathematics are proven by reducing them to basic postulates and reconstructing them in terms of those simples. In the same way, physical problems are reduced to simple basic propositions and solving the problem in those terms.

The second consequence is the strong distinction between the physical and the mental. In his desire to have a simplified mathematical definition of matter, Descartes is unable to include any mental phenomena in his explanation. The scholastics used the idea of forms with increasingly large sets of properties, including rational thought, to explain substances with various levels of complexity. This was impossible for him given his limited definition of material substances as objects extended in space. That is the only property they have. Minds become distinct substances whose defining property is

thought. Descartes has simplified the world by eliminating the myriad formal qualities present in scholastic thought; all properties will be explained either in terms of particles moving in Euclidian space or thought. He has, however, introduced a whole new complication by reducing the world to two mutually exclusive kinds of substances whose interaction remains a problem still being argued over today.

The concepts and the basic propositional expression of them are the simple natures. They fall into the two ontological categories: matter as extension (e.g. shape, size and location) and mind as thought (e.g. understanding, willing and doubting). Mind is not examined in any detail since Descartes is concerned in the *Rules* with physical science. It is mentioned in passing in Rule VIII and laid out clearly in Rule XII but is not made subject to the method as matter is. At the time he wrote the *Rules* he was interested in establishing physical science on a sure footing. It was not until later that he realized that, to do this, he needed to order the complete ontology.

While the *Rules* was written early in Descartes career, its principle themes were not abandoned in his later work. As we have seen, the simple natures of Rule XII are all in play within the first thirteen pages of the *Meditations*. By the time Descartes has reached the *cogito* and the wax experiment of Meditation II, he has a definition of mind as thought and matter as extension. (AT VII, 25-31; CSM II, 17-20) These are the basic definitions he works with; they are never called into doubt. Skepticism, the catalyst that led to the *Meditations*, brings Descartes to question the existence of a material world not its essence.

The natures of the *Rules* are simply listed side by side. Matter has certain properties and mind others. The biggest step forward in the later writings is the ordering

of the natures. Descartes looks to determine the existence of a material world by first showing the certainty of the mental world. He does this using a general form of the method from the *Rules*. That method takes a complex problem, reduces it to simple intuited natures and re-constructs the problem in terms of those simple natures yielding a solution. In Meditation I the existence of a complex physical world is systematically reduced to nothing certain.[118] At the end of this analytic reduction in Meditation II Descartes reaches his key intuition: a mind characterized by thought alone. The extensive content of this mind gives him the material to re-construct the material world in the last two meditations.

The *Rules* and *Meditations* are separated by thirteen years and problems of skepticism. But that is all that separates them. Method and intuited simple natures, as first developed in the *Rules*, are the tools Descartes uses to answer the skeptics.

[118] In his initial, pre-analyzed world even the soul was seen as material: an ether spread throughout the body. (AT VII, 26; CSM II, 17)

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