

Christian Theology and the Modern Science of Nature
A Critical Analysis of Michael Beresford Foster's *Mind* Articles

by

Paul David Wilkinson Teel
B.Sc., Wheaton College, 1989

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MASTER OF ARTS

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ABSTRACT

In 1934, Oxford philosopher Michael Beresford Foster (1903–1959) published an article in *Mind*, the prestigious British journal of philosophy. The article argued for a positive relationship between Christian theology and the rise of modern science. Two more *Mind* articles followed in 1935 and 1936. Taken as a whole, the three articles make for one philosophically sophisticated and complex argument, often referred to as the “Foster Thesis.” In this paper I aim to contribute to the ‘Fosterian’ conversation in two ways: in Part One, I present a thorough and detailed synthesis of Foster’s three *Mind* articles, and in Part Two, I present a critical literature review of published references to the Foster Thesis. The first has never been done before, and the second has not been done since 1964 (at which time there were only six published references, as opposed to the more than forty today).

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To Heidi Laurel Ruth Wilkinson Teel,

without whom . . .

General Introduction

In 1934, young Oxford philosopher Michael Beresford Foster (1903–1959) published an article in *Mind*, the prestigious British journal of philosophy. The article argued for a positive relationship between Christian theology and the rise of modern science, a surprising argument for that time and especially for that journal, which—as we will see argued in Part Two—could be seen as particularly hostile to the serious philosophical study of any religious claims. Two more articles followed in 1935 and 1936, each of these *also* in the journal *Mind*. Taken as a whole, the three articles make for one philosophically sophisticated and complex argument, often referred to as the Foster Thesis.

Mind never published a response to Foster's three articles. In fact, *nobody* did—other than a very brief mention—for nearly a decade and a half. His articles seemed to have come out of nowhere and returned there. However, once commentators did finally begin a 'conversation' with Foster (and with each other), that conversation developed a life of its own; despite the fact that Michael Beresford Foster is not broadly known, interest in the Foster Thesis is still very active today. Numerous scholars in various fields have analysed, criticised, railed against, or added to the Foster Thesis.

Through this paper I aim to contribute to the 'Fosterian' conversation in two ways: in Part One, I present a thorough and detailed synthesis of Foster's three *Mind* articles, and in Part Two, I present a critical literature review of published references to the Foster Thesis. The first has never been done before, and the second has not been done since 1964 (at which time there were only six published references, as opposed to the more than forty today).

On the 70th anniversary of the completion of the Foster Thesis, it is my hope that this paper will provide a helpful and illuminating summary and analysis of this influential argument, as well as the conversation surrounding it.

1.1 Introduction to Part One

In Part One, I attempt to do what nobody—including Michael Foster himself—has done before: present as *one argument* all that Foster presents in his three *Mind* articles,¹ which for brevity's sake I will call Foster 1934, Foster 1935, and Foster 1936. To be sure, most commentators have attempted some sort of summary, but what took Foster three years and three journal articles to accomplish simply cannot be summarised in a few sentences, paragraphs, or even pages. What is required is the luxury of time and space afforded by a project like this.

However, in undertaking this synthesis I am aware of two dangers. The first is the danger of success. Put simply: the harder I work at cogency, the more successful I am in *clearly* presenting as one argument what Foster presented in three articles, the more it will look as if I have not done very much. This is especially true for the reader who has not had the difficult pleasure of reading through Foster's articles. The second danger is related: the danger of undisclosed commentary in the service of explication. The act of synthesis necessarily involves a certain degree of editorial license. To that end, I have made two assumptions: (1) Foster really *did* see these three articles as a whole, and (2) Foster was an intelligent philosopher. As a result, when there are choices to be made in the interpretation of a troublesome text, I have chosen that which best serves the project of synthesis, that which best fits the rest of the Foster Thesis as I read it. When I have seen fit to comment directly about some of these decisions or about Foster's argument generally, I have done so; otherwise, as much as is possible, the text of Part One aims to present Foster's own thinking. However, it should be read as it was written: with the above dangers in mind.

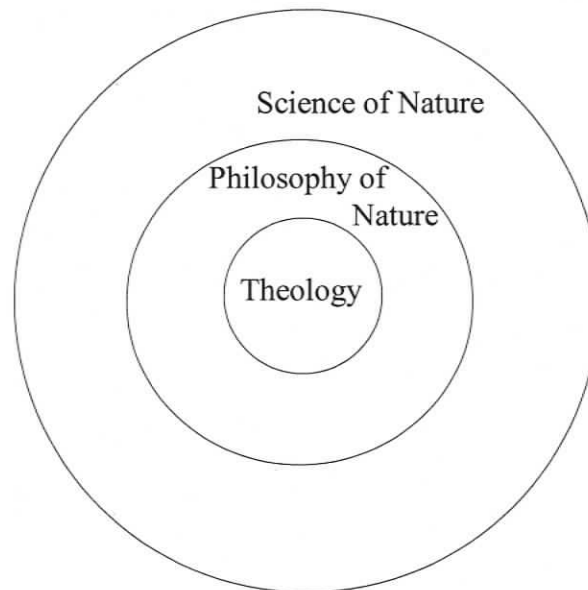
¹ "The Christian Doctrine of Creation and the Rise of Modern Natural Science," *Mind* 43 (1934), 446–68; "Christian Theology and Modern Science of Nature (I)," *Mind* 44 (1935), 439–66; and "Christian Theology and Modern Science of Nature (II)," *Mind* 45 (1936), 1–27.

1.2 Setting Out the Basic Thesis

Throughout his three *Mind* articles, Michael Foster discusses connections among the realms of theology, philosophy of nature, and science of nature.² As to the nature of the connections among these realms, Foster says that a “strict reciprocal implication between theology, philosophy and scientific method” is “the principle upon which I depend throughout.”³ Before we explore the details of the Foster Thesis, then, we should take some time to understand Foster’s guiding principle.

The Basic Image

A useful image in this regard is a set of three concentric circles.



The innermost circle represents what Foster called “Theology,” the middle circle represents “Philosophy of Nature,” and the outermost circle represents “Science of Nature.” The definitions of these terms will be forthcoming, but for now it is important

² While this is a hugely ambitious enterprise, it is also (precisely *because* it is so ambitious) quite an attractive enterprise, which in all likelihood accounts for the enduring influence of (and interest in) the Foster Thesis.

³ Foster 1936, 5. Any discussion of the connections among these realms presupposes a knowledge of the *nature* or *definitions* of these realms. While Foster does offer some brief definitions, he often proceeds as if there is general consent as to what these realms really are.

to note two things about this concentric circle model. First, while for Foster these circles represent realms of ideas with eventual implications for each other, they might not always exist or function in a logically coherent way at the level of the individual. In other words, it is psychologically possible for a person to subscribe to a theology which is logically incompatible with her philosophy of nature. Rather, Foster seems to think of these realms of ideas as operating primarily at the level of a culture as it evolves through time. Second, the image of the concentric circles is mine, not Foster's. I use it here because it effectively and helpfully 'spatializes' his discussion of implications (when working from the inside out) and presuppositions (when working from the outside in).

Foster's use of the words "strict reciprocal implication" will be the source of much debate in Part Two. Some commentators take Foster to mean that any theology has *one and only one* logically linked philosophy of nature which in turn has *one and only one* logically linked science of nature. These commentators then read Foster as saying that the rise of modern science was the *inevitable and only possible outcome* of Christian theology. Other commentators read Foster to be saying that a theology carries with it logically implied possibilities for a philosophy of nature—some (or one) of which may be more likely than others—and that the same mechanism of logically implied possibility is at work linking the realms of philosophy of nature and science of nature. This second interpretation best fits the rest of the Foster Thesis; therefore, for the purposes of this synthesis my reading of "strict reciprocal implication" is that every theology cannot help but imply a philosophy (or perhaps some philosophies) of nature, and that every philosophy of nature cannot help but imply a science (or perhaps some sciences) of nature. Likewise—and this covers the term "reciprocal"—every science of nature cannot help but presuppose a philosophy (or perhaps some philosophies) of nature, and every philosophy of nature cannot help but presuppose a doctrine (or perhaps some doctrines) of God.

From the Inside Out

“Theology,” for Foster, means “a doctrine of God.”⁴ God can be conceived as Creator, Parent or Generator, Artificer or Demiurge, Final Cause, Nature Itself, etc. This is the inner circle. Each of these doctrines—or conceptions of God—has implications for how one conceptualizes nature: as fine art, as offspring, as artifact, as eternal, as divine, etc. This is the middle circle. And, of course, what one thinks nature *is* will have implications for how one goes about studying it. (For example, Foster will argue that if one considers a natural object to be what it is by virtue of its form alone, then one will consider the materiality of that natural object to be a necessary tool for—but not the actual object of—a science of nature.) This study of nature is the outer circle.⁵

From the Outside In

Foster also discusses these implications in reverse, using the language of incompleteness and presuppositions. He begins with the outer circle. “Every science of nature must depend upon presuppositions about nature which cannot be established by the . . . science itself.”⁶ This incompleteness is then ‘remedied’ by the middle circle: Philosophy of Nature. For Foster, “philosophy of nature” means the assertion of “the truth of what natural science presupposes.”⁷ Similarly, Foster believes it is theology that supplies the presuppositions present in forming a philosophy of nature. We will see examples of these ‘reversed’ implications in a moment, as we explore Foster’s analysis of what he calls the Greek world view.

The Foster Thesis

Foster defines “Greek science of nature” as “such science, or attempted science, of

⁴ Foster 1935, 440.

⁵ Notice that atheism and pantheism have nearly identical implications in the concentric circle model: each denies the need to look any further than the middle circle when looking for the cause of nature. Agnosticism, on the other hand, is not a denial of the inner circle but rather a refusal (for any variety of reasons) to talk about it.

⁶ Foster 1935, 439.

⁷ *Ibid.* He gives uniformity-in-nature as an example.

nature as conformed to the canons of Aristotelian Logic”⁸ and “modern science” as what we might now call early modern science or classical physics. Clearly, says Foster, the modern science of nature is very different from the Greek science of nature. Foster, in answering the question of how that came to be, repeatedly appeals to the principle modelled in this synthesis by the image of concentric circles. He argues that a crucial factor was the introduction of Christian theology to the ‘inner circle’ or core of the Greek tradition inherited by the West, and the interaction which followed this introduction. The resulting tension and energy brought theological changes whose implications eventually made their way to the outer circle.

In the following ‘sub-theses’ of the Foster Thesis, the underlying principle is actively present:

The general question arises: What is the source of the un-Greek elements which were imported into philosophy by the post-Reformation philosophers, and which constitute the modernity of modern philosophy? And the particular question—which is merely part of the general question repeated: What is the source of those un-Greek elements in the modern theory of nature by which the peculiar character of the modern science of nature was to be determined? The answer to the first question is: The Christian revelation, and the answer to the second: The Christian doctrine of creation.⁹

The object of this article is to exhibit some implications between Christian theology and the philosophy of nature which is presupposed by modern natural science.¹⁰

The object of this article is to show that the modification of the philosophy of nature necessitated by the peculiarities of Christian theology is precisely that presupposed by the peculiarities of modern natural science.¹¹

A departure from rationalism in theology by the ascription to God of an arbitrary faculty of will must involve a reformation of this philosophy of nature, and in consequence a revolution

⁸ Foster 1934, 453. “. . . and I shall not be disturbed by the fact, if it be one, that the Greeks developed some sciences not so conformable; or that the systematic attempt to apply Aristotelian methods to the investigation of nature was characteristic rather of the medieval scholastics than of the Greek philosophers. The peculiar characteristics by which modern is to be distinguished from Greek natural science may consequently be determined simply as those which render the former unconformable to the canons of this logic” (453–4).

⁹ *Ibid.*, 447.

¹⁰ Foster 1935, 441.

¹¹ *Ibid.*, 442.

in the methods of natural science.¹²

Notice that Foster does not argue that theologians and philosophers were consciously trying to prepare the West for a modern science whose rise they foretold. Rather, Foster argues that—in working from the inside out—the Christian West was consciously trying to solve problems concerning the doctrine of God (and subsequently his¹³ relationship to nature). As it happened, argues Foster, the philosophy of nature wrought by theology ‘from within’ is the same as that which must be presupposed by modern science ‘from without.’ In fact, Foster identifies a shift in the modern period from “establishing the possibility” of modern science to “justifying the presuppositions” of modern science.¹⁴

He goes on to explain the shift:

The relation of philosophy to science varied according to the degree of development which the latter had achieved at the time. By the later centuries of the modern era the sciences of nature had become so firmly established that they formed a datum from which philosophical speculation could start. This does not of course mean that the philosopher dogmatically accepted the truth of any scientific hypothesis. He assumed only that a science of nature was possible (because it was actual), enquired into the presuppositions of its possibility, and tested his conclusions by their compatibility with it. This procedure is what Kant first named the Critical Method¹⁵

We will return to Foster’s use of Kant at the end of Part One.

The concentric circle model helps us see the shape of Foster’s argument: we will first explore the inherited Greek world view from the outside in, add Christian theology to the inner circle, and then work our way back out. We will start, in other words, with the Greek science of nature and—after travelling to the theological core and back—end with the modern science of nature.

¹² Foster 1936, 4.

¹³ I will use ‘male’ language for God in this paper. This is for no other reason than that it is the language Foster used and therefore will allow for the greatest continuity with quotations from his work.

¹⁴ Foster 1934, 446.

¹⁵ *Ibid.*, 446–7.

1.3 The Inherited Greek World View

Outer Circle: The Greek Science of Nature

Geometry, says Foster, is the perfect model for Greek science. In geometry, we have definition and deduction, in that order. Once a circle is defined, for example, its properties can be discovered through logical deduction. Some ‘sensuous experience’—as Foster calls it—may be necessary *at first* to get to the logical, intelligible, timeless, immaterial definition, but then the sensuous is left behind and logical deduction takes over.

Consider, for example, that nobody has ever seen a circle. No matter how carefully drawn, any *visible* circle must have some thickness to it. That thickness, however, prevents the drawing from conforming to the definition of a circle—a curve everywhere equidistant from the centre—because the inner edge of the ‘thick’ curve will be closer to the centre than the outer edge. In other words, if one can see it, it is not a circle; if it *is* a circle, one cannot see it. This is not to say that drawings are not helpful; they can be. However, *no* drawing can generate the definition of a circle. That definition is the result of a ‘leap’ *from* sensuous experience *to* immaterial reason: “definition is an act of reason containing no element of sense.”¹⁶

The assumption at work in Greek science, then—and here we risk edging prematurely toward the ‘middle circle’—is that the essences of natural objects are definable in the same way a circle is. A quick look at the ways modern science is distinguished from this view will show us just how far we have to go:

Modern science describes natural substances instead of defining them, it discovers their properties by observation and experiment instead of by ‘intuitive induction’ and demonstration, it classifies their species instead of dividing their genera, it establishes between them the relation of cause and effect instead of the relation of ground and consequent.¹⁷

In all of these differences, the main contrast is found in the roles played by sensuous experience and reason. For the Greeks, as in their geometry, “it supplied the *illustration*

¹⁶ Ibid., 454.

¹⁷ Ibid.

but not the *evidence* of the conclusions of science.”¹⁸

Middle Circle: The Greek Philosophy of Nature

What view of nature is presupposed by the Greek science thus described? According to Foster, precisely the view we find in the Greek philosophy of nature, in which every natural object is made up of sensible matter and intelligible form. (For Foster, “intelligible” means “capable of being so distinguished from the sensible that it can become an object of knowledge by itself.”¹⁹) But because the Greeks believed that the essences of natural objects are definable—and because definition is an act “containing no element of sense”—we must add that for any natural object it is the form, and the form *alone*, that makes the object what it truly is. Matter, then, “contributes no positive element to its being.”²⁰ Again, turning to an example from geometry, it is the *definition* of a circle that makes it what it is. No illustration or drawing can possibly *add* any “positive element” to the “being” of a circle.

Inner Circle: Greek Theology

What doctrine of God is presupposed by such a view of nature? Foster’s first answer comes in the form of a restriction on divinity: God *cannot* be thought to have created either matter or form. Why?

If matter were created it would possess a positive being, if form were created it would not be intelligible. The twin Greek doctrines of the ‘unreality’ of matter and the intelligibility of form imply that matter and form are alike eternal.²¹

Therefore, in Greek theology we should expect to find that God cannot exercise omnipotence over nature but *at most* can only be responsible for bringing together pre-existent, eternal form and matter. Foster’s second answer is that Greek theology must

¹⁸ Ibid. Emphases mine.

¹⁹ Foster 1935, 460.

²⁰ Foster 1934, 455.

²¹ Ibid., 456.

provide a reason to expect systematic unity in nature.

Looking for these two characteristics—uncreated form and matter as well as a reason for nature’s systematic unity—Foster then explores what he sees as the three major ‘types’ of Greek theology: (1) God as partially identified with nature, (2) God as Final Cause, and (3) God as Demiurge.

In the above quotation, Foster’s claim that form would not be intelligible if it were created requires, but never gets, further explanation. Foster may have meant that for the Greeks intelligibility entailed eternity, and that creation in time conflicted with that entailment.²² Or, he may have meant that for the Greeks intelligibility *requires* the possibility of conceptualisation through theoretical reason prior to practical activity or investigation.²³ In either case, what should have become an issue as Christianity is added to the story is the possibility of a God capable of creating eternal truths. Descartes, for example, did in fact subscribe to a doctrine of the creation of eternal truths. However, even though Descartes is mentioned with some frequency in the Foster Thesis, Foster never deals with Descartes’ doctrine. In fact, as we will see in Part Two, very few Fosterian commentators have addressed this issue.

(1) God as Partially Identified with Nature

Foster is referring here primarily to the Olympian Greek gods which appear “in nature and as natural objects.”²⁴ Clearly these gods meet the first requirement: they are *not* the creators of form or matter. But what about systematic unity in nature? Can these feuding gods really supply a reason to expect it? Here Foster relies on the fact that these gods were only *partially* distinguished from nature, resulting in a kind of pantheism. In

²² This interpretation is supported by Foster’s implicit equivocation (in the Greek mind) of *eternal* with *uncreated*.

²³ This interpretation is supported by Foster’s comment in *The Political Philosophies of Plato and Hegel* that as opposed to the doctrine of the Demiurge, “the doctrine of Creation contains the implication that the divine, and therefore the highest, form of practical activity is not determined by reason” (181).

²⁴ *Ibid.*, 457.

this somewhat pantheistic Greek polytheism, nature's systematic unity need not come from without; that is, it need not come from a *single* external force. (This is important if Foster is to show that a scientific unity in nature can flow from Greek polytheism.) Rather, there could be a 'divine' unifying force analogous to the way "the principle of life in an organism is related to its bodily members."²⁵ This force may at times be called 'God,' but this 'God' is still partially identified with nature and is still compatible with Greek polytheism. Hence, this first 'type' of Greek theology—God as partially identified with nature—meets both theological requirements: (a) uncreated form and matter and (b) a reason for nature's systematic unity.

In the next two theological 'types,' God is conceived in such a way so as *not* to be confused with nature.

(2) God as Final Cause

Foster is referring here to Aristotle's conception of God in which the *only* divine activity is "his own theoretical activity; and this activity terminates not upon the world but upon himself."²⁶ Aristotle's God is not even "the source of energy in nature; that must be held to arise within nature from the active potency of the form to realise itself; but is only the end upon which all energy in nature is directed."²⁷ Clearly, then, this doctrine of God meets the two theological requirements: Aristotle's God, while not the creator of form and matter, *is*—by virtue of being the Final Cause of all natural activity—the source of a systematic unity in nature.²⁸

²⁵ Ibid., 458.

²⁶ Ibid., 458–9. This terminology of Foster's—"terminates upon"—is used throughout his articles. It is seductively clear and yet frustratingly difficult to rephrase. It can mean "has as its object," "ends up producing," "has a logical connection to," or (most likely) all of these. Because of this I will continue to use Foster's language, calling attention to it as I do so.

²⁷ Ibid., 458.

²⁸ Foster's analysis of Aristotle's theology echoes that of Sir David Ross in *Aristotle*, 182–186.

(3) God as Demiurge

Foster is referring here to Plato's conception of God as a divine Artificer, fashioning the world in the way a craftsman fashions an artifact: using pre-existing matter as a means to embodying a pre-existing idea. God-as-Demiurge fashions the world by joining together pre-existing, eternal form and matter. In this way, the first theological requirement—uncreated form and matter—is met. However, at first blush it is more difficult to see how the doctrine of the Demiurge gives reason to assume a systematic unity in nature. To do this, Foster returns to a discussion of Aristotle, saying that in Aristotle's own thought, theology and philosophy are not always shown to be connected. For Aristotle, asks Foster, "Why should the same 'askesis' of reason which enables it to rise to the comprehension of the thoughts of God, enable it also to penetrate to the essences of natural objects?"²⁹ The 'doctrine' of the Demiurge is important here, answers Foster, because it *does* make the connection between the rationalism in theology and rationalism in philosophy of nature:

"According to this doctrine God not only thinks, but carries out his thoughts by giving them a material embodiment in the world of nature; natural objects, conversely, are nothing but embodiments of the divine ideas."³⁰

The doctrine of the Demiurge, then, means that natural objects are artifacts with intelligible definitions. This, in turn, means that—because the presence of *definition* means that there can be the categories of essence and properties, of genera and species—Aristotelian logic must apply, and the second theological requirement is met.

1.4 Confusion at the Core: Greek Paganism and Rationalism

We have followed Foster's analysis to the 'inner circle'—theology—of the Greek world view, but before adding Christianity to the mix and working his way back out, Foster pauses to analyse what he finds in Greek theology: a confusion, a mix of paganism and rationalism. Some definitions are in order here. For Foster, "paganism"

²⁹ Foster 1936, 2.

³⁰ Ibid.

means “the failure to distinguish God from nature”³¹ and “rationalism in theology” means “the doctrine that the activity of God is an activity of reason” and that “the activity of God is exhausted in ‘theoria’, or contemplation.”³² Even though the doctrine of the Demiurge does allow for the additional ‘practical’ activity of God in the fashioning of natural objects, Foster says it

may still be called ‘rationalist’ in the limited sense that it allows to God no activity of will not controlled by reason; and (since we shall have little occasion to refer in future to any theology which is ‘rationalist’ in the Aristotelian sense, that it denies to God any activity except that of pure theory) I shall apply the term ‘rationalism’ to it henceforth in contrast to any doctrine which attributes to God an activity of arbitrary will.³³

Generally, Foster sees Greek paganism as left over from earlier Greek theology. As he will later argue when discussing the Christian Reformation, Foster attributes this theological ‘leftover’ to beliefs not abandoned but internalized: “the Greek did not free himself from the teachings of his religion when he became a philosopher.”³⁴ Before moving to the evidence Foster sees for this confusion in Plato and Aristotle—and to understand why the confusion is a *problem*—we will explore what Foster sees as the implications of both paganism and rationalism, for God and for nature.

Exploring Paganism and Rationalism

In paganism, God-as-Parent produces nature-as-offspring through the act of generation. In theological rationalism, God-as-Artificer produces nature-as-artifact through the act of manufacture (the Greek *technē*). These views have similarities and

³¹ Foster 1935, 442. Foster also notes here that paganism need not be polytheism. For Foster, the opposite claim to paganism is *not* that God is one but that God is *immaterial*, that God is *ontologically distinct* from the world “and operates on it by the spiritual activities of will and reason.”

³² Foster 1936, 1.

³³ *Ibid.*, 3.

³⁴ Foster 1934, 457. In fact, it is in this very pattern of belief not abandoned but internalised that Foster finds Christian theology’s greatest influence in the rise of modern science. Early modern rationalism and empiricism, Foster claims, were ‘saved from themselves’ (that is, from the ‘scepticisms’ which are their logical conclusions) by an internalised Christian theology long enough to allow them to pave the way for modern science.

differences. The acts of generation and manufacture are *similar* in that both involve the information of matter with a pre-existent form: in each case, “the act itself may be termed indifferently the information of a pre-existent matter and the embodiment of a pre-existent form.”³⁵ And in each case, the form is the *essence* of the finished product. But, generation and manufacture are *different* in the way in which—prior to production—the form is possessed by the parent and the artificer. The artificer *has* the form through *conscious reason*; the parent *is* the realization of the form through *embodiment*. In the artificer, the form is antecedently intelligible (separable from its matter); in the parent it is not.³⁶

There are also important distinctions to be made between offspring and artifact.

In the offspring, form

is present as spontaneous, active power, the cause not only of motion and of growth to the body in which it is, but of existence also, inasmuch as it exhibits itself in a positive effort to preserve it in its being and to resist its disintegration.³⁷

The artifact, meanwhile, is always dependent on the artificer for these things. And concerning the motion of these two products, there is an important distinction to be made between the movement of an offspring and the movement of an artifact. For instance, a horse and a tiger would, because of their different forms, respond differently if struck in a similar way. However, if a wheelbarrow and a bicycle of roughly similar shape and size were struck similarly, they would respond similarly—despite having different forms.

Foster puts it this way:

The whole of the distinction which I have endeavoured to elaborate may be summed up best by saying that form is present in an artificial product as an embodied concept, but in a product of generation as an embodied ‘soul’.³⁸

The artifact, as an embodied concept, has the advantage in intelligibility (form

³⁵ Foster 1935, 446.

³⁶ For instance, I qua wheelbarrow-maker ‘possess’ the form Wheelbarrow solely in my immaterial reason, but I qua human-parent ‘possess’ the form Human only as long as I am embodied.

³⁷ Foster 1935, 447.

³⁸ *Ibid.*, 449.

antecedently separable from matter) but the disadvantage in spontaneous, active power. The offspring, as an embodied ‘soul,’ is in the opposite situation: it has the advantage in spontaneous, active power and the disadvantage in intelligibility. To confuse God-as-Parent with God-as-Artificer, then, is to confuse the acts of generation and manufacture as well as the products of offspring and artifact.

Now we turn to the alleged confusion, to the mixing together of paganism and rationalism, which Foster finds in Plato and Aristotle.

Confusion in Plato

Foster points to the *Timaeus*, in which Plato conceptualizes God as both Artificer and Parent: “the maker and father of this universe.”³⁹ Correspondingly, Plato refers to nature as both artifact (29A) and offspring (30B). Foster also sees a parallel confusion in Plato’s conception of the role of the philosopher. In the Cave Analogy of the *Republic*, the philosopher is described as an artificer, producing philosophical ‘artifacts’ based on intelligible forms possessed antecedently by conscious reason. But in Diotima’s Ladder of Love from the *Symposium*, the philosopher is described as a parent, producing philosophical ‘offspring’ based on a mystical, love-based union with Beauty.

Confusion in Aristotle

While, strictly speaking, Aristotle’s theology (God as Final Cause) allows for neither God-as-Parent nor God-as-Artificer, Foster says that Aristotle’s philosophy of nature presupposes a confused mixture of both. By removing from God any efficient causality in nature, Aristotle effectively left nature to be self-caused, thus giving natural objects the same spontaneous, active power they *would* have as offspring. In other words—when treating natural objects as embodied ‘souls’—Aristotle was conceptualizing nature as something God-as-Parent *could* make but God-as-Artificer could *not*. On the other hand, says Foster, “Aristotle asserts, and all the methods of

³⁹ *Timaeus* 28C, from Francis Cornford’s *Plato’s Cosmology*. Cornford, in his commentary on another passage, 41A, says, “‘Gods and works whereof I am father and maker’ means the whole universe, of which the Demiurge has been called maker and father . . .” (140).

Aristotelian science presuppose, that natural objects *are as though they were* the work of a Demiurge,⁴⁰ giving them the intelligibility they would have as artifacts. In other words, when treating natural objects as embodied 'concepts', Aristotle was conceptualizing nature as something God-as-Parent could *not* make but God-as-Artificer *could*.

As a result of this confusion, says Foster, Aristotle conceptualized natural objects as having all the intelligibility of artifacts *with the addition of* the spontaneous, active power of offspring. He did not recognize the balancing 'trade offs' of advantage and disadvantage discussed above in the analysis of the processes of generation and manufacture:

A clear insight into the distinction between these two processes of production would have facilitated the recognition that the product of the former differs from the artificial product not only by superiority (in virtue of the efficacy of its form) but by defect, in that its form lacks the intelligibility which that of an artefact possesses.⁴¹

Ultimately, Foster sees the confusion of Plato and the confusion of Aristotle as related. He introduces his discussion of the two by proposing that "there is a confusion of animism and rationalism in Aristotle's philosophy of nature precisely analogous to the confusion of the two conceptions of God in the theology of the *Timaeus*,"⁴² and he concludes with the more confident assertion that "the confusion inherent in Aristotle's philosophy of nature is thus radically the same as that of Plato's theology in the *Timaeus*."⁴³

1.5 From Offspring to Artifact: The Christian Rejection of

⁴⁰ Foster 1934, 460. As evidence, Foster points to *Physics*, II., 8, 199a, 12 which begins a passage in which Aristotle says, "If, therefore, artificial products [that is, artifacts] are for the sake of an end, so clearly also are natural products."

⁴¹ Foster 1935, 463–4. This analysis by Foster, in which he finds a theological incoherence at the very core of the 'Aristotelian' world view, receives very little attention in the Fosterian literature. It most certainly is an area of the Foster Thesis in some need of explication.

⁴² *Ibid.*, 455.

⁴³ *Ibid.*, 465.

Paganism

It is at this point, and into this theological confusion, that Christianity makes its entrance in the story Foster presents. Now that we have explored some of the traits of the Greek legacy inherited by Christianity, we are ready to look at the results of the inevitable tension between this legacy and Christianity.⁴⁴ We will begin at the ‘inner circle’—theology—and work outward, ultimately arriving at what Foster calls the modern science of nature.

According to Foster, the Christian response to the confusion of God-as-Parent and God-as-Artificer was *not* to eliminate one of them but to clearly distinguish between them. Through the doctrine of the Trinity, each divine function found a separate object. God-as-Parent was no longer related to nature but to the second person of the Trinity: God-the-Son. God-as-Artificer was still related to nature. In terms of God’s relationship with nature, Christian theology brought clarity to the ‘inner circle’: no longer were there two different divine functions related to nature, no longer could God be conceptualized as the Parent of nature. As a result, of course, theological paganism—failing to distinguish between God and nature—was no longer possible in orthodox Christianity.

It is worth noting that this clarity concerning nature still holds even if the Trinity is held to be an impenetrable mystery or an absurd logical contradiction. The point is that the two divine functions no longer (as Foster says) “terminate” on the same object. However, this is Foster’s only reference to the doctrine of the Trinity as playing a crucial role in Christianity’s rethinking of theology, philosophy of nature, and science of nature. In the conclusion to Part Two, I will argue that there may be more to be explored.

The immediate consequence for the inherited theology was that—in terms of nature—only God-as-Artificer remained. That is, only theological rationalism remained. While Foster argues that theological rationalism and paganism were *both* “elements in

⁴⁴ As stated in Foster 1934, “the opposition between Christian revelation and Greek philosophy [is] as old as Christianity itself” (448).

Greek theology with which the revealed doctrines of Christianity were incompatible,”⁴⁵ he also argues that these two elements were dealt with in significantly different ways:

As Christian Theology, discriminating the two doctrines which Plato had confused, adopted a different attitude towards each, rejecting the pagan but assimilating the other, so a Christian philosophy of nature was bound to reject the ‘animism’ of Aristotle, but could adopt his ‘rationalism’.⁴⁶

Before exploring this Christian assimilation, adoption, or (as Foster will later call it) *transformation*—that is, before travelling back out through the concentric circles of philosophy of nature and science of nature—we will pause to consider anew the implications of this Greek theological rationalism for a philosophy of nature. This will give us a better sense of *why* this rationalism could not be accepted unmodified by Christianity but had to be transformed.

Implications of Theological Rationalism for a Philosophy of Nature

To review: under God-as-Artificer, natural objects are conceptualized as artifacts for whom the concepts of *form* and *matter* are identical to *end* and *means*:

[An artefact’s] nature is the end realised in it, and this is not sensible but intelligible. What is sensible in the artefact is the means by which the end has been realised, but the end is not to be identified either with any of the means or with the sum total of all of them, and the thing itself or the essence of the thing is related to its sensible characteristics not as whole to parts, but as end to means.⁴⁷

And since it is the intelligible (antecedently separable) definition or end which makes a natural object what it is, it can only be *definition* which is the proper object of study in a science of nature.

As an example, imagine a distant future in which an archeologist—never having seen one before—digs up a wheelbarrow. A long list of the physical properties of the wheelbarrow, says Foster, will *not* bring the archeologist true scientific knowledge of what the wheelbarrow truly *is*, because the wheelbarrow is an artifact and can only be

⁴⁵ Foster 1935, 442.

⁴⁶ *Ibid.*, 465.

⁴⁷ Foster 1936, 4.

known through its form/definition/end. Empirical investigation may be helpful for the archeologist, but the leap to the definition or end of the wheelbarrow is an act of immaterial, *non-sensuous* reason.

Under God-as-Artificer, then, we have nature-as-artifact, leading to a science of artifacts in which sensuous experience “has no place as a cognitive activity by which nature is known, but only as a stage which must have been transcended and replaced by the non-sensuous activity of reason, which alone is science.”⁴⁸

Contingency

Into this view of nature Foster introduces the concept of contingency, by which he means anything in an artifact which is not necessary to fulfill the final end or purpose:

[Contingency] does not make [an artefact] something more than an embodiment of form, but makes [it] only a bad embodiment of form; just as two inches more on one leg of a table does not make it more than an artefact, but only a bad artefact.⁴⁹

Contingency in an artifact has two possible sources: bad workmanship or recalcitrant material. If a wheelbarrow is not manufactured in such a way that it fulfills its function, the flaw can be traced to the artificer or to the material or to both. However, since God-as-Artificer is divine, bad workmanship is ruled out and the contingency found in natural objects *must* come from the recalcitrant material—matter—in those objects. Matter, then, *prevents* natural objects from conforming completely to their idea or definition or essence. The example of geometry is again helpful: it is precisely the *embodiment* of a physical drawing of a circle which prevents that circle from conforming completely to its definition.

Such are the implications of Christianity’s early rejection of paganism which left it, by default, with the Greek, rationalistic theology of God-as-Artificer and the philosophy of nature-as-artifact. Clearly there are going to be significant challenges ahead for Christianity as it struggles to reconcile—as much as possible—the inherited doctrine of God-as-Rational-Artificer with the revealed doctrine of God-as-Omnipotent-

⁴⁸ Ibid.

⁴⁹ Foster 1934, 463.

Creator. These challenges, and the theological response to them, will take up the bulk of the remainder of Part One.

At this point, however, it is important to note that *the rejection of paganism alone* was an important step toward modern science. While Aristotle and the Christian Scholastics did share a rationalist philosophy of nature, Aristotle's was rationalist—as we have seen—based on a *confusion*. The Scholastics' philosophy of nature, by contrast, was rationalist based on a theological *distinction*, in which God was conceived as an Artificer and not a Parent.

The first great contribution of Christian theology to the development of modern natural science was the reinforcement which it supplied to the scientific element in Aristotle himself . . . that there is a reason in nature discoverable by the exercise of reason in man.⁵⁰

Modern science, Foster will argue, presupposes both rationality *and* contingency in nature. His point here acknowledges the importance of the former.

However, before moving on to the Christian transformation of rationalism, we will take a bit of a 'detour' into Foster's analysis of the Reformation, modern philosophy, and the rise of modern science. This detour is necessary in order to deal with some obvious historical questions: Why was the Christian elimination of paganism from theology very quick while the elimination of what Foster calls animism from the philosophy of nature was *much* slower? Why did this second elimination appear to happen so 'suddenly'? Why did modern philosophy and modern science arise when they did and as quickly as they did?

Note: these *historical* questions are related to Foster's *philosophical* analysis. Clearly the two realms—history and philosophy—are related in Foster's work, but the nature of that relationship is a difficult one to explore. In Part Two, George Grant will offer a distinction between a 'philosopher of history' and an 'empirical historian.' I agree with Grant that Foster falls into the first category, but I also agree with those commentators who insist on an empirical element in the evaluation of the validity of Foster's argument. As a result, in Part Two I will propose an appropriate 'evaluative

⁵⁰ Foster 1935, 465.

structure' for commentary on the Foster Thesis. As a contribution to the Fosterian discussion, this proposal is perhaps second only to my forthcoming analysis of Foster's view of the relationship between 'Christian' rationalism and the subsequent rise of voluntarism. This proposal—and the preparatory analysis of the mechanism of logically implied possibility among the realms of theology, philosophy of nature, and science of nature—will form the basis of much of my analysis of the Fosterian literature in Part Two.

1.6 The Reformation, Modern Philosophy, and Modern Science

Foster believes that the Reformation's role in Christianity's struggle with the inherited Greek world view was to intensify and accelerate an already existing struggle:

My contention is that the conflict waged against Aristotle after the Reformation was only a continuation of the conflict waged against him before it⁵¹

To help explain the reason for the acceleration, Foster makes use of an analogy. He first considers two effects the Reformation had in the realm of conduct: (A) Christian 'rules' of conduct were extended from the religious or monastic sphere to the secular sphere, and (B) the *external* authority of the priest was transferred to the *internal* authority of the conscience. In both of these effects Foster has in mind Aristotle's view on ethical training: a child who grows up having certain moral guidelines imposed from *without* will become an adult who follows those same moral guidelines as guidelines imposed from *within* through trained desire and conscience.

Foster claims that this is analogous to two effects the Reformation had in the realm of philosophy. First—analogue to (A) above—the influence of Christian doctrines extended beyond the “sacred into the profane sciences.”⁵² Prior to the Reformation, belief in the Christian doctrine of creation had been largely limited to the

⁵¹ Foster 1934, 448.

⁵² *Ibid.*, 453.

‘inner circle’ of theology; philosophy and science of nature were both still largely Aristotelian. To put it in terms of the concentric circle model, the effects of Christian theology had not yet ‘seeped out’ from the core. Second— analogous to (B) above—while post-Reformation philosophers claimed that reason had “emancipated” them from the “authority of faith,”⁵³ in actual fact that very faith had been internalized rather than jettisoned. The combined effect of these two aspects, says Foster, was—wittingly *and* unwittingly—to accelerate the ‘seeping out’ of Christian theology through the circle of philosophy of nature to the circle of science of nature.

For Foster, the development of modern philosophy—especially as it related to “establishing the possibility or justifying the presuppositions of the modern science of nature”⁵⁴—is a powerful example of the internalized Christian influence. By “modern philosophy” Foster means “the philosophy which arose at the end of the Middle Ages and developed along the two main lines of Empiricism and Rationalism from Hobbes to Hume and from Descartes to Leibniz,”⁵⁵ and he claims that neither modern Rationalism nor modern Empiricism was entitled to its conclusions:

The work of criticism very speedily showed that neither the Rationalist nor the Empiricist philosophy was really based upon the evidence upon which it pretended to rely. No experience, to take one example, could serve as evidence to Locke of the existence of material substances, nor any reasoning demonstrate to Descartes the existence of a material world. No doubt, the assurance of ‘common sense’ might suffice for the one, and of the ‘natural light’ for the other. But then it must be admitted that ‘common sense’ is something other than sense and the ‘natural light’ something other than reason; and the way is open for the enquiry: What is the source of that certainty which is derived neither from reason nor from sense?⁵⁶

According to Foster, the “source of that certainty” was an internalized Christian theology. If that certainty had not preserved both Rationalism and Empiricism from sceptical resignation, they would not have been able to do the work they did in establishing the possibility of modern science. Of course, by the time the ‘internal’ influence of Christian

⁵³ Ibid., 450.

⁵⁴ Ibid., 446.

⁵⁵ Ibid.

⁵⁶ Ibid., 450–1.

theology had genuinely waned, it had already—so far as the rise of modern science was concerned—done its work: “By the later centuries of the modern era the sciences of nature had become so firmly established that they formed a datum from which philosophical speculation could start.”⁵⁷

Many commentators—especially those who are Roman Catholic—take exception to Foster’s analysis of the Reformation and the role it played in the rise of modern science. While Foster seems to go out of his way to emphasize that he sees only an *acceleration* in ‘theological seeping,’ these commentators feel that he is in fact ‘blaming’ Catholicism for a delay in the rise of modern science. In my analysis, this view is incompatible with a charitable reading of the Foster Thesis.

Having completed our ‘detour,’ we will now return to the story of the Christian transformation of the inherited Greek rationalism, keeping in mind that for Foster this transformation begins before, and accelerates through, the Reformation.

1.7 The Christian Transformation of Rationalism

As alluded to earlier, one of the major sources of tension between the inherited Greek rationalism and Christian theology is found in the fact that the Christian doctrine of creation requires *not* a limited God-as-Artificer but an omnipotent God-as-Creator. Rationalism—God-as-Artificer—placed two restrictions of God’s omnipotence: (1) the limitations associated with being restricted to the use of pre-existing matter as the *means* to an end, and (2) the limitations associated with being restricted to the use of pre-existing forms as the only possible *ends*. Christianity had to rid its theology of each of these restrictions.

(1) Pre-existing Matter

As discussed earlier, God-as-Artificer can *never* fully realize his ideas in natural

⁵⁷ Ibid., 446.

objects. The recalcitrance of matter, then, necessarily limits God's activity. Under Christianity, however, God-as-Omnipotent-Creator is understood to have *perfectly realized* his creation. Matter, then, must be no impediment to the carrying out or manifestation of God's ideas. As we will see, the second part of the solution Foster offers to the following problem of pre-existing forms also provides the solution to the problem of recalcitrant matter.

(2) Pre-existing Forms

God-as-Artificer is limited: he may embody only the forms available to him as an external restriction. Obviously, an *omnipotent* God-as-Creator cannot be conceptualized this way. There is a problem, however: if God's reason does not at least govern his will, then how can one possibly expect to find any logical coherence in God or nature, and how could there be theology or science? Put another way, how can God be conceptualized so as to preserve his rationality *and* his omnipotence?

According to Foster, the Christian solution to this problem comes in two parts, the first dealing with the *source* of God's rational thoughts and the second dealing with the *nature* of those thoughts.

The Source of God's Thoughts

In order to keep God both rational and omnipotent, says Foster, God must be considered to be the source of his own ideas. Rather than having the world of ideas as an *external* limit on God, God must be seen as the *internal* author of his own thoughts:

The [rationalist] principle demands the limitation of God's will by subordination to his reason, and therefore to whatever ideas are objects of his reason; but this limitation of God's will can be rendered compatible with his omnipotence if it can be held that these objects are not proposed to his reason from without, but are themselves products of the activity by which he conceives them. . . .⁵⁸

Foster calls this conceptualization of God's reason "intuitive understanding," which he defines as "the conception of a theoretical activity which produces its own object" and as

⁵⁸ Foster 1936, 8.

“understanding which produces its own objects.”⁵⁹ Although Foster first mentions Augustine in connection with intuitive understanding, we will move ahead to a Cartesian example Foster uses to help explain what he means by intuitive understanding:

This implication is worked out in the Cartesian theory of knowledge. For Descartes the ideas of reason are ‘innate’, not in the sense that they are present ready made in the mind from the beginning (if they were, every man would be omniscient at birth without any necessity of reasoning), but in the sense that the reason develops them by cultivation of itself, and does not have them presented to it from without; in other words, that thought produces its objects in the activity by which it understands them.⁶⁰

With that minimal help⁶¹ in mind, we return to what Foster says is the first important attempt at resolving the theological tension between rationalism and omnipotence: Augustine’s doctrine of the Divine Word.

In Augustine’s doctrine—as described by Foster—God, through thought, generates the Son in whom are found God’s ideas. In this way, God *is* the author of his own thoughts, which terminate⁶² not on something external but on God the Son. Then, these ideas *completely* determine the unfolding of material creation: “Creation is nothing but the material embodiment of those ideas.”⁶³

Foster sees strengths and weaknesses in Augustine’s doctrine. The main strength is that it introduced the idea of intuitive understanding which, so far as Foster can see, really *is* the only way to preserve both God’s rationality and his omnipotence. Augustine’s proposed solution, in other words, had the right ‘shape’ and *did* offer a way

⁵⁹ Ibid., 9–10.

⁶⁰ Ibid., 10.

⁶¹ Clearly we are dealing here with a kind of self-referentiality which needs explaining. Rather than giving us much of an explanation, however, Foster points to some more self-referentiality which he finds in Descartes. This may help a bit, but it also brings to mind other questions: Does God have an ‘innate’ reason needing cultivation? If so, how did it get there? Foster’s best response to these questions, ultimately, may very well be that it does not ultimately *matter* whether “intuitive understanding” can be satisfactorily explained; rather, what matters is that it *was* explored by theologians, with the result that rationalism was transformed in such a way so as to pave the way for the rise of modern science.

⁶² Again, Foster’s terminology.

⁶³ Foster 1936, 9.

to preserve these two characteristics. However, the weakness of Augustine's doctrine is that the creation and the Incarnation are both a kind of "material embodiment of the Word."⁶⁴ Concerning the material embodiment of creation, Foster proposes two (equally problematic) ways of construing this:

Either the Word suffers diminution by material embodiment, so that nature is an imperfect representation of that which exists perfectly only in the eternal reason of God; or it does not.⁶⁵

If the Word *is* diminished in the material embodiment of creation, then the result is a return to a philosophy of nature characterized by archetype and appearance, by definition and *necessarily imperfect* embodiment. God's omnipotence—his ability to *perfectly realize* his ideas in creation—then disappears, and Augustine's doctrine fails to accomplish what it set out to do: the preservation of omnipotence and rationality. This leaves only an undiminished Word. If, however, the Word is *not* diminished in the material embodiment of creation, then creation and Incarnation become indistinguishable, and the result is a return to paganism.

To sum up: The received Greek doctrine of God-as-Artificer had the strength of rationality but the weakness of a limited God. Intuitive understanding—conceptualizing God as the *source* of his own thoughts—is the right theological 'shape' for any doctrine which attempts to preserve God's omnipotence and rationality. Foster holds that Augustine's doctrine of the Divine Word was *important* in that it first identified intuitive understanding as the only way to solve the problem; but it was ultimately *unorthodox* in that it confused God with nature. Through Augustine the *source* of God's thoughts had begun to be reconceptualized. Foster will argue that Christianity found an orthodox way to use intuitive understanding only after the *nature* of God's thoughts were also reconceptualized.

The Nature of God's Thoughts

Foster says that Christianity found the required reconceptualization of the *nature*

⁶⁴ Ibid.

⁶⁵ Ibid.

of God's thoughts in its Jewish roots, as opposed to the somewhat Platonic thinking of Augustine:

It is possible instead to have recourse to the Old Testament doctrine of the Law, and to conceive the production of the divine ideas not as the eternal act by which God generates the Son, but as the eternal act by which he establishes the law, to which then his will is subject in the creation of the world.⁶⁶

In this view, God's thoughts are not *definitions* of natural objects but rather the *laws* these natural objects must obey.

There are significant implications flowing from this theological shift. If God's thoughts are definitions then the objects of his reason are substances, and we, through pure reason, arrive at "a knowledge of an intelligible substance related to the world of nature as reality to appearance."⁶⁷ In other words, there is the possibility of an *a priori* metaphysics. If, on the other hand, God's thoughts are natural laws then the objects of his reason are modal concepts (*relationships* of necessity and possibility which exist between natural objects), and we, through pure reason, arrive at "a knowledge of universal and necessary laws, exhibited throughout nature, but incapable of a substantial being apart from it."⁶⁸ In other words, there is the possibility of an *a priori* science of nature.

Combined with the breakthrough of intuitive understanding, this theological shift in the *nature* of God's thoughts solves the problems of recalcitrant matter, of omnipotence and rationality, and of Augustine's Christian heterodoxy. First, it no longer matters that *no* natural object conforms perfectly to an immaterial, intelligible definition; rather, it now matters that *all* natural objects obey natural laws *perfectly* and *without exception*. Second, since God is seen as the author of his own rational thought-as-law, his omnipotence is no longer a threat to his rationality. Third, Christian orthodoxy is maintained here in a way that it was not under Augustine's doctrine: there is, here, a real "distinction to be drawn between the creation of the world and the incarnation of the

⁶⁶ Ibid., 11–12.

⁶⁷ Ibid., 12.

⁶⁸ Ibid.

Son.”⁶⁹ *Christian* theological rationalism, then—as opposed to the inherited Greek rationalism—is aimed at the *laws* and no longer at the *ends* of natural events. It seeks to find *perfectly realized laws* and no longer to find *imperfectly realized ends*.⁷⁰

Looking ahead, Foster sees the rise of modern science as related to this theological shift to a Christian rationalism:

Hence are derived two assumptions which will easily be recognised to be fundamental presuppositions of modern scientific method: the first the assumption that the scientist has to look nowhere beyond the world of material nature itself in order to find the proper objects of his science, the second (which is really a corollary of the first) that the intelligible laws which he discovers there admit of no exception.⁷¹

However, a focus on God’s reason, while a crucial part of the presupposition of a systematic unity in nature, does not tell the whole theological story. In the next section Foster will add God’s will to the discussion.⁷²

As we shall see, it is this emphasis on God’s will that dominates much of the literature on the Foster Thesis. Commentators often miss, forget, or ignore Foster’s fairly lengthy and complex discussion of the preservation of God’s *rationality*. The common portrayal of the Foster Thesis as anti-rationalist demonstrates a lack of awareness of the Fosterian distinction between ‘Greek’ rationalism and ‘Christian’ rationalism.

⁶⁹ Ibid.

⁷⁰ Without doubt, the idea of a ‘natural law’ does a lot of work in this part of Foster’s argument. Nevertheless, he spends little time defining it, proceeding as if its true nature were already agreed upon. This leaves the reader with the feeling that one has been backed into a corner by the apparent incommensurability of divine reason and omnipotence, only to find a trap door labelled “Law.” This is yet another rich area of discussion largely untapped by Fosterian commentators.

⁷¹ Foster 1936, 14.

⁷² Interestingly, Foster locates his discussion of *Law* within a discussion of divine reason, while many modern philosophers (Malebranche and Berkeley, for instance) connected natural law with God’s *will*. Of course, Foster is about to argue that modernity’s increasing emphasis on divine will can be intimately linked with the theological transformation of rationalism he has just described.

1.8 The Rise of Theological Voluntarism

Concerning God's will and the term "theological voluntarism," Foster writes:

A theology is constituted voluntarist not by the mere fact that it attributes to God a faculty of will in addition to reason, for the doctrine of the divine Demiurge does this; but by the fact that it attributes to God an activity of will not wholly determined by reason.⁷³

However, it would appear as if the orthodox Christian rationalism described by Foster in the previous section has no room for voluntarism thus defined:

It is important to bear in mind that what I have designated the orthodox Christian theological doctrine is still rationalist. The law which God imposes upon the created world is not itself a product of God's will. It is not a command. It is the product of his understanding and his will is wholly subject to it.⁷⁴

Is there room, in Foster's account, for a divine will that is "not wholly determined by reason" but is still "wholly subject to it"? Is there an element of arbitrariness in God's will or not? This is no small problem for Foster, who links empirical science to Christian theology, specifically to the doctrine of creation, which he says "attributes to God an autonomous activity of will."⁷⁵ Comparing the Christian God-as-Creator to the Greek God-as-Artificer, Foster writes:

In the creative act the will must exceed any regulations which reason can prescribe. . . . It is what constitutes him, not a bad Demiurge, but something altogether more than a Demiurge.⁷⁶

"The *voluntary* activity of the Creator," says Foster, "terminates on the *contingent* being of the creature."⁷⁷ Natural objects, then, are no longer *embodiments* of intelligible forms but are contingent *creatures*. And since "the contingent is knowable only by sensuous experience," then empirical investigation must be "indispensable to the science of nature."⁷⁸

⁷³ Foster 1936, 5, note 5.

⁷⁴ *Ibid.*, 13.

⁷⁵ Foster 1934, 462.

⁷⁶ *Ibid.*, 464.

⁷⁷ *Ibid.*

⁷⁸ *Ibid.*

Foster acknowledges the tension he has created by anticipating a possible objection to his account of Christian rationalism and its role in the eventual rise of modern, empirical science. The objection goes something like this: ‘If Christian rationalism—like the Greek version—is still a thoroughly rationalist conception of God, then this would seem to preclude the possibility of contingency in nature and therefore empiricism in science. But all modern science is empirical, so how can it be traced back to Christian rationalism?’

Foster ‘responds’ to this objection with two points. First, while it is true to say that all modern science is empirical, it is *not* true to say that all modern science is *nothing but* empirical. To limit confusion, Foster distinguishes between *wholly* empirical sciences (which he calls ‘empirical’) and *partially* empirical sciences (which he calls ‘*a priori*’). Foster’s answer to the objection will only deal with the modern *a priori* sciences, which, despite their name, have an empirical element. Second, Foster attempts to show that “these sciences combined an empirical element with their *a priori* character” and that “the development of theological doctrine presupposed in the admission of this element” was the development which occurred when “*Christian rationalist theology was bound to admit an element of voluntarism into itself.*”⁷⁹ This is a crucial part of Foster’s attempt to link Christian rationalism and empirical science: voluntarism is not only *compatible with* but also *necessary for* a fully developed, consistent, Christian rationalism. As his argument unfolds, Foster identifies three ‘types’ of theological voluntarism. I shall name these three types, listed here in order of increasing ‘strength,’ (1) creative voluntarism, (2) selective voluntarism, and (3) particularizing voluntarism.

(1) Creative Voluntarism

This type of voluntarism describes God’s will to *create* and can be linked to the question, ‘Why something rather than nothing?’ God’s having conceived a set of natural laws does not necessarily lead to God’s actually *creating*. Creation, then, involves an arbitrary exercise of the divine will. This, Foster notes, is equally true under *Greek*

⁷⁹ Foster 1936, 18. Emphasis mine.

rationalism. God-as-Artificer, in fashioning natural objects, uses intelligible definitions but cannot be motivated or activated by them. Therefore, *all* rational theologies must contain this first type of voluntarism, of a divine will not wholly determined by divine reason:

Thus, the cardinal principle of theological rationalism, that God produces the world rationally, and not by generation, involves the conclusion that the will to produce it must be arbitrary in the sense of being undetermined by his reason.⁸⁰

However, in changing the nature of God's rational thoughts from definitions to laws, Foster says, Christian rationalism must also contain the next two types of voluntarism.

(2) Selective Voluntarism

This type of voluntarism describes God's will to *select* and can be linked to the question, 'Why this world rather than another?' There are many different possible schemes of universal natural laws, says Foster, but not all of these schemes are possible together. God must choose one, and the choice involves an arbitrary exercise of the divine will.

Leibniz, with his discussion of the 'best of all possible worlds,' opened up the possibility that God's choice was really no choice at all: God *had* to create the best of all possible worlds, and the idea of 'choice' is a false one. Foster, although referring occasionally to Leibniz, does not deal with this; neither do any of the commentators in Part Two.

(3) Particularizing Voluntarism

This type of voluntarism describes God's will to *populate* a given universal scheme of natural laws and can be linked to the question, 'Why these particulars rather than others?'

Suppose the scheme chosen, it will still be necessary to add to its universal nature an element of particular existence; and since this element, being particular, is not determined by the

⁸⁰ Ibid., 19.

universal [scheme], God's will is arbitrary in the production of it.⁸¹

Again, in this populating or particularizing—without which the universal scheme of laws could not be fully realized—we see an arbitrary exercise of the divine will.

In the three types of voluntarism listed above, Foster attempts to resolve the apparent tension between God's will and reason by showing that even while “wholly subject to it,” God's will is nevertheless “not wholly determined by” his reason. Even in order to actualize a completely rational and universal scheme of natural laws, God's “autonomous” will “must exceed any regulations which reason can prescribe.”

If there is any contribution to be made by this paper to the Fosterian discussion, it is my analysis of Foster's treatment of the tension between rationalism and voluntarism—especially his argument that varying degrees of voluntarism necessarily arose *within* a rationalism transformed by Christian theology.⁸² This is often missed by commentators, who instead see Foster as setting up a choice between rationalism and voluntarism . . . and then picking voluntarism. What I have shown is that Foster argued that (1) ‘Greek’ rationalism was transformed into ‘Christian’ rationalism, and that (2) this new rationalism, as a logical consequence, *had* to take into itself increasingly strong types of voluntarism.

We have looked at the Greek theological ‘inner circle’ inherited by Christianity, at the rejection of paganism, at the transformation of rationalism, and at the corresponding rise of a Christian theological voluntarism. As we start to move out through the ‘middle circle’ of Philosophy of Nature to the ‘outer circle’ of Science of Nature, we will explore the implications—particularly the implications of the rise of voluntarism—that Foster feels these theological changes contain for the philosophy and science of nature.

⁸¹ *Ibid.*, 25.

⁸² “The modern philosophy of nature depends likewise not merely upon the adoption of Aristotle's rationalism, but upon its transformation” (Foster 1935, 466).

1.9 Moving Out: Implications for Philosophy and Science of Nature

For Foster, voluntarism in theology, contingency in nature, and empiricism in science are linked: "The product of an arbitrary will is contingent, and of the contingent there can be no knowledge beyond experience."⁸³ It is not surprising, therefore, that as the significance of the role of God's will increases in theology so also the significance of the role of sensuous experience increases in science. Here, as Foster sees it, are the philosophical and scientific implications of the three types of theological voluntarism.

(1) Creative Voluntarism

In this type of voluntarism the role of God's will is limited to the decision of *whether* to create at all; therefore, it is only the *existence* of the material world as a whole which is contingent. Once its existence is granted, rational deduction is the primary tool for explaining all natural objects and events. The role of sensuous experience for the scientist, then, is limited to an initial 'check' to see if there really *is* a material world. If so, then the scientist returns to primarily non-empirical methods.

(2) Selective Voluntarism

In this type of voluntarism the role of God's will is expanded to include the decision of *which* among many possible schemes of universal natural laws to bring to realization; therefore, it is not only the existence of nature but also the *shape* of nature which is contingent. The role of sensuous experience for the scientist, then, is also significantly expanded: while non-empirical methods are sufficient for determining the *possible* schemes available to God, only empirical methods are sufficient for determining which scheme has been chosen. Under selective voluntarism,

science thus presupposes (a) that it is impossible that nature should not embody a mathematically intelligible scheme and exhibit laws mathematically definable; but (b) that, which of possible alternative schemes it embodies and which of several laws equally definable mathematically it exhibits, can be decided only by appeal to observation and

⁸³ Foster 1936, 5.

experiment.⁸⁴

As a result, the scientist uses a mixture of *a priori* and *a posteriori* reasoning, first using empirical investigation and induction to propose a natural law, then using rational deduction to explore the implications of that law, and finally using empirical data to *verify* those deductions.⁸⁵

(3) Particularizing Voluntarism

In this type of voluntarism the role of God's will is expanded yet again to include the decision of *how* to populate the chosen universal scheme of natural laws; therefore, since there will always be "a particular element in the nature of the actual which is not exhausted in its being the embodiment of a universal scheme,"⁸⁶ there will always be contingency in natural objects.

Of this particular element [that is, contingency] there can be none but empirical knowledge, and thus, . . . [natural science] must be supplemented by experience if the whole nature of things is to be known.⁸⁷

Particularizing voluntarism, in other words, changes the status of natural objects by endowing them with a contingency that makes them not something *less* than archetypes but something *more* than embodiments of a universal scheme. Foster uses the example of fine art to make this distinction more clear:

When confronted with a work of creative art, [one] is indeed aware that there is 'something more' in it than the sensible material—a great painting is more than a certain complexity of coloured surfaces—but this 'something more' (we may call it loosely 'the meaning') is not capable of being conceived in distinction from the sensible material in which it is expressed. The meaning of a painting is not intelligible in the sense in which the purpose of a wheelbarrow is.⁸⁸

⁸⁴ Ibid., 24.

⁸⁵ Note that in the event of a disagreement between the senses and the logic, the senses now 'win' and the law or logic must be revisited.

⁸⁶ Foster 1936, 26.

⁸⁷ Ibid.

⁸⁸ Foster 1934, 462. Foster's introduction of fine art into the argument leads to the following questions: What exactly *is* fine art? Is it another 'idea realm' (like theology,

This has direct implications for the *science* of nature:

So soon as nature is conceived to be created by God, the contingent becomes more than an imperfection in the embodiment of form; it is precisely what constitutes a natural object [as something] more than an embodiment, namely a creature.⁸⁹

The natural object, then, has been transformed from embodiment to creature, from *artifact* to *art*, and—because a natural object’s full essence is no longer separable from its materiality—sensuous experience must become an essential part of the methodology of the natural scientist:

If, therefore, the contingent is essential to nature, experience must be indispensable to the science of nature; and *not* indispensable merely as a stage through which the human scientist must pass on his way to attaining adequate knowledge by reason but indispensable because knowledge by reason cannot be adequate to a nature which is essentially something more than an embodiment of form. This ‘something more’, the element in nature which depends upon the *voluntary* activity of God, is incapable of becoming an object to reason, and science therefore must depend, in regard to this element, upon the *evidence* of sensation. The reliance upon the senses for evidence, not merely for illustration, is what constitutes the empirical character peculiar to modern natural science; and the conclusion follows that *only a created nature is proper object of an empirical science*.⁹⁰

And thus—after working out the implications of the Christian rationalism and its somewhat surprising correlative, Christian voluntarism—we arrive at the ‘outer circle’ of the modern science of nature.

In using several quotations from Foster 1934 in the context of a category of voluntarism that he did not introduce until 1936, I am obviously making an editorial decision. I appeal yet again to my assumption that Foster himself saw these three articles as comprising a whole. In Part Two, we will see that Peck’s analysis of the relationships among the three *Mind* articles supports my assumption: he sees the first article as setting out the basic argument for relationships among voluntarism in theology, contingency in

philosophy of nature, and science of nature)? If so, are there connections between it and the rest similar to those being discussed in the Foster Thesis? Foster does not answer these questions, and no previous Fosterian commentator has raised them.

⁸⁹ *Ibid.*, 464.

⁹⁰ *Ibid.*, 464–5. Final italics mine.

nature, and empiricism in science, and he sees the second and third as going back and ‘fleshing out’ the theological background to that argument. If Peck’s analysis is right—and for the purposes of this paper I accept that it is—then it is also reasonable in the context of a synthesis to use an historical example from 1934 to clarify a theological point from 1936.

1.10 There and Back Again: A Concluding Summary

The picture, as Foster paints it, is now nearly complete.

We began with what Foster called the Greek world view as inherited by Christianity, starting with the ‘outer circle’ of the Greek science of nature, which we found to be following the geometric model: sensuous experience might be helpful at first, but once the definition of a natural object was formulated by immaterial reason, that same reason could explore the essence of the object through logical deduction. Moving in to the ‘middle circle’ of the Greek philosophy of nature, we found that each natural object was thought to be made up of sensible matter and intelligible form, with the entire essence of the natural object coming from its form. Its matter, then, not only contributed nothing positive to the being of the object but was in fact considered to be the source of the object’s imperfection. Ending at the ‘inner circle’ of Greek theology, we found that all versions of Greek theology held matter and form to be eternal and thus uncreated. At most, God could be a ‘fashioner’ or Artificer of natural objects by bringing together form and matter. We also found at the theological core of the Greek world view a confusion of paganism and rationalism, with God-as-Parent and the process of generation confused with God-as-Artificer and the process of manufacture. As a result, nature-as-offspring and the status of embodied ‘soul’ was confused with nature-as-artifact and the status of embodied ‘concept.’

We then added Christianity to the story.

Through the doctrine of the Trinity, Christianity distinguished between the paganism and rationalism it found at the Greek theological core. As a result, theological paganism was removed from orthodox Christianity and only theological rationalism—God-as-Artificer and nature-as-artifact—remained. But this theological

rationalism, with the limitations of pre-existing matter and form, was ultimately incompatible with the Christian doctrine of an Omnipotent Creator; therefore, while the inherited paganism was rejected, the inherited rationalism was transformed. In order to preserve both God's rationality *and* God's omnipotence, Christianity transformed the thinking around the *source* of God's thoughts, eventually developing the concept of intuitive understanding in which God was seen to be the author of his own thoughts. The *nature* of God's thoughts was also transformed to be the laws that natural objects must obey rather than the definitions of the natural objects themselves. Taken together, these changes to the *source* and *nature* of God's thoughts allowed for an omnipotent, rational Creator who perfectly realizes his creation in the material world.

Seemingly ironically, this transformation from a Greek rationalism to a Christian rationalism brought with it a rise in theological voluntarism: an emphasis on divine will which is *not* wholly determined by divine reason. We found three types of voluntarism: creative (choosing *whether* to create), selective (choosing *which* universal scheme of natural laws to embody), and particularizing (choosing *how* to populate the chosen scheme). Since voluntarism in theology is linked with contingency in nature and empiricism in science, we found that each of these types of voluntarism corresponded with an increase in both the contingency found in nature and the empirical methods needed by scientists for the adequate study of that nature.

1.11 Postscript: Historical Examples and Indirect Support

Foster concludes his final essay with an admission that he can provide no direct proof for his thesis, but that *indirect* support may be found:

As to the contention, finally, that this philosophy of nature is that presupposed by some modern sciences of nature, I have no direct evidence to offer, but will confine myself to an indirect method of argument which I have employed already in a similar context. Kant himself arrived at this philosophy of nature by reflection on the methods of modern natural science. He did not argue from a theological premiss, but enquired, What theory of nature is presupposed in the possibility of the science of mathematical physics?⁹¹

In fact, this is precisely the kind of support Foster identifies throughout his writings, in

⁹¹ Foster 1936, 27.

addition to specific historical examples of the various types of Christian theological voluntarism. Having left most of these out of the main body of the synthesis—for purposes of clarity—I will now discuss some indirect support and historical examples under the following categories: (1) Orthodoxy, (2) Creative Voluntarism, (3) Selective Voluntarism, (4) Particularizing Voluntarism, and (5) Kant.

(1) Orthodoxy

On several occasions, Foster notes a connection between orthodox Christian theology and the philosophy of nature presupposed by modern science. This connection is taken as indirect support for his overall thesis. We will look at three examples. First, in his discussion of intuitive understanding, Foster notes that Augustine's doctrine of the Divine Word was inconsistent with both Christian orthodoxy *and* with the presuppositions of the modern science of nature. Foster also notes that Descartes' version of intuitive understanding was not only far more orthodox but also supplied "the very presuppositions upon which at least some modern sciences of nature were based."⁹² Second, Foster sees in Aquinas another convergence of Christian orthodoxy and the presuppositions of modern science:

Of Aquinas's presentation of the doctrine of the 'star-moving Intelligences' Prof. Webb remarks that "the chief interest to us of these speculations . . . lies in the fact that Thomas Aquinas is so thoroughly alive to the danger involved to the religious principles of Christianity in the acknowledgment of the divinity of the heavenly bodies" (*Studies in the History of Natural Theology*, p. 274). Acknowledgement of their divinity was the basis of the distinction between Celestial and Terrestrial physics, with the abolition of which modern physical science may almost be said to have begun. *There could hardly be more striking evidence of the truth of my thesis than the fact that this criticism was first undertaken in the interest of the religious principles of Christianity.*⁹³

Third, when discussing the need for the medieval Rationalist philosophy of nature to be corrected if it were going to lay the groundwork for modern science, Foster wondered about the possible sources of that change. The correction could not come from the use of the critical method—using modern science as a starting point—because modern science

⁹² *Ibid.*, 11.

⁹³ Foster 1934, 452, note 8. Emphasis mine.

had not yet been established! It also could not come from a direct inspection of nature, because that type of inquiry cannot prove or disprove a metaphysical theory. According to Foster, that left only theology as the source of correction:

There was no standard by which the Rationalist doctrine of nature could be corrected, there was a standard only for the correction of the Rationalist doctrine of God. That had to be remoulded so as to conform to the Christian doctrine that God is Creator, and *this remoulding carried with it as an implicit consequence such a modification of the theory of nature as would have rendered it consistent with the presuppositions of empirical science.*⁹⁴

In all three examples, Foster notes, orthodox theology seems to lead to the very philosophy of nature required by modern science. This, in turn, supports his thesis that Christian theology played a positive role in the rise of modern science.

For each of the types of theological voluntarism identified by Foster in his analysis of the Christian transformation of rationalism, he also identifies philosophers (natural and otherwise) who were historical examples of that type.

However, it is important to note that while Foster gives historical examples he does not appeal to them empirically as ‘proof’ of his thesis. Rather, they act as tantalizing hints of a broader kind of ‘support’ which might be found if one went looking. Foster is more interested in exploring the implications—the logical possibilities—that ‘flow’ from Christian theology in general and the doctrine of creation in particular. In other words, Foster is setting out what *should* have happened rather than what exactly *did* happen. He leaves the empirical investigation for others. In Part Two, we will encounter some commentators who criticise Foster for being unhistorical and some commentators who go ahead and do the empirically historical investigation Foster did not do. Very few try to formulate the mixture of *a priori* and *a posteriori* methods which might be required in evaluating Foster’s argument.

(2) Creative Voluntarism

Foster offers up Descartes as an example of a Christian rationalist who allowed

⁹⁴ Ibid., 467. Emphasis mine.

God only this weakest type of voluntarism:

This is the Cartesian philosophy of nature and of natural science. The existence of a material world cannot itself be demonstrated. . . . But once its existence is granted, no further element of contingency is held to belong to the nature of particular material things, and consequently the science of them can rely upon the method of demonstration alone.⁹⁵

Because Descartes could only conceive of God as an infinite thinking substance, he could not really “conceive the reality of a contingent element in nature” and matter-as-extension is considered by Foster to be “the inevitable consequence.”⁹⁶ According to Foster, “Christian dogma works in [Descartes] strongly enough to modify his language, but not strongly enough to transform his thought.”⁹⁷ On the other hand, Descartes’ Christian faith did ‘protect’ him from his own conclusions—conclusions which are perhaps seen most clearly in Spinoza, who, unfettered by Christian dogma, takes Descartes to the logical extreme: there can be no positive contribution from sensation, and there can be nothing but an *a priori* science.

(3) Selective Voluntarism

Foster sees this stronger type of voluntarism in the theology of Leibniz:

This further element of voluntarism, over and above that which Descartes had recognised, is admitted into Leibniz’s theology by his distinction of God’s understanding from his will, and of the Possible from the Actual.⁹⁸

Foster also sees this voluntarism at work in both the philosophy and the science of nature of Kepler and Galileo. In them Foster finds

the two empirical methods of induction and verification. The former of these is employed prior to the definition, when the scientist is seeking examples in order to help him to it; the latter at any stage in the subsequent process of reasoning, when the scientist turns aside from his demonstration of properties in order to check (not the correctness of his demonstration, but) the correspondence of its results with experienced nature.⁹⁹

⁹⁵ Foster 1936, 19.

⁹⁶ Foster 1934, 466.

⁹⁷ *Ibid.*, 466.

⁹⁸ Foster 1936, 20.

⁹⁹ *Ibid.*, 23.

(4) Particularizing Voluntarism

For this strongest type of voluntarism Foster, oddly, holds up as an example the philosophy of nature implied by Kant's theory of knowledge:

It implies . . . that nature is the embodiment of a 'form' which is intelligible *a priori*; but that its whole being is not exhausted in its being an embodiment of the 'form'.¹⁰⁰

Why would Foster switch in his examples from 'pre-rise-of-modern-science' philosophers to a 'post-rise' philosopher?

Indeed, this question is asked with particular force by Stanley Jaki, as we will see in Part Two. Jaki, however, makes the mistake of assuming that Foster held Kant up as the model Christian thinker on these matters. As we will see, it is precisely because Kant was *not* thinking theologically that Foster appeals to him.

(5) Kant

The answer to that question is supplied by Foster directly, when he explains why—in terms of his thesis—it matters deeply what Kant thinks:

Kant is a valuable witness to the connection of implication between modern natural science and orthodox Christian faith for the following reason: he sets out to inquire what kinds of knowledge are possible and what are not. He does not apply the criterion of orthodoxy, but that of natural science; in other words, he does not ask: What cognitive activity are we compelled to attribute to man by the necessity of conforming with orthodox Christian theology? but: What cognitive activity is presupposed in man by the existence of the sciences (*sc.* of mathematics and mathematical physics)? But the cognitive activity which he eliminates by the latter criterion is the same as that which would have been eliminated by the application of the former.¹⁰¹

As an example, Foster points to the assertion—made by both Descartes and Kant—that there are no final causes in nature. For Descartes, this assertion is a *rule* prescribed for theological reasons; for Kant, this assertion is a *fact* based on the fact of the existence of modern science. In terms of the concentric circle model, then, Descartes arrived at No-

¹⁰⁰ Ibid., 27.

¹⁰¹ Ibid., 13.

Final-Causes from the 'inside,' motivated by concerns for theological orthodoxy, while Kant arrived at No-Final-Causes from the 'outside,' motivated not by theological orthodoxy but by the search for the presuppositions of modern science (presuppositions which, Foster argues, theology had supplied). This, thinks Foster, is the most compelling type of support that can be found for his thesis.

2.1 Introduction to Part Two

Critical response to the Foster Thesis was not immediately forthcoming. Indeed, except for a very brief footnote in 1937, it was thirteen years before the appearance of any published interaction with Foster's argument. It may be, as Robert Peck believes, that the British philosophical community of the time was particularly, and perhaps hostilely, unreceptive to an argument that considered theology to be of philosophical importance:

It is undoubtedly illustrative again of the 'revolution' in British philosophy, that [the Foster Thesis] fell on ears which could not have cared less. 1936—the year of the last of these articles—saw the publication of *Language, Truth and Logic*, A. J. Ayer's 'manifesto' of Logical Positivism. The tide had turned.¹

Whatever the reason for the delay, once the response began it did not stop. Beginning in 1949, there has not been a gap of more than five years between any two published references to the Foster Thesis, and a reference has appeared, on average, every one and a half years. In the last twenty years, the rate has been higher. Despite a slow start, we find that on the 70th anniversary of the publication of the third article, interest in the Foster Thesis is waxing rather than waning.

In general, it is acknowledged by all who respond to the Foster Thesis—positively *or* negatively—that it was and remains a powerful and influential argument. It has been called important, excellent, illuminating, acclaimed, significant, seminal, influential, and remarkable. It has been praised as “perhaps the most valuable contribution to the study of the relation of the rise of modern science to the Christian faith made by anyone in our century.”² Foster's analysis of the relationship between theology and science has been said to have been “put classically,”³ argued with “philosophical sophistication”⁴ and with “admirable clarity and cogency,”⁵ but the Foster Thesis has also been described as being

¹ Peck 1964, 51.

² *Ibid.*, 37–8.

³ Russell, 69.

⁴ Brooke 1991, 352.

⁵ Mascall 1949, 8.

“much less familiar to theologians than it deserves to be.”⁶ Even some who ultimately find serious flaws in Foster’s argument—his “famous trilogy of papers”⁷—call it “ingenious and forceful”⁸ and a “very helpful analysis.”⁹ Defenders find the Foster Thesis to be “long and closely reasoned,”¹⁰ while detractors describe it as a “long, convoluted, often confusing argument,”¹¹ “about seventy pages—at times repetitious, at times poor in documentation.”¹²

Because the Foster Thesis deals with the three realms of theology, philosophy of nature, and science of nature, response to the argument has been multi-disciplinary. Some theologians praise or condemn its apparent apologetic purpose or value. Other theologians see the Foster Thesis as a good starting point, claiming—as Foster himself did—that there is much more to the theological ‘story’ that needs telling; however, whatever their agreement or disagreement with *how* Foster tells the story, in the Foster Thesis these theologians find encouragement that the actual telling of this story is an intellectually respectable task. Some philosophers choose to ignore the ‘external’ element of Foster’s argument—that is, whether the history of philosophy actually corresponds to his account of it—focussing instead on whether its internal logic survives rigorous analysis. Other philosophers see in Foster support for the view that ‘ideas have legs,’ that they have their own history, in a sense, and that their implications *will* eventually make their way into the empirical world of human history. These philosophers differ, however, on *which* theological ideas have had the particular impact on modern science that Foster claims for the Christian doctrine of creation; they also differ on *who*

⁶ Ibid., 4.

⁷ Weeks and Jacobs, 268.

⁸ Patrick, 252.

⁹ Torrance, 145.

¹⁰ O’Connor, 20.

¹¹ Davis 1999, 78.

¹² Jaki 1992, 270.

held these ideas and *when*. Some historians see the Foster Thesis as a powerful counterexample to the ‘warfare model’ of the relationship between science and religion. Other historians focus on how to evaluate the Foster Thesis; they differ on whether support for the Foster Thesis can be found in the *empirically available* facts of history.

These are the major categories of the published critical response to the Foster Thesis. In Appendix A, the reader will find a complete list of every published reference to the Foster Thesis that I could find, beginning in 1937 and continuing up to 2006. Due to space restrictions, in the main body of this paper we will not deal with every single reference but only with those offering significant analysis. In the interest of thoroughness, however, I have included brief summaries of the ‘skipped’ references in Appendix B; it is not necessary, of course, to read these for the purposes of this paper. After a brief summary of the relevant literature published *prior* to the Foster Thesis—we will proceed to summarize and evaluate these responses *not* by category but rather chronologically, to allow us to follow how they interact not only with Foster but also with each other. It is important to note that the following analysis takes place in light of the work done in Part One, most notably in light of two of my contributions: my analysis of Foster’s view of (1) the relationship between Christian rationalism and voluntarism and (2) the nature of the logical relationships among the realms of theology, philosophy of nature, and science of nature.

2.2 Relevant Literature Pre-Dating the Foster Thesis

The historiography of science was undergoing a significant evolution in the time leading up to Foster’s three *Mind* articles; specifically, the value and role of medieval thought was being re-evaluated. A period that had previously been considered ‘dark’ or empty (scientifically, at least) was being rediscovered as philosophically and scientifically rich. I will briefly mention three examples: writings by Pierre Duhem, Alfred North Whitehead, and Etienne Gilson. I have picked these three because they are referred to by subsequent commentators on the Foster Thesis.

First, in 1905 and 1906, Duhem, himself a physicist, published two volumes on the history of statics, the branch of physics concerned with the mechanics of bodies or

systems in equilibrium and therefore with concepts such as force, inertia, centre of gravity, etc. In the preface to the first volume, Duhem describes a piece of information that caused him to completely rethink the history of this science, a history that had hitherto ignored the middle ages:

It was Tartaglia, who, long before Stevin and Galileo, had determined the apparent weight of a body on an inclined plane. He had very correctly deduced this law from a principle which Descartes was later to affirm in its complete generality. But this magnificent discovery, which no historian of mechanics mentions, did not come from Tartaglia. It was nothing but an impudent act of plagiarism on his part, and Ferrari bitterly reproached him for it and gave credit for this discovery to a 13th century mechanician, Jordanus Nemorarius.¹³

Duhem writes that subsequent investigation led him to conclude that

the mechanical and physical science of which the present day is so proud comes to us through an uninterrupted sequence of almost imperceptible refinements from the doctrines professed within the Schools of the Middle Ages. The so-called intellectual revolutions consisted, in most cases, of nothing but an evolution developing over long periods of time. The so-called Renaissances were frequently nothing but unjust and sterile reactions. Finally, respect for tradition is an essential condition for all scientific progress.¹⁴

Duhem, then, locates the roots of modern science deep in the middle ages.

Second, twenty years later (in 1926), Whitehead wrote *Science and the Modern World*, in which is found this well-known passage:

When we compare this tone of thought [that the scientific endeavour will bear fruit] in Europe with the attitude of other civilisations when left to themselves, there seems but one source for its origin. It must come from the medieval insistence on the rationality of God, conceived as with the personal energy of Jehovah and with the rationality of a Greek philosopher.¹⁵

Whitehead tries to distance himself from whether Christian theology *ought* (logically) to have 'generated' modern science; nevertheless, he writes, "My explanation is that the faith in the possibility of science, generated antecedently to the development of modern scientific theory, is an unconscious derivative from medieval theology."¹⁶

Third, in 1932, Etienne Gilson wrote *L'esprit de la philosophie médiévale*, a

¹³ Duhem, 7–8.

¹⁴ *Ibid.*, 9.

¹⁵ Whitehead, 15.

¹⁶ *Ibid.*, 16.

written version of the Gifford lectures he delivered in 1931 and 1932. (The book was translated into English in 1936.) In the preface, after describing the widely held view that the middle ages “lacked a philosophy that could be called their own,” Gilson describes his central thesis:

“The Middle Ages produced, besides a Christian literature and a Christian art as everyone admits, this very Christian philosophy which is a matter of dispute. . . . The true questions are, first, whether we can form the concept of a Christian philosophy, and secondly, whether mediaeval philosophy, in its best representatives at any rate, is not precisely its most adequate historical expression.”¹⁷

Gilson goes on to argue that, indeed, the best of Scholasticism is the best possible Christian philosophy, and it is a philosophy to which the West should return.

In the *Mind* articles, Foster admires the historical work of Gilson but takes issue with his call for a return to Scholastic philosophy; however, Foster does not mention Duhem or Whitehead. That he did not, especially concerning Duhem, will be the subject of future criticism.

2.3 1937–1959: The Initial Response

1937: Francis Macdonald Cornford’s *Plato’s Cosmology*

See Appendix B.

1949: E. L. Mascall’s *Existence and Analogy*

Thirteen years after the completion of the Foster Thesis, E. L. Mascall wrote *Existence and Analogy*, in which he gives an account of how the doctrines of existence and analogy fit into a rational theology. Mascall opens his book with a discussion of the term “God,” noting that the Greek and Christian conceptions of God are radically different. He begins with a summary of Gilson’s analysis and argues that, according to Gilson, the drive to identify God as “not only an object for religion but also a first principle for philosophy is, however little many modern philosophers may have realized

¹⁷ Gilson, vii–viii.

it, a direct effect of Christianity.”¹⁸ He then turns to Foster:

I should like to set by the side of M. Gilson’s exposition an independent discussion by Mr. M. B. Foster bearing the title “The Christian Doctrine of Creation and the Rise of Modern Natural Science” If the consideration of it seems to be leading us away from our immediate concern of determining the precise meaning of “God” in Christian philosophy, we shall find in the end that it has in fact set us very far forward on our path.¹⁹

Mascall then proceeds to give a fairly long summary of Foster 1934, presumably because he finds in its emphasis on voluntarism a balance to Gilson’s emphasis on rationalism.²⁰

As implicit ‘proof’ of the importance of bringing these two emphases together, Mascall says:

The type of universe whose investigation requires the methods of modern science must, I would suggest, have two characteristics: contingency and rationality. If rationality were absent, there would be no laws for science to discover; if contingency were absent, there would be no need for empirical observation and experiment, for every truth about the world could be deduced from first principles.²¹

In terms of an account of “God,” then, Mascall sets Foster and Gilson ‘against’ each other and presents *as his own* a synthesis that provides the very presuppositions required by modern science. This, I believe, is what Mascall means when he says that setting Foster alongside Gilson gives us a meaning of “God” that “sets us very far forward on our path,” and the fact that the Foster Thesis was written by “one who is by profession a philosopher and not a theologian,”²² says Mascall, only adds more credibility to the exercise of exploring a more widespread set of implications flowing from the realm of theology.

Mascall’s response to the Foster Thesis is important in that it sets a pattern we will see repeated over the decades: it pays more attention to Foster 1934 than to the other

¹⁸ Mascall 1949, 2.

¹⁹ *Ibid.*, 4.

²⁰ We have seen, however, that the *entire* Foster Thesis—that is, the synthesis of all three articles—sees voluntarism (and the resulting empiricism in science) as operating *within* a Christian rationalism and not against it.

²¹ *Ibid.*, 9.

²² *Ibid.*, 8.

two articles. In fact, although Mascall does refer to the existence of Foster 1935 and Foster 1936,²³ he does not seem to count them as significant. For example, the above synthesis, which Mascall presents as his own, can be found in nearly identical form in Foster 1936, within a discussion of the implications of ‘selective voluntarism’ for a philosophy of nature.²⁴ Why, then, should these thoughts be presented as Mascall’s and not Foster’s?

Perhaps as a result of reading Foster 1934 outside of the context of the entire Foster Thesis, Mascall sees Foster as ‘pro-voluntarist/empiricist’ and ‘anti-rationalist’ and misses what we saw in Part One: Foster argues for a rising level of voluntarism in theology—and subsequently, empiricism in science—as occurring *within* a rationalism which has been transformed by Christian theology but which is still a thoroughgoing rationalism. As we will see, missing this important and central feature of the Foster Thesis will lead many on both sides of the Protestant-Catholic divide to see Foster as not only ‘anti-rationalist’ but also ‘anti-Scholastic’ and even ‘anti-Catholic,’ resulting in statements that not only generate more heat than light but also distort Foster’s own views on the continuous nature of Christian theology and its implications both prior to *and* subsequent to the Reformation.

1952: John Baillie’s *Natural Science and the Spiritual Life*

Baillie’s book—subtitled “Being the Philosophical Discourse delivered before the British Association for the Advancement of Science at Edinburgh on 12 August 1951 by John Baillie, D.D., D.Litt., S.T.D., LL.D., Principle of New College and Professor of Divinity in the University of Edinburgh”—is a good example of the kind of anonymous influence the Foster Thesis eventually came to have among those studying the confluence of theology, philosophy, and science. In his book—or, rather, in his lecture, as the subtitle makes clear—Baillie makes several Fosterian statements without crediting Foster. Two examples will suffice:

²³ Ibid., 8, n. 2.

²⁴ Foster 1936, 24.

The real reason why both Bacon and Descartes broke with the authority of Aristotle was a reason of faith rather than a reason of science. It was that they found themselves working with a different conception of God and of His relation to the world. The presuppositions of ancient science were all associated with a pagan theology.²⁵

What Bacon and Descartes are really saying is that . . . [t]he method of science must be fundamentally inductive, working by observation and experiment, using the evidence of the senses not merely for illustration but for demonstration, and “classifying the species instead of dividing the genera.”²⁶

Even though that last phrase—a direct quotation from Foster 1934—is demarcated with quotation marks, it is never made clear who actually said it, unless the following statement by Baillie counts as credit given ‘retroactively’:

[The early modern scientists learned to reject ‘Greek’ rationalism] from the Christian revelation, and more specifically from the Christian doctrine of creation which teaches that the world is not itself divine but is contingent upon the divine Will. *Nobody has done more towards the establishment of this as the true historical answer than Mr. Michael Foster of Oxford*, who in one of his many scattered writings on the subject asks the question, ‘What is the source of those un-Greek elements in the modern science of nature by which the peculiar characteristics of the modern science of nature were to be determined?’ and answers simply, ‘The Christian doctrine of creation.’²⁷

We can see a veritable host of unfortunate future trends in this one quotation: the assumption that the Foster Thesis is primarily an argument ‘for’ voluntarism and ‘against’ rationalism, the feeling that the Foster Thesis can be used as a nearly unassailable apologetic strategy, the virtual lack of specific documentation, and the attempt to reduce the Foster Thesis—which took three years and three *Mind* articles to articulate—to a ‘simple’ statement.

Elsewhere, however, Baillie makes an important observation about the eventual implications of the Christian doctrine of creation for the West’s conception of time and history:

[For the Greeks] the spectacle of nature was like a continuous performance at a cinema show. Within so many thousand years from now everything in nature would again be exactly as it is today, and so on, times without number, to all eternity. . . . The rectilinear conception of time, which we all now take for granted, was introduced into Western thought by

²⁵ Baillie, 18.

²⁶ *Ibid.*, 19.

²⁷ *Ibid.*, 20. Emphasis mine.

Christianity.²⁸

This is an implication not explored by Foster. In his 1974 *Science and Creation*, Stanley Jaki—a scholar we will encounter in 1992—argues that the doctrine of creation and the subsequent re-conceptualization of history is one of the primary reasons that the rise of modern science occurred within Christian culture. Although the arguments of Jaki and Foster both connect the rise of modern science with the Christian doctrine of creation, we will see that Jaki finds very little common ground with the Foster Thesis.

1955: Arthur F. Smethurst's *Modern Science and Christian Beliefs*

Three years later this book by Smethurst appeared and, so far as the Foster Thesis is concerned, added very little to the already thin discussion by Baillie. Smethurst himself acknowledges that he “owes much to the excellent statement of the argument by John Baillie.”²⁹ What Smethurst *did* add to Baillie is notable for its striking misreading of Foster. According to Smethurst, Foster held the position that “the Greek philosophers did not possess a doctrine of the unity of God, such as was required to justify the scientific view of the nature of the world.”³⁰ Apart from a failure to specify *which* scientific view—ancient or modern—is being referred to here, Smethurst’s comment has a deeper problem: Foster himself spent a fair bit of time in Foster 1934 specifically showing that the three major categories of theology found in the Greek world view *do* in fact justify a belief in the systematic unity of nature, and therefore in the systematic and scientific study of nature.

Smethurst wants to say that science is Christianity’s greatest gift to the world, and that *only* Christianity could have given it, and in wanting to use Foster’s status as an “Oxford philosopher”³¹ in order to give that conclusion academic respectability, Smethurst appears to have read only Baillie’s summary of Foster and not the Foster

²⁸ *Ibid.*, 25–6.

²⁹ Smethurst, 22, n. 2.

³⁰ *Ibid.*, 22.

³¹ *Ibid.*, 21.

Thesis directly.

1956: Mascall's *Christian Theology and Natural Science*

One year later, E. L. Mascall returned to the discussion and published another response to the Foster Thesis, this time setting Foster alongside Whitehead rather than Gilson. According to Mascall, while Foster and Whitehead both attribute to Christian theology an important role in the rise of modern science, they have different emphases:

For Mr Foster it is the *freedom* of God and the consequent *contingency* of the world in Christian thought . . . [while] for Whitehead it is the *rationality* of God and the *regularity* of the world that is the main stimulus, in contrast with the views of God as either impersonal or altogether arbitrary in Asiatic thought. Foster explains why modern science did not arise in ancient Greece, Whitehead why it did not arise in India³²

Mascall then proceeds—as he did seven years earlier—to propose that both rationality *and* contingency must be present in the philosophy of nature presupposed by modern science. His analysis has the same problem here as it did in 1949, but with an added twist: while he again presents the necessity of presupposed rationality and contingency as *his own* idea—and by implication *not* Foster's—Mascall also quite clearly shows evidence of having now read Foster 1935 and 1936, even to the point of summarizing Foster's "double assumption"³³ that modern science presupposes rationality and contingency. Mascall never resolves the tension created by these apparently contradictory descriptions of Foster's thought.

While appropriately emphasizing Foster's discussion of voluntarism in order to draw out a helpful comparison with Whitehead, Mascall still seems confused—or at least unresolved—about Foster's overall analysis of the rise of voluntarism *within* a Christian rationalism.

In 1959, Michael Foster died. At the time, the only published responses to his thesis had been from Britain, by authors who did not seem to have read the argument

³² Mascall 1956, 95.

³³ *Ibid.*, 94.

carefully or holistically. Foster never lived to see the thorough, intelligent, and rigorous reception and criticism of his work which would have its beginning in five years' time.

2.4 1964: Robert Peck's Th. D. Dissertation

Five years after Foster's death, Robert Peck wrote his Th. D. dissertation, "The Apologetic Philosophy of Michael Beresford Foster." The title can be misleading; Peck is not arguing that Foster's work was undertaken *for* apologetic purposes but rather that his work *has* apologetic value for the theologian looking to 'think together' Christian theology and the modern world in a way which is both rigorous and relevant.³⁴ Title notwithstanding, Peck's dissertation remains one of the most thorough and intelligent analyses of the Foster Thesis *and* Foster's entire body of pre-war writings. He provides the reader with (1) a thorough review of the literature on the Foster Thesis, (2) a brief biography of Foster, (3) an analysis of the larger themes of Foster's pre-war work, (4) a description of Foster's approach to doing philosophy, (5) a fairly thorough look at the Foster Thesis as presented in the *Mind* articles, and (6) an analysis of Foster's handling of the divine-will-versus-reason debate and the subsequent empiricism-versus-rationalism debate. We will touch upon the highlights here.

(1) Literature Review

Peck's literature review is at once notable and not notable. It is not notable in that, while it offers a list of five of the six books I have already discussed,³⁵ it offers very little by way of analysis or critique. Only Mascall's first book, *Existence and Analogy*, warrants a critical comment, and that only in a footnote in which Peck points out that Foster himself wondered how the mention of the Foster Thesis actually helped further Mascall's overall argument. But Peck's literature review is notable in that, until the present paper, it is the only literature review ever done on the response to the Foster

³⁴ This distinction, understood by Peck, between the Foster Thesis as apologetically *motivated* and the Foster Thesis as apologetically *valuable* has not been well understood or articulated by many other commentators.

³⁵ Peck did not include the Cornford reference.

Thesis. Approximately 40 years and 35 publications later, then, I offer the first update to Peck's list.

(2) Biography

Peck's biography of Foster is the source of much of what little is known about Foster's life: his father was a dominating, authoritarian figure; Foster, while somewhat handicapped by severe shyness, excelled academically; he served as an officer in the British Intelligence Corps during the Second World War; he returned to Oxford with a religious zeal he had never known before but also with chronic depression; he eventually took his own life at age 56. However, what will be of importance as we continue to interact with criticism of the Foster Thesis is the fact that during the years leading up to the war, Foster was *not* a very religious man:

Under his father's influence he had never had much to do with the church. But his war-time experience, about which nothing is known, marked the beginning of a piety and a personal conviction which transformed his life in an unusual way.³⁶

This means that the *Mind* articles were written by a man who, while knowledgeable about Christian theology, was not particularly devout. Peck recognizes that this is not the impression readers get from the articles: "One of the most remarkable things about Foster's work was that his own religious experience came as a *conclusion to* rather than a *premise for* his apologetic philosophy."³⁷ Later we will encounter critics who will claim that Foster's philosophical analysis was clouded by an apologetic agenda. That is a difficult claim to support in any case; Peck's biographical research makes it even more so.

(3) Larger Themes

More important for Peck than a review of the writings *about* Foster is a review of

³⁶ Peck 1964, 3.

³⁷ *Ibid.*, 5. Emphases mine. As before, Peck's use of the term 'apologetic' here can be misleading, especially as his point is that Foster himself did not view his philosophy as apologetic in purpose.

the writings by Foster. In this, Peck does what few if any Foster commentators have done: he sets the Foster Thesis of the *Mind* articles within the larger context of the pre-war Fosterian corpus. In these writings, Peck identifies two related subjects: the Christian doctrine of creation, and voluntarism. According to Peck, Foster believes each of these are crucial to an historical understanding of how modernity came to have its peculiar characteristics.

Voluntarism, both human and divine, Peck found to be a preoccupation of Foster's published work from the very beginning of his academic career:

Foster has already in this early study [his doctoral dissertation, *Die Geschichte als Schicksal des Geistes in der Hegelschen Philosophie*] fastened on the conception of will—its meaning in philosophy and in history—as somewhat of a ‘key’ to the philosophical study of Western thought. We will find him, in his second published book [*The Political Philosophies of Plato and Hegel*], subjecting Plato as well as Hegel to a close scrutiny from this perspective, and his most significant published work [the *Mind* articles] will find him pressing the idea into the study of the rise of modern science.³⁸

And this focus on voluntarism is part of an even greater project concerning the Christian doctrine of creation:

Foster is primarily interested in pointing out how the Christian doctrine of Creation has informed the whole of Western thought. Sometimes he looks at the political State with this in mind—*Die Geschichte* and *The Political Philosophies*—sometimes he looks at a representative philosophical work—“The Contradiction of ‘Appearance and Reality’”—sometimes he looks at logic—“The Concrete Universal”—sometimes he looks at contrasting schools of philosophy—“The Opposition between Hegel and the Empiricists”—and sometimes he looks at science—“The Christian Doctrine of Creation and the Rise of Modern Natural Science.” In each case he is constrained to show not only how far Christian doctrine is responsible for the rise of modern civilization, but also to what depth it still informs our way of life.³⁹

Some critics of Foster take his *Mind* articles to be aberrations, distractions, or detours from an otherwise strong philosophical career; at Foster's funeral some comments were made to the effect that Foster himself rarely referred to the *Mind* articles, and these have been taken as support for the ‘detour’ theory.⁴⁰ However, Foster himself in the first

³⁸ *Ibid.*, 18–19.

³⁹ *Ibid.*, 48.

⁴⁰ The fact that Foster's general reticence discouraged him from referring to *any* of his own writings is overlooked by these critics.

footnote of the first *Mind* article leaves an obvious hint that the Foster Thesis is part of a greater scholarly thrust:

I have anticipated something of what is said in this article in a paper entitled "The Opposition between Hegel and the Philosophy of Empiricism" which was read at the third Congress of the International Hegel Society at Rome, Easter, 1933, and published among the proceedings of the Congress. The subjects of the two papers are different enough to be largely complementary, but where they overlap I have not hesitated to repeat my arguments.⁴¹

Peck's research fleshes out that hint and shows us how the *Mind* articles are indeed part of a much larger project to explore the implications of the Christian doctrine of creation, particularly as they can be traced through voluntarism toward modernity.

(4) The Fosterian Approach to Philosophy

Before undertaking a summary of the Foster Thesis or any other of Foster's writings, Peck describes the general approach Foster takes to doing philosophy:

British philosophers of the first decades of our century generally chose between two [options]. The first was to say that the subject-matter for philosophy is *meaning focussed in the proposition*, or more generally, language. The second is that the great work of the philosophers of the past is the proper subject-matter for philosophy. For our present purposes it is not necessary to be any more exact than this. We are only interested in the preliminary observation that Foster chose the latter⁴²

Later in his dissertation, while discussing the relationship between philosophy and religion in the *person* of Michael Beresford Foster, Peck points out that "religious motives and doctrines spurred his philosophical studies, but his religious convictions did not rest on philosophical foundations."⁴³ It is important to bring together these two observations made by Peck: since the great philosophers of the past were shaped by their various religious convictions, and since the work of these philosophers is the "proper subject-matter for philosophy," then it is not *Foster's own* religious convictions which "spurred his philosophical studies" but rather the "religious motives and doctrines" of *past* philosophers. In other words, Peck is saying, Foster is not projecting his own

⁴¹ Foster 1934, 446, n. 1.

⁴² Peck 1964, 15–16.

⁴³ *Ibid.*, 73.

religious belief and agenda onto the philosophers of the past; rather, Foster is interested in exploring the religious beliefs of those past philosophers, taking those beliefs seriously, and tracing the implications of those beliefs as they came to fruition in the history of ideas.

(5) The Foster Thesis Described

Peck's summary and analysis of the Foster Thesis evinces a rare understanding of how the three *Mind* articles work together: "The proposition was set forth and defended in the first article and its foundation on Christian theology spelled out in detail in the following two."⁴⁴ Peck sees, as so many others do not, that while Foster sets forth a 'voluntarism-heavy' argument in Foster 1934, he then proceeds in Foster 1935 and Foster 1936 to set that argument *in the context of* a 'rationalism-heavy' history of theology and philosophy. As I have shown in Part One, the rise of the voluntarism and empiricism is understood by Foster to be the result of—and to take place in the context of—the ideas unique to a *Christian* rationalism.

(6) Will vs. Reason

The foregoing discussion about voluntarism 'versus' rationalism leads very naturally to the question of divine will 'versus' divine reason. Peck acknowledges the longstanding nature of that debate and that Foster has waded into deep and tricky waters. However, Peck argues that Foster claims neither will nor reason as primary in the character of God. Further, Peck argues that Foster need not make such a claim for the purposes of the Foster Thesis, saying rather that

it is unnecessary for his purposes to enter into the debate about whether will or reason is *absolutely primary* in God. Indeed, it is only sufficient to show that *in the act of creation* the arbitrary will of God issues in the contingency of nature. This much, and no more, suffices to establish his thesis.⁴⁵

Later we will meet critics who feel that the Foster Thesis, by claiming an important role

⁴⁴ *Ibid.*, 47.

⁴⁵ *Ibid.*, 84.

for voluntarism in the rise of modern science, is jettisoning the primacy of God's reason and therefore the rationality in nature which is presupposed by modern science. These same critics also argue that in pointing to the Reformation as a turning point, the important contributions of Scholasticism are unfairly ignored. Foster, as we have seen, sees in the Reformation and in the rise of voluntarism a natural acceleration of idea-implications stemming from God-as-Creator. Peck seems to have accurately understood Foster's position, which he paraphrases this way:

What is new is the fact that after so many centuries this doctrine (creation) was finally assimilated with sufficient pervasiveness to become a positive challenge to a theology of rationalism. . . . [I]n this respect the modern world can no longer settle for the Thomistic philosophy of nature.⁴⁶

And later, Peck summarizes the list of concepts which Foster describes as the idea-implications of the Christian doctrine of creation:

[W]hat this doctrine *means* is what it has provided for the modern world; namely, necessary presuppositions for the modern science of nature. We have analyzed the complex character of this meaning into these specifiable characteristics: (1) there is one God (2) who is rational and (3) whose activity is one of many modes, to which must be added that (4) experience is knowledge and (5) nature is contingent because (6) ours is a *created* world.⁴⁷

In the Foster Thesis, Peck sees voluntarism *and* rationalism in theology, contingency *and* rationality in the philosophy of nature. Nevertheless, Peck also sees the Foster Thesis as an argument which may be impossible to 'prove': "It is important to notice that Foster has taken hold of a thesis, the defense of which appears to demand an entire history of philosophy."⁴⁸

I have quoted Peck at some length for two reasons: (1) much of what he has to say is valuable, and (2) his refusal to make the Foster Thesis about *only* voluntarism makes for an interesting contrast with much of the critical reception that followed his. Peck's analysis is not without its flaws, of course. For instance, at one point Peck describes one of Foster's central themes as "the opposition between God as Creator and

⁴⁶ Ibid., 87.

⁴⁷ Ibid., 113.

⁴⁸ Ibid., 92.

God as Demiurge, between creation and generation.”⁴⁹ Without any further clarification (and Peck offers none), this seems to link the act of *generation* with God-as-Demiurge. Clearly, *if* Peck intended this linkage, this is a serious misreading of Foster.

Nevertheless, despite errors such as this and a sometimes overeager tendency to jump to conclusions favourable to modern theologians (in other words, to apply the Foster Thesis as a piece of apologetic ‘technology’), Peck’s is the first published analysis of the Foster Thesis to show evidence of having read all three articles and having attempted to think them *together*. Peck’s dissertation, published only five years after Foster’s death, is the first truly intelligent and thorough discussion of the Foster Thesis. The published references to Foster that came before Peck, and many which came after, pale by comparison. It may be that neither before nor after Peck’s dissertation has there been a more thorough analysis of Foster’s pre-war writings, especially with an eye toward the larger themes of his work.⁵⁰

2.5 1966–1981: A More Rigorous Response

Although the authors in this section do not indicate that they have read Peck’s ThD dissertation, many of them follow his lead ‘in spirit’: they give evidence of careful reading and intelligent analysis. Many of them also engage Foster critically, something notably absent in the years leading up to Peck.

1966: George Grant’s *Philosophy in the Mass Age*

For our study, Canadian philosopher George Grant’s book is important for two reasons: (1) we see in Grant a tendency to give Foster ‘less billing’ than the commentators we saw prior to Peck, a tendency that will continue after Grant, and (2) we see in Grant’s work a description of an important distinction between two ways of ‘doing’ history, a distinction that will help us understand some of the future criticism of Foster.

⁴⁹ Ibid., 41.

⁵⁰ Wybrow echoes this sentiment by specifically mentioning Peck “first and foremost” in the acknowledgements of his book, primarily for this dissertation but also for helpful correspondence.

First, in saying that “Christianity has been chiefly responsible for the destruction of the old religious cultures and the coming to be of our modern, secular culture,”⁵¹ Grant was clearly echoing Foster’s argument. Foster’s influence becomes even more obvious as Grant builds his argument:

In support of this thesis, I want to start from one historical fact, which seems inexplicable on any other hypothesis. The modern spirit first came to be in European culture and not in the civilizations of the East. To look for the reason is to look for the radical difference between China or India and Europe. The central difference is that European civilization was, in its emergence, penetrated by Christianity. Furthermore, it can be asked what is the most important difference between the old classical world of Greece and Rome and the European society of the sixteenth and seventeenth centuries, out of which the modern spirit was to arise. It was that the classical spirit had taken into itself Biblical religion.⁵²

Notice here the basic Fosterian theme: eventual implications of the theology found at the ‘core’ of a culture. Notice also that the theme is framed in Fosterian language: that the difference between the classical and modern cultures can be found in the ‘taking in’ of Christianity.

Grant *does* acknowledge Foster’s influence, but only in an endnote in which he writes, “On this complex and little discussed subject, Michael B. Foster has written two illuminating articles . . .”⁵³ In this we find an ironic pattern that will continue through time: while the Foster Thesis will become more and more influential, Michael B. Foster himself will become less and less known. The Foster Thesis will become known not so much through the original *Mind* articles but through secondary ‘versions’ proposed by other commentators. As a result, when we come to Wybrow’s book of 1992—in which there is amassed some important criticism of the Foster Thesis—we will find that some of that criticism mixes up the primary and secondary sources, confusing Foster’s views with those of his ‘interpreters.’

Second, for our purposes in evaluating future criticism of the Foster Thesis, Grant

⁵¹ Grant 1966, 43.

⁵² *Ibid.*, 44.

⁵³ *Ibid.*, 113. Grant only mentions *two* *Mind* articles because he considers Foster 1935 and Foster 1936 to be part one and part two of the same article. In this he follows Foster’s own convention.

offers a helpful distinction between what he calls a *philosopher of history* and an *empirical historian*:

It is a necessary principle of any proper philosophy of history that the conscious intention of human actions is often different from the meaning of those acts as events in the historical process, considered philosophically. It is this which Hegel is describing in his doctrine of 'the cunning of reason' But to accept the difference between intended action and the meaning of event is to have insisted that historical explanation only completes itself within philosophy. It is to write as a philosopher of history, not simply as an empirical historian.⁵⁴

While Grant himself does not say so explicitly, his treatment of the Foster Thesis shows that he thinks of Foster as a philosopher of history, one who is concerned with the *eventual* implications of powerful ideas. As we will come to see, both supporters and detractors of the Foster Thesis will search for 'proof' or support for their arguments using the methods of an empirical historian. However, if Grant's distinction is accepted, if the "meaning" of historical acts is often not known to the participants of history, it may be that these empirical methods of evaluation are inappropriate—or at least incomplete—when evaluating the Foster Thesis.

There is a philosophical tension here that has not been appreciated by most commentators. The Foster Thesis, in attempting to trace some of the contributing factors to the rise of a science distinguished by its empirical element, may not itself be subject to an evaluation based on purely empirical methods. Peck, in saying, "It is important to notice that Foster has taken hold of a thesis, the defense of which appears to demand an entire history of philosophy,"⁵⁵ appears to have come closest to exploring this tension; understandably, he stops there. But to anyone who has read Foster carefully, the tension *should* be nothing new. Remember: Foster argues for a rise of empiricism *within* a (transformed) rationalism. Perhaps any thorough evaluation of the Foster Thesis must take the same form. I will attempt here to describe the general shape of such an analysis, in the hope that it will guide our understanding of the discussion that follows.

Consider a rough analogy between the Creator God as outlined in the Foster Thesis and humans as thinkers. In Foster's account, God as the author of his own

⁵⁴ *Ibid.*, 43.

⁵⁵ Peck 1964, 92.

thoughts is conceived as having rationality but not in the form of an outward restriction. Also, rationalism is transformed by Christian theology so that the ‘objects’ of God’s thoughts are laws rather than definitions. This means that nature is seen to display a law-like rational structure governing the interaction of natural objects. However, within the structure of that rationality, God’s creative activity is an act of will: the rising levels of voluntarism demonstrate that the particularising of a rational structure is an activity *not* wholly determined by reason. In other words, while the *a priori* rational structure of creation opens up possibilities and rules out others, it is precisely the contingency of natural objects—that is, the ‘un-inevitability’ of those objects—that demands the use of *a posteriori* empirical methods if nature is to be fully known.

Considered analogously—and presumably Foster would have allowed this, given the biblical tradition of humanity’s being created in the image of God—humans may be conceived as living within a similar history of philosophy. We, too, may be seen as the authors of our own thoughts, thoughts which have a built-in rationality.⁵⁶ If we think of these ideas as ‘laws’ rather than ‘definitions,’ then we will view these ideas as setting out a basic structure which guides subsequent human thought, opening up possibilities and ruling out others. However, a basic structure still needs ‘infilling’ with particularity, and since there are many options for these particularities, we must actually go out and ‘look’ to see what happened. Therefore, *a posteriori* empirical historical methods must be combined with a sort of *a priori* history of ideas, or “philosophy of history” as Grant calls it, in order to create a complete history. In other words, while the *a priori* rational structure of an idea opens up possibilities and rules out others, it is precisely the contingency of the subsequent thinking—that is, the ‘un-inevitability’ of those thoughts—that demands the use of *a posteriori* empirical methods if the history of philosophy is to be fully known.

In the *Mind* articles Foster sets out the *a priori* dimension with eloquence and

⁵⁶ For the purposes of our analogy, we need not explore whether this rationality is imposed from without or within. His emphasis on Kant, however, may indicate Foster was leaning toward rationality as an internal restriction. Ultimately, of course, this would make for a tidier analogy.

clarity, and he also gives hints as to the *a posteriori* dimension, hints which have given rise to further empirical investigation by others. However, Foster himself never explicitly recognized the possibility of another compossible ‘type’ of modern science. This can quite easily give the impression that he felt modern science was the *inevitable* and *only* outcome of Christian theology, an impression which has opened him up to much criticism. Perhaps Foster *did* feel this way and did not recognize the possibility of other ‘types’ of modern science.⁵⁷ In implying—purposefully or not—that the ‘particular’ (our current array of modern sciences) was as inevitable as the ‘rational scheme’ (the logical possibilities opened up by the doctrine of creation), Foster failed to allow the implications of his own thesis to guide his investigation. As we will see, many of his critics have followed him in the same failure. Some ‘evaluate’ the Foster Thesis through *a priori* methods alone; others use only *a posteriori* methods. Those who use a combination of methods do so without spelling out their relationship, and *no* commentators have explicitly clarified what the Foster Thesis itself implies for just such an evaluation.

1969: Daniel O’Connor and Francis Oakley’s “General Introduction”

Three years after the publication of Grant’s book, O’Connor and Oakley published *Creation: The Impact of an Idea*, a collection of essays whose title at least promises to be fertile ground for Fosterian seeds. In the “General Introduction,” the authors set out to define the biblical core of the doctrine of creation and some of its immediately obvious implications, and they insist that these implications may not occur immediately *in time*:

The idea of creation brings in its wake a whole chain of implications. Not that they were all perceived at once. Centuries were required before some of them—for example, those affecting conceptions of personality or of the nature of political life—were clearly understood.⁵⁸

Put in the language of my analogy above, while an idea may open up possibilities and rule out others, it often requires time and meditation by subsequent thinkers before those implications are understood. As we have seen, Foster believes this also applies to the

⁵⁷ That is, unrealised possible versions of modern science.

⁵⁸ O’Connor and Oakley, 7.

development of a philosophy of nature from a ‘core’ of Christian theology.

The authors also note that while the influence of philosophy on theology has long been an accepted topic for debate or discussion—with all parties generally acknowledging the receptivity of Christian theology to ancient philosophy—the ‘flow’ of influence in the other direction is discussed far less frequently. How *has* Christian theology affected the development of philosophical thought? O’Connor and Oakley suggest that the doctrine of creation is just such an example:

[The biblical account of intelligibility] claims less than the one inspired by Greek philosophy, it claims only a *de facto* intelligibility directly dependent on the Divine Will. But its location of intelligibility primarily in observed regularities is an idea with momentous consequences, perhaps the most important of the novel conceptions introduced into Western thought by Christian theology. These crucial differences and their attendant consequences will be elaborated more carefully below. Here we wish only to remark that a created reality is in principle accessible to the human mind but never exhaustively grasped by it.⁵⁹

This is a paragraph brimming over with Fosterian thought. Little wonder, then, that Foster 1934 is included in the book’s collection of essays.

1969: Daniel O’Connor’s “Introduction: Two Philosophies of Nature”

In the first essay of that same book, O’Connor sets before the reader an analysis of what the Foster Thesis *is* and what it is *not*. First, he deals with Foster’s basic assumption:

Greek philosophy of nature, Foster shows, flows from Greek theology. The modern philosophy of nature, he asserts, flows from Christian theology. And, in turn, the methods, objectives, and underlying impulse of modern science are determined by that philosophy of nature.⁶⁰

O’Connor’s use of the word “flow” is vague, but it is also interesting in its potential helpfulness. It could be seen to capture the concepts of *influence* and of *possibility* without falling into the trap of one-to-one correspondence. It acknowledges, as Foster does, that while ideas may be seen to have direct implications, human history is rarely as neat and tidy. Relationships which are instantaneous in the *a priori* realm of logic merely

⁵⁹ *Ibid.*, 9.

⁶⁰ O’Connor, 20.

“flow” in the *a posteriori* realm of the history of philosophy.

O'Connor seems to understand this distinction in his description of the Foster Thesis:

Foster's argument is primarily philosophical rather than historical. He is arguing about the relations between systems of ideas and the impact which novel ideas must have when their implications have been fully explored and assimilated. Documentation is supplied and the main line of the historical development is sketched, but the strategy of the argument follows the logic rather than the history of ideas.⁶¹

This is as close as any published Fosterian commentator has come to setting out the proper structure of an evaluation of the Foster Thesis.

O'Connor then proceeds to analyse science in three religious cultures—Christianity, Islam, and Byzantium—each of which has a doctrine of creation in its ‘theological core.’ He briefly offers some reasons why modern science arose within Christianity rather than the others:

a philosophy of nature based on a coherent theology, an attitude favorable to research, discovery and experiment, access to the learning of the Greeks and especially Greek mathematics as further developed by Indian, Byzantine, and Arabic thinkers, and finally, external conditions of relative peace and leisure.⁶²

For our purposes, the reasons are not as important as the general shape of his analysis, which follows the two-step process I have laid out above: (1) explore the various *a priori* possibilities through logical reasoning, and (2) explore the *a posteriori* particulars through empirical investigation. Again, O'Connor does not explicitly set before us a clear picture of his reasons or procedures, but his exploration of various cultures combined with his argument that modern science arose in the Christian West due to a “constellation” of factors indicate that while he acknowledges the strong role played by Christian theology, he does not consider modern science to be a *necessary* outcome of that theology.

1972: R. Hooykaas' *Religion and the Rise of Modern Science*

⁶¹ Ibid.

⁶² Ibid., 27–8.

In R. Hooykaas' *Religion and the Rise of Modern Science*, the author argues that voluntarism in Christian theology played a crucial role—perhaps *the* crucial role—in the rise of modern science. He lays out the basic Fosterian case for relationships among theology, philosophy of nature, and science of nature, and then he examines specific scientific thinkers for evidence of voluntarism in their theology. However, having said that Hooykaas makes a “Fosterian” case, I must point out that Hooykaas himself does not credit Foster, even when saying, “What people thought about God (or the gods) influenced their conception of nature, and this in turn influenced their method of investigating nature, that is their science.”⁶³ As it turns out, even though we know Hooykaas interacted with Foster fifteen years before the publication of this book, Hooykaas claims to have come to his conclusions independently of Foster.⁶⁴ In his book we see a very clear example of the trend toward Fosterian influence *and* anonymity.

1975: Rolf Gruner’s “Science, Nature and Christianity” in *Journal of Theological Studies*

In this article, Gruner uses the term “revisionists” to describe a group of people who “very often seem to have apologetic intentions” and who

wish to say that science was in its origins itself dependent on one particular religion, and if it is to endure and to be of further benefit, this dependence has to be recognized and reaffirmed. . . . Since the revisionist shares with most of his agnostic opponents the positive evaluation of science, he counts it very much in favour of Christianity that it has made such a thing as science possible.⁶⁵

Among the authors Gruner lists are names we have already encountered: Foster (1934–6), Baillie (1951), Smethurst (1955), and Hooykaas (1972). (Foster is the first, chronologically, and by implication might be understood as the ‘ringleader,’ although Gruner makes no such specific claim.)

⁶³ Hooykaas, xiii.

⁶⁴ Wybrow 1992, 346. Wybrow, through correspondence with Hooykaas, learned that Hooykaas invited Foster to speak at a conference in 1957 on the topic “Greek and Christian Ideas of Nature.” Wybrow also learned about Hooykaas’ claim of independent conclusions.

⁶⁵ Gruner, 214. I am using the reprint of this article found in Wybrow 1992.

By its very nature, Gruner's argument is incapable of specificity. His first step is to describe a 'thesis' which in reality is *nobody's*:

Some of these authors are only in part concerned with the topic in question, and there is none whose statement of the revisionist case is as complete as I have made it here. My description, in other words, is a composite.⁶⁶

After describing this 'thesis,' he proceeds to argue against it. There are only spotty references to Foster, and *no* direct critique of Foster specifically. In our study of the Foster Thesis, this is not a helpful article. I include it here only because we will encounter many future commentators who *do* find it helpful.

1977: Eugene Klaaren's *Religious Origins of Modern Science*

In a book whose title promises an affinity with—or at least an interaction with—the Foster Thesis, the only reference to Foster is found in an endnote to “Chapter 1: Introduction”:

Other good accounts are those of A. N. Whitehead and M. B. Foster. . . . The philosopher of religion, M. B. Foster, has also developed a significant argument, but compared to the work of Collingwood it is deficient in one important respect. Foster's claim that new (and old) methods 'presuppose' views of creation or nature which, in turn, 'presuppose' theology is correct, but he does not unfold what is involved in the crucial relation of presupposing.⁶⁷

It is unclear what Klaaren means by this criticism. Klaaren himself—while arguing for the presence of such presuppositions in the thinking of the 'principal' early moderns—is himself not able to “unfold what is involved in the crucial relation of presupposing” other than to say that the theological presuppositions of these moderns are “less determinative than direct causes but more determinative than simple conditions.”⁶⁸ Also, they are “not idle” but rather, “fruitful.”⁶⁹

Like Hooykaas, Klaaren seeks to demonstrate *at the level of the individual* that a

⁶⁶ Ibid., 214, n. 2.

⁶⁷ Klaaren, 194. Oddly, this is the only place in the literature in which Foster is called a “philosopher of religion.”

⁶⁸ Ibid., 185.

⁶⁹ Ibid., 184.

voluntarist theology leads to a philosophy of nature which in turn leads to the methods of modern science. To use Grant's distinction, both of these authors are behaving much more like "empirical historians" than "philosophers of history." Unlike Grant and O'Connor, these two authors seem unaware of the distinction.

1981: Colin Wright's "Comment on Professor Jeffner's Paper"

This article, published in *Religious Studies: An International Journal for the Philosophy of Religion*, is a response to a paper by Anders Jeffner in which Jeffner describes different 'parts' of reality and corresponding 'types' of understanding. Among other things, Jeffner argues that "religious all-inclusive understanding need not be opposed to a scientific understanding of a part of reality, but it is opposed to a scientific world-view and a scientific all-inclusive understanding."⁷⁰

Colin Wright, in response, accepts Jeffner's descriptions of reality and understanding, but he rejects Jeffner's assertion that each type of understanding leads to contradictory world-views. Wright wants to say that if "understanding is cognizing a manifold as a single whole in all its internal relationships"⁷¹ then, in theory, an all-embracing religious world-view *ought* to be able to embrace a scientific world-view. An acceptance of Jeffner's account, Wright says, leads to a fundamental incoherence which he feels is responsible for driving apart the religious and scientific communities.

In arguing for a more coherent world-view, Wright finds help in the Foster Thesis:

I believe a solution to these problems is to be found in three remarkable papers by M. B. Foster who argues that modern science, far from being in any way alien to Christianity, is a product of it.⁷²

Wright then gives a very brief summary of the Foster Thesis which is unremarkable except that in saying, "Contingency must find its place within a framework of

⁷⁰ Jeffner, 225.

⁷¹ Wright, 227.

⁷² *Ibid.*, 230.

necessity,”⁷³ he sees more clearly than most Fosterian commentators that Foster views voluntarism and empiricism as rising *within* a Christian rationalism. Perhaps Wright’s concern for a unified world-view helped him read beyond the stereotypical conflict. Whatever his motivation, Colin Wright is a good example of a certain category of commentators: those who hold up the Foster Thesis as a philosophically sophisticated—and therefore academically respectable—counterexample to the ‘warfare model’ of the relationship between science and religion.

1981: Thomas Torrance’s *Divine and Contingent Order*

Torrance does not mention Foster in the main body of his text, but in an endnote describes the Foster Thesis as

a very helpful analysis of Greek conceptions of God and nature, the Greek conception of science as operating *more geometrico*, and the ‘un-Greek’ elements needed for the rise of empirical science.⁷⁴

However, Torrance goes on to criticise what he sees as Foster’s over-emphasis on contingency as opposed to rational order:

While Foster shows the essential place of contingency in the rise of empirical science, he does not focus attention on contingent order or intelligibility, nor does he deal with the all-important patristic roots of these notions.⁷⁵

Implied in this criticism—an implication which will later be made explicit by Jaki—is a concern that Foster does not pay enough attention to the thinking of pre-Reformation theologians. We will deal with this particular criticism in detail when we get to Jaki. However, as to Torrance’s explicit complaint—that the Foster Thesis “does not focus attention on contingent order or intelligibility”—it is clear that Foster himself considered rational order and *even Greek philosophy* to be crucial components of a thoroughly Christian world-view:

The Christian doctrine on [Creation], as on all other subjects, itself includes an element derived from Greek philosophy, and *any doctrine from which all Greek elements are*

⁷³ *Ibid.*, 231.

⁷⁴ Torrance, 145–6.

⁷⁵ *Ibid.*, 146.

excluded is less than Christian. It is Christian to ascribe to God an activity of will, but it is not Christian to deny to God a theoretical activity or to ascribe to him a blind activity of will. It is a consequence of the Christian doctrine of Creation that the created world must contain an element of contingency, not that it must be nothing but contingent.⁷⁶

2.6 1984: Edward B. Davis' PhD Dissertation

In 1984, Davis published "Creation, Contingency, and Early Modern Science: The Impact of Voluntaristic Theology on Seventeenth-Century Natural Philosophy: An Essay in the History of Scientific Ideas." Davis earned a PhD from the Department of History and Philosophy of Science at Indiana University. In his abstract, Davis clearly sets out what he intends to do and how the Foster Thesis is involved:

Fifty years ago the late British philosopher M. B. Foster identified two different theologies of creation which differ profoundly in their implications for natural science. Rationalist theology, which assigns to God the activity of pure reason, 'involves both a rationalist philosophy of nature and a rationalist theory of knowledge of nature.' Voluntarist theology, which 'attributes to God an activity of will not wholly determined by reason,' implies that the products of his creative activity are contingent and can be known only empirically. By a careful analysis of four natural philosophies of the early modern period—those of Galileo, Descartes, Boyle, and Newton—I intend to show that there was indeed a connection between theological voluntarism and empirical science in the 17th century.⁷⁷

Right away we can see two serious misunderstandings of the Foster Thesis. First, Davis seems to have missed that Foster traces the rise of voluntarism *within a Christian rationalism*, even though Davis has taken both of the above quotations from Foster 1936, the article in which Foster makes precisely that argument. Foster distinguishes between Greek rationalism and Christian rationalism; Davis either misses or ignores that distinction. Second, Davis is doing what Hooykaas and Klaaren both do: he is looking for evidence of a connection between voluntarism and empiricism at the level of the individual, as indicated by the following quotation in his chapter on Descartes:

It is now time to consider the validity of the Foster thesis when applied to Rene Descartes: was there in fact a connection between his theology of creation and his understanding of

⁷⁶ Foster 1934, 468. Emphasis mine.

⁷⁷ Davis 1984, ix-x.

scientific method?⁷⁸

While Davis criticises both Hooykaas and Klaaren, it is only for looking at the *wrong* individuals or at too few individuals.⁷⁹ Nowhere does Davis question the methodology.

And when it comes to understanding what the Foster Thesis *is*, Davis makes two further mistakes. First, in his introductory chapter, “Testing the Foster Thesis,” Davis describes Foster’s work this way:

Although he went a long way toward showing what a consistently pursued theology of creation *ought* to have entailed for natural philosophy, he did very little to show that this had actually been the case historically.⁸⁰

Even though Davis seems implicitly to recognise the distinction between a philosopher of history and an empirical historian—and likewise that the Foster Thesis is in the former category rather than the latter—he insists on using *empirical* methods to “test” Foster’s argument.⁸¹ Second, in that same chapter Davis describes Foster as “a Christian philosopher with an apologetic aim: those many contemporary thinkers who admire modern science also ought to admire its source, Christian theology.”⁸² Later, Davis praises Gruner’s “astute critique of the ‘revisionist’ thesis of M. B. Foster and others,” even quoting Gruner’s statement that “modern science did not grow out of Christianity ‘as an oak tree grows out of an acorn.’”⁸³ As we have already seen in the work of Peck,⁸⁴ Christian apology was almost certainly not Foster’s aim in the years before the war, but even without the assistance of Peck’s research it should have been obvious that no

⁷⁸ *Ibid.*, 116–7.

⁷⁹ *Ibid.*, 8.

⁸⁰ *Ibid.*, 6–7.

⁸¹ George Grant’s work on Foster—in which this distinction is clearly laid out—does not appear in Davis’ bibliography; however, Daniel O’Connor’s article—which includes not only this distinction but also an appropriate evaluative example—*does* appear in the bibliography, but it is referred to neither in the text nor in the footnotes of the dissertation itself.

⁸² *Ibid.*, 6.

⁸³ *Ibid.*, 177.

⁸⁴ Also missing from Davis’ sources.

admonition to “admire” Christianity can be found in the Foster Thesis.

Davis’ research into the particular theological leanings of Galileo, Descartes, Boyle, and Newton is illuminating and helpful. His criticism of some of Foster’s more ‘empirical’ claims is also insightful.⁸⁵ In the end, Davis comes to a tentative agreement with Foster:

My conclusion is that Foster was correct, at least for the individuals I have studied. Theology impinged on natural philosophy through the doctrine of creation, in terms of which the four subjects of this essay approached the problem of scientific knowledge.⁸⁶

However, it seems that Davis—under the guise of ‘evaluating’ the Foster Thesis—has actually used it as a foil against which to place his own studies of the theologies of four early modern scientists. Davis’ contribution to a critique of the Foster Thesis, although voluminous,⁸⁷ is ultimately insubstantial. In his mis-characterisation of the Foster Thesis, his misunderstanding of how the argument works, and his misconstrual of an evaluative structure, Davis has simply missed too much.

2.7 1985–1992: Between Davis and Wybrow

This section covers the material published between Davis’ PhD dissertation and the very important book on Foster edited by Cameron Wybrow.

1985: Margaret Osler’s “Eternal Truths and the Laws of Nature”

In this article from the *Journal of the History of Ideas*—fully titled, “Eternal Truths and the Laws of Nature: The Theological Foundations of Descartes’ Philosophy of Nature”—Margaret Osler lists Foster as the first in a group of scholars (including Hooykaas, Klaaren, and Osler herself) having an “ongoing discussion concerning the

⁸⁵ Notable is his articulation of how Foster seems to have missed Descartes’ ‘Doctrine of the Creation of Eternal Truths,’ a doctrine which is certainly relevant to the development of ideas covered by the Foster Thesis.

⁸⁶ *Ibid.*, 236.

⁸⁷ Davis will reformulate and expand upon his PhD thesis in other publications in 1991, 1996, and 1999.

putative connection between theories about God's relationship to the creation, on the one hand, and the epistemological status of scientific laws, on the other."⁸⁸ While she goes on to say that "the traditional voluntarism-intellectualism dichotomy does not apply directly to Descartes,"⁸⁹ Osler does argue in this article that an understanding of Descartes' *theology* is crucial to an understanding of his *philosophy of nature* and his subsequent *science of nature*. Osler's indebtedness to Foster is evident in the shape of her thinking, but she does not intend to offer an analysis of the Foster Thesis.

However, in characterising the general thesis of the mentioned group of scholars—with Foster's name at the head—as being concerned with the links between "voluntarism in theology and nominalism and empiricism in the philosophy of science"⁹⁰ and between "intellectualism in theology and realism and rationalism in philosophy,"⁹¹ Osler makes it easy for the reader to miss a crucial part of the Foster Thesis: voluntarism as rising *within* a transformed rationalism.

1985: Colin Russell's *Cross-currents: Interactions Between Science and Faith*

See Appendix B.

1985: George Grant's *English-Speaking Justice*

See Appendix B.

1985: David J. Hawkin's *Christ and Modernity*

Subtitled *Christian Self-Understanding in a Technological Age*, Hawkin's book deals—among other things—with issues involving Christian theology, modern science, and contemporary, technological culture. While exploring the relatively common view

⁸⁸ Osler 1985, 349–50.

⁸⁹ *Ibid.*, 351. Primarily, this is because Osler dwells on what Foster missed (or chose to ignore): Descartes' doctrine of the creation of eternal truths.

⁹⁰ *Ibid.*, 350.

⁹¹ *Ibid.*

that the Bible is to be held responsible for encouraging a technological culture by de-divinizing nature and by linking the divine and human characteristics of creativity and autonomy, Hawkin cautions against emphasizing a positive, causal relationship between biblical theology and technology: “The central issue which is raised by the argument here revolves around the question of whether biblical theology *encourages* technology or simply *permits* it.”⁹²

Hawkin also points out that a common objection to those linking Christian theology with modern science is the uncomfortable fact that modern science has arisen only recently. To the standard answer that Medieval Christian theology was too wedded to Greek philosophy and needed to be freed from its bonds by movements such as the Reformation, Hawkin has this criticism:

This is an oversimplified answer which fails to do justice to the complexity of Christianity. From the beginning Christianity expressed itself through a fusion of Hebraic and Greek thought-forms. The Judaism from which Christianity was derived was itself permeated by Hellenism.⁹³

It is at this point that Hawkin makes reference to the Foster Thesis and shows that Foster is often *mis*-used in this discussion:

M. B. Foster’s influential articles are often quoted in support of the argument that the ‘un-Greek’ elements in modern science are derived from a Christian doctrine of creation. But one of Foster’s main points is that we cannot arbitrarily expel Greek ideas from Christianity. He also pointed out that modern science could not have arisen without a developed mathematics—something we owe to the Greeks, not to the Bible.⁹⁴

This reference to mathematics shows that, unlike many commentators, Hawkin has read the entire Foster Thesis with care: Foster’s discussion of the importance of mathematical thought occurs in a *footnote* to Foster 1936. In this footnote, however, Foster is not only arguing for the importance of mathematics in the story of the rise of modern science but is also explaining that the *use* of mathematics was very different in the Greek and modern cultures. Foster attributes this difference to the differing theologies at work:

⁹² Hawkin, 108.

⁹³ *Ibid.*

⁹⁴ *Ibid.*

A God who is a Demiurge can only copy [the mathematical objects of his reason] defectively in the material world, while an omnipotent Creator can realise them perfectly in it. Hence there follows the crucial difference that mathematics is for modern science an instrument for the understanding of material nature, but for Greek science a step in the progress of the mind away from matter to the immaterial objects of which alone scientific understanding is possible.⁹⁵

Hawkin is right to criticise the use of Foster when arguing against the ‘Greek’ elements in Christian theology; however, in giving the impression that Foster credits *only* Greek culture when discussing the importance of mathematics for modern science, Hawkin is leaving out part of Foster’s point: it is *Christianity’s* use of the once-Greek mathematics that leads to the empiricism-within-rationalism which characterises modern science.

1986: David C. Lindberg and Ronald L. Numbers’ “Introduction”

See Appendix B.

1991: Davis’ “God, Man, and Nature: The Problem of Creation in Cartesian Thought”

See Appendix B.

1991: John Brooke’s *Science and Religion: Some Historical Perspectives*

See Appendix B.

1991: Cameron Wybrow’s *The Bible, Baconianism, and Mastery over Nature*

See Appendix B.

1992: John C. Greene’s “From Aristotle to Darwin”

See Appendix B.

2.8 1992: Cameron Wybrow

One of the most significant contributions to the ongoing conversation begun by

⁹⁵ Foster 1936, 16, n. 15.

Foster's *Mind* articles was made in 1992 by Wybrow's ponderously titled book, *Creation, Nature, and Political Order in the Philosophy of Michael Foster (1903 – 1959): The Classic Mind Articles and Others, With Modern Critical Essays*. Not only did Wybrow assemble in one volume many if not all of Foster's writings on modern science and the doctrine of creation, but he also convinced many scholars either to compose new critical essays or allow older ones to be reprinted. Wybrow himself contributed an excellent overview of Foster's life and work. In any study of Michael Foster, this book is indispensable. We will limit our attention to the four essays offering direct criticism of the Foster Thesis.

1992: Cameron Wybrow's "The Life and Work of Michael Beresford Foster"

Wybrow's essay begins with as complete a biography of Foster as anyone has pieced together. Foster's personal life was not well documented; nor was he the type to attract such attention. Wybrow acknowledges the important biographical work that Peck did in 1964 and then adds to that work through the use of old newspaper articles, biographies of Foster's fellow academics, and extensive personal correspondence with Foster's surviving friends and colleagues. The result is an excellent overview of the evolution of Foster's religious and academic lives; particularly illuminating is Wybrow's analysis of the change wrought by "Foster's conversion to a new mode of Christianity, sometime just before or during the second World War."⁹⁶ Wybrow shows that, in general, Foster's religious beliefs moved from having a philosophical negotiability to having a "fierce subjective certainty."⁹⁷ Wybrow also gives a helpful introductory overview to what he calls Foster's 'early' and 'late' thought.

However, when it comes to discussing that thought, Wybrow offers some startling analysis:

However clever Foster's arguments for the Biblical or Christian origin of this depiction of nature and of man, there is little about it that *feels* Biblical or Christian. . . . In reading Foster, [as opposed to the Biblical writers], I see no serious or consistent attempt to articulate

⁹⁶ Wybrow 1992, 19.

⁹⁷ *Ibid.*

a Biblical or Christian world-view, but instead the stamping of Christian approval upon a world-view already articulated by modern philosophy. . . . Further, his standards for confirmation were quite low; he rested upon a handful of Biblical verses, taken out of context, and fragmentary remarks gathered from his desultory reading of second-class and unphilosophical Protestant theologians.⁹⁸

What begins as a respectful and illuminating essay on the life and work of Michael Foster, then, rather quickly turns sour. Here are Wybrow's concluding remarks, remarks that end the "Introduction" and which, presumably, are to set the tone for our reading of the remainder of his book:

It seems to me, then that there is only one crucial question in the appraisal of the work of Michael Foster: Has he hit upon a true affinity between modernity and Christianity, or has he simply provided, perhaps unwittingly, a spurious Christian justification for liberal Protestantism's obsequious endorsement of the modern project? And if the latter, is this justification not despicable, since it allows secularized Protestant liberals to feign a good conscience by attributing the foundations of modernity to the Bible, a book which they no longer read and would prefer to quietly abandon?⁹⁹

Wybrow's barely concealed contempt, combined with his evident disdain for liberal Protestantism, answers one question but asks another. It explains why Wybrow decided to go ahead and publish the Jaki article which we will evaluate soon, an article which makes absolutely *no* attempt to conceal the author's contempt for Foster or for Protestantism. But Wybrow's conclusion also leads to the question: Why *did* he decide to put together this book? Was his motivation to continue the Fosterian conversation or to end it?

1992: James Patrick's "The Place of Michael Foster's Protest in the Controversial Historiography of Modern Science"

Patrick's essay aims to explain the philosophical and theological contexts of Foster's *Mind* articles. It is interesting in that it deals not with the question, 'Is Foster on to something?' but with the question, 'Why did Foster get published?' He begins with an observation on the startling fact that Foster *did* get published:

At first sight the inclusion of Foster's article offering a new interpretation of the positive

⁹⁸ Ibid., 43.

⁹⁹ Ibid., 44.

relation between Christianity, philosophy, and modern science seems anomalous, for in the early thirties *Mind*, G. E. Moore being its editor, rarely published articles that were essentially historical and very seldom essays about God or religion.¹⁰⁰

Patrick's argument is that Foster was published not so much because he was brilliant but because he was Protestant:

What [Foster's articles] promised to provide, and what *Mind* was very likely to approve, was a theology founded upon an alternative to the historiography proposed by Gilson. For Gilson the restoration of Scholasticism was the wave of the philosophic future, classical modern philosophy represented by Descartes having been at last rejected or transcended. For Foster the development of modern philosophy could only begin when the un-Greek, anti-rationalist element broke free, allowing the existence of real contingency, real creatures, and a real science of those contingent creatures.¹⁰¹

According to Patrick, Gilson "had argued effectively that the high Middle Ages had developed an especially fruitful, organic relation between theology and philosophy, thereby providing the necessary background for the rise of modern science."¹⁰² Patrick believes that this was unsettling to many in the 'secular' philosophical community, who saw in the Foster Thesis the lesser of two evils: "Despite the implied theism of Foster's essay, *Mind* can hardly have disapproved his attempt to put neo-scholasticism in its place."¹⁰³

There are two significant problems with Patrick's argument: (1) he can offer no proof that the powers at *Mind* were indeed motivated as he claims, and (2) significant parts of his argument are based on misreadings of Foster, three of which we will deal with here. First, like many other commentators, Patrick sees Foster as setting modernity *against* rationalism. This is only partly true; Foster sets modernity against *Greek* rationalism. But as we have seen, for Foster the "un-Greek, anti-rationalist element" did not "break free" from rationalism in general but rather emerged from *within* a Christian

¹⁰⁰ Patrick, 245–6.

¹⁰¹ *Ibid.*, 247.

¹⁰² *Ibid.*, 251.

¹⁰³ *Ibid.*

rationalism which was in fact Greek rationalism transformed by Christian theology.¹⁰⁴ Second, Patrick says that “Foster doubted, perhaps without the best of historical warrants, that Christian theology had been able to make the careful distinction between the begetting of the Son and the creating of the world”¹⁰⁵ when in fact Foster quite clearly says the exact *opposite* about Christian theology when he discusses the doctrine of the Trinity. And third, Patrick writes, “For Foster, Descartes was the philosopher in whose thought the noble Christian doctrine on which the modern philosophy of nature, a philosophy in which nature was free of divine ontology, had been built”¹⁰⁶ This overstates the case. Yes, Foster argues that Descartes’ ‘version’ of intuitive induction was more orthodox than Augustine’s *and* that it—perhaps not coincidentally—helped to supply presuppositions about nature which were important for modern science. Yes, Foster refers to Descartes as someone whose philosophy of nature actively excluded final causes, in order to demonstrate that Christian theology *can* ‘flow’ into a philosophy of nature identical to that which Kant said must be presupposed by modern science. But Foster also criticizes Descartes fairly sternly toward the end of Foster 1934, when he calls Descartes (somewhat pejoratively) a Rationalist and says,

Christian dogma works in him strongly enough to modify his language, but not strongly enough to transform his thought. The God of which he has demonstrated the existence is a God whose whole essence is to think. His Rationalist doctrine of nature corresponds with his Rationalist doctrine of God: as he cannot conceive a voluntary activity in God, so he cannot conceive the reality of a contingent element in nature, and his identification of matter with extension is the inevitable consequence of his identification of the divine activity with thought.¹⁰⁷

Despite these misreadings of Foster, Patrick’s essay helpfully and carefully documents that the language of ‘supposals,’ ‘suppositions,’ and ‘presuppositions’ was

¹⁰⁴ Foster: “Christian rationalist theology was bound to admit an element of voluntarism into itself.” (Foster 1936, 18.)

¹⁰⁵ Patrick, 252–3.

¹⁰⁶ *Ibid.*, 253.

¹⁰⁷ Foster 1934, 466. Whether Foster has accurately portrayed Descartes’ thoughts is a secondary consideration here. What matters is that Foster does not (as Patrick implies he *does*) hold up Descartes as the exclusive foundation of modern thought.

alive and well in Britain in the late 1920s and early 1930s, and he considers the Foster Thesis to be an important and early articulation of this way of thinking:

The Foster thesis was an important early twentieth century example of something new: of the power of the new philosophy of history by asserting certain supposals or presuppositions to bring questions into prominence which unsettle whole worlds of discourse and which required answers.¹⁰⁸

We will find this charity wholly lacking in Jaki's somewhat similar analysis.

1992: Ian Weeks and Struan Jacobs' "Theological and Philosophical Presuppositions of Ancient and Modern Science: A Critical Analysis of Foster's Account"

In this essay, the authors present an analysis of the Foster Thesis. Rather than "*externally* testing [Foster's] interpretations for historical accuracy,"¹⁰⁹ Weeks and Jacobs choose to undertake an "intensive internal study" that will expose "serious problems in the structure of Foster's thought."¹¹⁰ However, before examining the logical coherence of Foster's three articles, Weeks and Jacobs must determine, in outline at least, what they believe *is* the structure of Foster's thought. Here is their description of the Foster Thesis:

Foster's account covers and combines important doctrines of theology, philosophy of nature, and scientific method. In these three domains, he believes, doctrines exist in strict relations. . . . It is, then, for him a general truth that every theology carries (has a 'logical connection' to) its own philosophy of nature, while each such philosophy entails a particular set of scientific procedures.¹¹¹

And right away we come to the difficulty and weakness of their entire analysis: the insistence of a direct, logically necessary, one-to-one correspondence in the domains of theology, philosophy of nature, and science of nature. This insistence is what fuels their argument—which consists primarily in pointing out counterexamples to that one-to-one correspondence in Foster's own writing—and this insistence belies a serious misreading

¹⁰⁸ Patrick, 254.

¹⁰⁹ Weeks and Jacobs, 255. Notice the assumption that the methods of the 'empirical historian' are the only ones appropriate for evaluating the Foster Thesis.

¹¹⁰ *Ibid.*

¹¹¹ *Ibid.*, 256.

of Foster. Foster's conception of 'implication' is neither as mechanistic nor as instantaneous as Weeks and Jacobs make it out to be. Rather, Foster's idea of implication is more like this:¹¹² if a culture has adopted a certain theology, that theology *necessarily implies* that some philosophies of nature will be ruled out, others will be possible, while still others—or *perhaps* just one—will be most likely. This is also what he means when he says that “the method of natural science depends upon the presuppositions which are held about nature, and the presuppositions about nature in turn upon the doctrine of God.”¹¹³ This last quotation, despite its vague use of the phrase “depends upon,” is used by Weeks and Jacobs to support their ‘one-to-one correspondence’ interpretation.

In fairness, however, it should be noted that Foster *does* occasionally use language like this: “The methods of modern science, *precisely* in so far as they differ from those of Greek science, *must* presuppose a philosophy of nature *correspondingly* different.”¹¹⁴ Or, to use another example: Foster talks about “the principle upon which I depend throughout, namely of the *strict reciprocal implication* between theology, philosophy of nature and scientific method.”¹¹⁵ As is to be expected, Weeks and Jacobs use both quotations to support their ‘one-to-one’ interpretation. However, Foster himself also discusses the three realms of theology, philosophy of nature, and science of nature in ways which show them to be glaringly and obviously *not* in strict, one-to-one correspondence. As an example, Foster discusses three different Greek theologies which can be presupposed by a single Greek philosophy of nature.

Charitably assuming, as I believe we should, intelligence and philosophical sophistication on Foster's part, we must look for ways to reconcile these Fosterian quotations. Necessary implication of *possibility*, it seems to me, is the best way to do that. And indeed, Foster does say that a rationalist philosophy “implies in its turn the

¹¹² I have already presented a preliminary sketch of this in Part One.

¹¹³ Foster 1934, 465.

¹¹⁴ Foster 1935, 442. Emphases mine.

¹¹⁵ Foster 1936, 5. Emphasis mine.

possibility of an *a priori* natural science.”¹¹⁶ It is this concept of implied possibility—hinted at by Grant and O’Connor and Oakley—which has escaped Weeks and Jacobs. Hence, in their analysis of the *three-to-one* relationship of Greek theologies and philosophy of nature, Weeks and Jacobs take as a *counterexample* that which is actually perfectly consistent with Fosterian implication as I have described it. Weeks and Jacobs have based their “critical analysis” on a false premise: Fosterian insistence on an instant, logically necessary, one-to-one correspondence among doctrines in the three realms of theology, philosophy of nature, and science of nature.

However, there are two other major problems in this essay by Weeks and Jacobs: (1) a misreading of the three *Mind* articles in other areas, and (2) a tendency to caricature the history of philosophy. In analysing the Foster Thesis, Weeks and Jacobs make several statements which belie a significant inattentiveness to the text. I will deal with two examples. First, they write:

In [1934] Foster says that modern science generically puts experience to probative, as distinct from simply illustrative, use Yet in much of [1935 and 1936] Foster sharply distinguishes modern science into *a priori* and empirical disciplines, implying that experience in the *a priori* is non-probative.¹¹⁷

But what the authors have missed is that Foster clearly says that even what he calls the *a priori* modern sciences have both *a priori* and empirical elements, and that experience is still the final arbiter. In the second example of inattentiveness, the authors write:

Two thirds of the way through [1936] Foster’s argument begins to slide. The connotations of ‘rationalist’ and ‘voluntarist’ have previously been such that they could not without contradiction be simultaneously affirmed of God. But now we find Foster arguing that “‘Christian rationalist theology was bound to admit an element of voluntarism into itself”¹¹⁸

What we see here is an equivocation which, again, belies a somewhat sloppy reading of the material. The ‘previous’ rationalism was the *Greek* version. The ‘current’ rationalism is *Christian*. The fact that they could *not* be simultaneously affirmed in the

¹¹⁶ Foster 1936, 3.

¹¹⁷ Weeks and Jacobs, 256, n. 2.

¹¹⁸ *Ibid.*, 256.

past and that they now *must* be is precisely Foster's point. Just after this last quotation, Weeks and Jacobs list two types of voluntarism to which Foster refers. While they accurately identify and describe what I've called 'creative' and 'selective' voluntarism, they never do discuss 'particularizing' voluntarism, a type of voluntarism which plays a significant role in Foster's argument and therefore should not have been overlooked. Concerning the history of philosophy, Weeks and Jacobs do not appear to understand why a principle of unity would be important for a Greek conception of a logically complete science and they do not appear to understand the important distinction between Aristotle and Aristotelianism.¹¹⁹ This hampers their analysis.

In his "Overview of the Essays," Wybrow describes Weeks and Jacobs as "versatile thinkers whom I knew to have both a grasp of Foster's thought and a keen interest in it."¹²⁰ Unfortunately for us, their grasp is not firm enough so as to render their essay as profitable as it might be.

1992: Stanley Jaki's "Telltale Remarks and a Tale Untold"

Stanley Jaki's presence in this collection is a great success for Wybrow. Jaki is a Templeton Prize winner, has doctorates in Theology and Physics, and has written over two dozen books on science and religion. His participation in the ongoing conversation about the Foster Thesis has every reason to be of great value. However, it is a great disappointment that Jaki's contribution relies heavily upon insult and innuendo—an inexcusable flaw in what should have been an excellent and helpful original essay by an extraordinarily knowledgeable author. Foster seems to have touched a *very* raw nerve in Jaki by suggesting that the Reformation may have contributed something positive to the history of ideas as applied to the rise of modern science, and Jaki's venomous response makes it quite difficult for the reader to tease apart the insight from the invective.

Jaki's essay aims to expose the Foster Thesis as a weak, uninformed, and unintelligent argument set forth by a scholar who purposefully or accidentally kept

¹¹⁹ Ibid., 258–260.

¹²⁰ Wybrow 1992, xii.

himself ignorant of the neo-Scholastic historiography of the rise of modern science. As the title expresses, Jaki believes that an analysis of several ‘telltale remarks’ by Foster will show the inadequacy of Foster’s scholarship generally and the Foster Thesis particularly, especially when compared to the ‘tale untold,’ which turns out to be the historiography of science as presented by Pierre Duhem. Like Patrick, Jaki sees the Foster Thesis through a lens coloured by the Protestant-Catholic divide. Unlike Patrick, Jaki can find almost nothing redeeming about Foster or his work. I have identified six major categories of comments made by Jaki in this essay: comments which are (1) meanspirited, (2) what I will call ‘counterfactually *ad hominem*,’ (3) overly sensitive to the Catholic-Protestant divide, (4) focussed on Foster’s ‘telltale remarks’, (5) based on actual criticism of the Foster Thesis, and (6) full of praise for Duhem (the ‘tale untold’). I will examine some examples from each category.¹²¹

(1) Meanspirited

Jaki’s animosity is shown not only toward Foster in this essay; he also lashes out at Protestants generally, at Hooykaas, at Oxford, and at some of Foster’s colleagues. About the Reformation and Protestants, Jaki writes that Reformers turned the distinction between God’s absolute and ordained power

into a shibboleth, which they repeated endlessly but never examined closely. The most a Protestant historian of the early stages of modern science can do with that shibboleth is to locate it, as R. Hooykaas did, in the writings of insignificant journeymen of science from the 17th century.¹²²

In Jaki’s view, it would appear that Protestant historians are a separate species of historian. Also, the claim that the Reformers *never* examined that distinction closely

¹²¹ I have decided to include several examples of what I consider to be Jaki’s ‘uglier’ comments only after significant deliberation. I do not do this to malign Stanley Jaki; he would be unconcerned if I did. Nor do I do this to defend Michael Foster; he does not need my help. Rather, I do this for two reasons: first, to give the reader a sense of what I mean by the challenge of “teasing apart the insight from the invective,” and second, to attempt a criticism of Jaki’s arguments, something which—other than a few *very* brief comments in a review of Wybrow’s book—has yet to appear in the literature.

¹²² Jaki 1992, 273–4.

seems an odd one to make, in that it would take only one counterexample to prove it false. Concerning Hooykaas, Jaki says, "Hooykaas' references to Buridan and Oresme are crass signs of ignorance," and, "To speak, as Hooykaas does, of Descartes' theological voluntarism is a howler."¹²³ As for Foster's academic life at Oxford, Jaki writes:

Concerning the topic analyzed by Foster, some salient, indeed towering facts had been conspicuously available for two full decades before Foster [sic] first essay appeared. Not perhaps in *that* England where the fog in the Channel is readily taken for the non-existence of the Continent.¹²⁴

He also wrote:

One wonders whether Foster had ever read at least the introductory chapter (with not even a simple trigonometrical figure in it) of Copernicus' immortal book. (Possibly, Oxford's program of Greats did not yet include such truly great writings.)¹²⁵

And concerning Foster personally, Jaki is extraordinarily meanspirited: "Foster's own Christianity was not without some perplexities. One, of course, can never fathom the true reason for suicide, the end Foster chose for himself."¹²⁶ This is followed by an attack which is, at best, vague in its meaning and relevance:

The kind of Christian Foster was could perhaps be best speculated upon by Eric Mascall, his fellow theology student in Christ Church. The two worked strenuously on the material improvement of the life of undergraduates, only to find that undergraduates were surprisingly clever in looking after themselves.¹²⁷

It is this sort of venom which runs through Jaki's essay and makes critical reflection significantly difficult.

(4) Counterfactually *ad hominem*

¹²³ Ibid., 274, n. 11 and 13 respectively. Jaki ignores the ample evidence that Descartes *himself* spoke of his own 'theological voluntarism' by writing about his doctrine of the creation of eternal truths.

¹²⁴ Ibid., 281.

¹²⁵ Ibid., 282.

¹²⁶ Ibid., 285.

¹²⁷ Ibid.

On several occasions, Jaki posits an imaginary situation, guesses what Foster would say or do, and then attacks Foster for saying or doing it. We will begin with an example of the same procedure carried out against one of Foster's teachers:

Had Kröner, Foster's 'Christian-Kantian' or 'Kantian-Christian' teacher in Kiel, learned about the true origin of science (which is the origin of the Newtonian laws of motion, of which the first, the law of inertial motion is the fundamental), he might have had the greatest intellectual shock of his life. Or possibly, he might have taken the easy academic way out of dealing with the specter of troublesome facts. It consists in not reconsidering one's favorite perspective until such a change becomes safe through the shift of academic consensus.¹²⁸

Not only is this bad argumentation, but it takes nothing away from Foster's argument. Turning to the Foster Thesis, Jaki argues that the true beginnings of modern science can be found *prior* to the Reformation, in Buridan's impetus theory from the early 14th century. Jaki does not believe Foster would agree: "Whether by knowing about Buridan, Foster would have recognized the true Christian provenance of that fruit, is most unlikely."¹²⁹ Considering that Foster seems to see the story of Christian theology as *one* long whole, in which the Reformation is seen primarily as an *acceleration* of an already existing trend, it does not appear that Jaki is right in his speculation. But Jaki presses on:

One of [Foster's] options would have been to damn Buridan and the rest with faint praise, and with the condescension of more than one Oxford don, in much the same way as he did with Gilson. This is possibly the best a Protestant can do with the fact of the pre-Reformation Christian origin of modern science, unless he chooses to imitate the ostrich.¹³⁰

We see in this comment the hyper-sensitivity to the Protestant-Catholic divide, a sensitivity which permeates Jaki's essay straight to the very last sentence, in which Foster's Christian faith was challenged:

Had Foster studied the works of Duhem, which were at the Bodleian from the moment of their publication, perhaps he would not have written his articles, or, had he mustered a truly Christian intellectual courage, he would have told a very different story with very different telltale remarks.¹³¹

¹²⁸ Ibid., 284.

¹²⁹ Ibid., 285.

¹³⁰ Ibid.

¹³¹ Ibid., 296.

The implication is clear: Foster, based on what Jaki imagines he would do, does *not* have a “truly Christian intellectual courage.” What is less clear is how Jaki’s use of ‘counterfactual *ad hominem*’ does demonstrate such a courage.

(3) Overly Sensitive to the Catholic-Protestant Divide

As we have already seen, the struggle between Catholics and Protestants seems to have the single greatest influence in shaping Jaki’s reading of the Foster Thesis. There are many, many examples of this type of comment in Jaki’s essay, of which the following are representative:

[Foster] credited the Reformation and Reformed theology with a breakthrough in the understanding of the Christian dogma of creation. Less important, though very misleading, could seem his insistence that the Reformation liberated Christian faith from its monastic enclosures and brought it in contact with the world at large.¹³²

To call Foster’s stance an “insistence” is a bit strong. Foster was describing a *trend* by using an *analogy* and he used none of the hyperbolic language Jaki ascribes to him. Jaki appears to be overreacting by setting up a straw man. Ironically, in another passage Jaki insists that “it is not Foster’s Protestantism which is the target of criticism, but the narrowing of historical and philosophical perspectives and information which it imposed on him.”¹³³ In the *Mind* articles, however, Foster demonstrates *explicitly* that he is able to credit Catholicism fully when credit is due; Jaki, on the other hand, does not demonstrate the same attitude toward Protestantism. One must ask whose perspective has been narrowed. Despite saying that he is not arguing against Protestantism, Jaki later says, “Protestants in more than one case joined the rationalists in an unholy alliance if it served the cause of denigrating further the allegedly dark Middle Ages.”¹³⁴

(4) Foster’s ‘Telltale Remarks’

In the course of this essay, Jaki mentions three telltale remarks of Foster’s, three

¹³² Ibid., 272.

¹³³ Ibid., 273.

¹³⁴ Ibid., 286.

remarks which Jaki contends give away more than Foster intended. In the first telltale remark, Foster praises Gilson's *L'esprit de la philosophie médiévale*, although Foster goes on to say:

But my whole article is a protest against Gilson's further assumption, that we must look to a resurrection of Scholasticism for a continuation of this great task, and against his implied judgment that the work of the classical modern philosophers represents a declension from the path upon which medieval philosophy set out.¹³⁵

Jaki believes that the tale told by the first part of this remark is that Foster had read Gilson's book and therefore should have known that his own thesis was nothing new; the tale told by the second and longer part of this remark is that Foster's Protestantism was clouding his intellectual vision.

In the second telltale remark, Jaki paraphrases Foster as saying that "the methodology of ancient Greek science was equivalent to Aristotle's logic and that therefore it was not really important to have a detailed knowledge of Greek science to talk about its very nature and principle features."¹³⁶ The tale told? Foster is "more a heedless constructor of history in terms of some generic, if not preconceived categories, than a careful reconstructor of history"¹³⁷

In the third telltale remark, Foster writes at the very beginning of Foster 1934:

I have anticipated something of what is said in this article in a paper entitled "The opposition between Hegel and the philosophy of Empiricism" which was read at the third Congress of the International Hegel Society at Rome, Easter, 1933, and published among the proceedings of the Congress.¹³⁸

The tale told?

Foster's dissertation and other writings on Hegel were part of a long-standing strategy of Kantians to exculpate Kant from the charge of having inspired Fichte's rank voluntarism and Hegel's brazen flights of fancy.¹³⁹

¹³⁵ Foster 1934, 448, n. 3.

¹³⁶ Jaki 1992, 271.

¹³⁷ Ibid.

¹³⁸ Foster 1934, 446, n. 1.

¹³⁹ Jaki 1992, 277.

Peck's work on Foster, published nearly thirty years before Jaki's, shows that Foster spent years studying the Christian doctrine of creation, exploring its implications in many different fields. Peck's view, well researched, is simply more reasonable than Jaki's conspiracy theory.

(5) Actual Criticism of the Foster Thesis

Jaki, as may be expected from a scholar of his stature, has some important criticisms of the Foster Thesis. As we have seen, however, the reader must wade through many other types of comments in order to find them. One criticism concerns the 'alternative' historiographies of science: Foster should have read them, and if he had read them he should have mentioned them. Foster does not mention Duhem once, and Jaki argues that (1) Foster either failed to read Duhem, or (2) Foster read Duhem but failed to interact with him. Either way, Jaki sees a failure at work.

Another criticism is that Foster is not careful enough about documentation:

Foster felt that he could readily assume a consensus about the chief features of modern science as well as of modern philosophy, as he understood both. Working on the basis of such a consensus has the dubious advantage that one may feel justified in dispensing with a careful documentation of its reliability. Beneath that advantage may lie a pitfall, namely, that the consensus is based more on a wishful reconstruction of the thought of earlier philosophers and scientists than on painstaking studies of their writings.¹⁴⁰

In this comment we see again the tension between *philosophy of history* and *empirical history*. Jaki seems to want the scope of the former with the documentation of the latter. Whether such a thing is possible is another question, of course, but Jaki's analysis does point to an important issue when discussing any evaluation of the Foster Thesis: even if we agree that Foster sets out various *a priori* possibilities through logical reasoning and opens up the possibility to explore the *a posteriori* particulars through empirical investigation—and here we are moving well beyond Jaki, who never discusses the shape of an appropriate evaluative structure—how confident can we be in Foster's 'first principles'? That is, if Foster is exploring the logical implications of the doctrine of creation or of Greek rationalism, how certain can we be that he has defined those

¹⁴⁰ Ibid., 271.

doctrines accurately? It is extremely important, of course, to get those definitions right, and if Jaki is not questioning Foster's accuracy,¹⁴¹ he is at least questioning our ability to test Foster's accuracy, since Jaki believes that Foster does not leave us enough documentation to check for ourselves.

A third criticism of Jaki's is that Foster relies too much on Kant for support of the Foster Thesis:

No less easy to understand, provided one is not satisfied with clichés, is Foster's characterization of Kant's philosophy as an almost ideal Christian philosophy of nature at least in "one important aspect." [Here, Jaki makes reference to Foster 1936, 26.] Part of that aspect is seen by Foster as a fundamental achievement of Kant, namely, that Kant spelled out finally and clearly that the source of ideas on which modern science and scientific method rested was Christian revelation. Foster kept a revealing silence on the fact that Kant . . . did not take for an intellectually respectable source that very revelation.¹⁴² (275)

This is an astonishingly inaccurate rendering of Foster's argument. First, Foster never claims that Kant credited Christian revelation with *anything*; instead, Foster wants to show that Kant's philosophy of nature (derived 'backward' from modern science) closely matches Christianity's philosophy of nature (derived 'forward' from theology). Second, and related to the first, Foster refers to Kant *precisely because* Kant has no Christian apology in mind. Third, and perhaps most unsettling, not only does Jaki's reference to Foster 1936 not lead to the quotation it claims to, but that quotation appears *nowhere* in the three Foster articles. I can offer no explanation for this which does not reflect poorly on Stanley Jaki.

Some of Jaki's criticism is reserved for those who have made sloppy use of the Foster Thesis. He is particularly critical of those early commentators who "made it a fashion to refer to Foster's essays as if they contained a profound and unassailable analysis . . ." ¹⁴³ As I have shown, Peck reversed this trend in 1964, but Jaki makes no mention of that reversal. Instead, his characterisation of the Foster Thesis paints it as

¹⁴¹ Although on p. 279 Jaki clearly questions Foster's accuracy on the importance and role of definition in Substantial Form for Aristotle and the Scholastics.

¹⁴² *Ibid.*, 275.

¹⁴³ *Ibid.*, 286.

irredeemable: “It is a story in which mistaken assumptions, deficient information, inconsistent argumentation, and a good deal of wishful thinking let the blindfold of sectarianism appear as a respectable academic hood.”¹⁴⁴

(6) Praise for Duhem (the ‘Tale Untold’)

As mentioned above, one of Jaki’s biggest concern is that Foster does not interact with Duhem on the subject of the Christian ‘origins’ of modern science. This is a shame, says Jaki, because it would be “[important] for Foster’s Christian concerns [that] Duhem also showed the unmistakably Christian origin of Buridan’s impetus theory”¹⁴⁵ But Jaki is not primarily concerned with rounding out Foster’s understanding; rather, through Duhem Jaki is making the point that Scholasticism was *not* contrary to the preconditions for the rise of modern science. This, Jaki believes, is in opposition to Foster’s claims. When Jaki takes Foster to say that Christianity was only ‘friendly’ toward these preconditions *after* the Reformation, he sets up a conflict which is based on a misreading of the Foster Thesis. This misreading—perhaps coloured by a predisposition to view Christianity, theology, and the history of ideas through the categories of Catholic and Protestant—leads Jaki to say the following, in which he appears to blame his fellow Catholics for the ‘success’ of the Foster Thesis:

That the myth Foster helped create has not come in for due criticism has in part to do with the failure of nerve on the part of many Catholic scholars who could and should have cultivated Duhem, the philosopher and the historian of science.¹⁴⁶

In this quotation we see not only Jaki’s preference for Duhem’s historiography but also his preference for Catholic scholarship and—in this essay, at least—his unfortunate preference for name calling over argumentation.

To conclude this section on Jaki, I must repeat what I said at the beginning: Jaki’s contribution to the Fosterian discussion *should* have been extremely valuable. He could

¹⁴⁴ Ibid., 295.

¹⁴⁵ Ibid., 282.

¹⁴⁶ Ibid., 287.

have drawn on his work on the life and work of Pierre Duhem and compared the Foster Thesis to what Jaki calls Duhem's belief in the inevitable "historical unfolding of a great idea."¹⁴⁷ Or, he could have drawn on his own analysis of the relationship between Christian theology and the rise of modern science, an analysis which includes these (potentially, at least) Fosterian words:

Great cultures, where the scientific enterprise came to a standstill, invariably failed to formulate the notion of physical law, or the law of nature. Theirs was a theology with no belief in a personal, rational, absolutely transcendent Lawgiver, or Creator.¹⁴⁸

In other words, Jaki's scholarship uniquely qualified him to add to or to subtract from the Foster Thesis with particular meaningfulness. That he chose instead to respond in a vitriolic way is a tragedy, for him and for us.

2.9 1993–2006: From Wybrow to the Present

1993: Colin Gunton's *The One, the Three and the Many*

See Appendix B.

1994: Margaret Osler's *Divine Will and the Mechanical Philosophy*

See Appendix B.

1994: Davis reviews Wybrow 1992 in *Isis and Perspectives on Science and Christian Faith*

In 1994, Davis published two reviews of Wybrow 1992. They are nearly

¹⁴⁷ Jaki 1984, 377. On this page and the next, Jaki quotes Duhem as describing the sometimes 'messy' unfolding of a great idea: "it will vibrate in the tremblings of populist pressures, of upheavals, and of revolutions; one will see it run beneath the crowded medley of events." This resonance between the analyses of Duhem and Foster points to the possibility of a rich study.

¹⁴⁸ Jaki 1974, viii. Jaki's emphasis in this book is, like Foster's, on the Christian doctrine of creation and its implications. Unlike Foster, Jaki focusses on the subsequent 'opening up' of the future—that is, Jaki portrays the emergence, through Christian theology, of a non-cyclical sense of history and a corresponding optimism about the possibility of real progress, an optimism which in turn made the scientific enterprise worth undertaking.

identical—one being a very slight rewrite of the other—so we will treat them as one publication. Davis introduces the Foster Thesis,¹⁴⁹ discusses the value of having many of Foster’s ‘Science-Creation’ writings bound in one volume, and then moves on to a discussion of the critical essays. This discussion is what concerns us.

Concerning Gruner’s essay—a reprint from 1975—Davis writes:

[Gruner] attacks the highly abstract, unhistorical nature of the revisionist argument—a fair challenge when leveled at Foster and certain others at the time Gruner raised it in 1975, but one that cannot be mounted against much recent scholarship along Fosterian lines.¹⁵⁰

Notice Davis’ continuing insistence on empirical history as the only proper tool for evaluating the Foster Thesis; he continues to fail to articulate the important distinction between a *philosopher of history* and an *empirical historian*. Although, later in the same review, Davis shows a vague awareness of the distinction when he writes:

Numerous carefully crafted historical studies, far more than Wybrow seems to be aware of, have established solidly that early modern natural philosophers were deeply influenced by just the sorts of theological assumptions that Foster said *ought* to have influenced them.¹⁵¹

Davis also discusses the Jaki essay. His very brief analysis is quoted here in its entirety:

[Foster as ‘foil’ to neo-Scholasticism] explains why Stanley Jaki’s paper is so negative, a contemptuous response to Foster replete with cheap shots directed at other scholars who do not share Jaki’s view that modern science began in the fourteenth century. For opposing Gilson and ignoring Pierre Duhem, Foster is all but confined to perdition. It is unfortunate that Jaki has chosen to shout down, not to talk with, his opponents, for his important points about the relevance of medieval theology (which Foster missed or would not grant) are difficult to hear over the din.¹⁵²

Other than my analysis above, this is the only response to Jaki’s essay in the literature. While somewhat similar in spirit to my own, Davis cannot dig any deeper in the context of a book review. Finally, in his discussion of Wybrow’s “Introduction,” Davis finds—as I did above—the concluding comments about the “only crucial question” jarring and out of step with the rest of the helpful and informative essay.

¹⁴⁹ Described as a “long, convoluted, often confusing argument” (Davis 1994, 127).

¹⁵⁰ Ibid., 128.

¹⁵¹ Ibid.

¹⁵² Ibid.

1996: Jitse M. van der Meer's "Introduction" to *Facets of Faith and Science*

In the course of introducing the essays in this book, van der Meer offers a description of the Foster Thesis:

The method of natural science, Foster argued, depends upon presuppositions about nature which depend in turn upon the doctrine of God. For Foster, the connection between Christian theology and the presuppositions of modern science was itself logically necessary, not historically contingent.¹⁵³

Van der Meer also writes that Foster believed "that Christian theology had caused the rise of modern science."¹⁵⁴ In 1999, Davis will come to share this conclusion, a conclusion which I have argued is not consistent with a careful reading of the Foster Thesis.

1996: Davis publishes 're-issues' of his PhD dissertation in *Facets of Faith and Science*

In two separate chapters of this book, Davis reworks portions of his PhD dissertation. One chapter focusses on Newton, the other on Galileo, Descartes, and Boyle. In the chapter on Galileo, Descartes, and Boyle, however, Davis—while continuing to agree with Foster that theological voluntarism played a significant role in the rise of modern science—concentrates on the character of the Foster Thesis, as he reads it, and his own disagreement with it. Because he reworks this chapter three years later, we will explore his arguments then.

1997: Catherine Wilson's "Theological Foundations for Modern Science?" in *Dialogue*

See Appendix B.

1997: Jan W. Wojcik's *Robert Boyle and the Limits of Reason*

See Appendix B.

¹⁵³ van der Meer, xi.

¹⁵⁴ Ibid.

1998: John Brooke and Geoffrey Cantor's *Reconstructing Nature*

See Appendix B.

1998: Colin Gunton's *The Triune Creator*

In a book focussing on bringing together the two Christian doctrines of the Trinity and Creation, Gunton once more makes reference to the Foster Thesis. As in Gunton 1993, he refers only to Foster 1934 but maintains a balanced awareness of Foster's argument. Yet again, he offers no direct criticism of the Foster Thesis, but the entire book can be understood as arguing that Foster's argument needs theological 'filling out,' especially with a more Trinitarian analysis.

1999: Davis' "Christianity and Early Modern Science"

Subtitled "The Foster Thesis Reconsidered," this essay is a chapter in *Evangelicals and Science in Historical Perspective*, edited by David N. Livingstone, Mark A. Noll, and D. G. Hart. In this expansion of 1996's 're-issue' of Davis' 1984 PhD dissertation, two points are worth considering.

First, Davis sets up an implied straw man by beginning the chapter with the words, "'Did Christianity 'cause' science?'"¹⁵⁵ This is made explicit a bit later when Davis writes, "Foster's belief that Christian theology had actually *caused* the rise of modern science turns out to be as much an oversimplification of the actual situation as the belief that warfare between religion and science is inevitable."¹⁵⁶ Foster, of course, never says this; the only "oversimplification" at work here is Davis' inaccurate rendering of Foster's argument:

His essays are replete with statements that would support this [view that Christianity 'caused' modern science], although it is rarely stated directly. An exception [that is, a place where it *is* stated directly] is found on p. 11 of the 1936 article. If it should happen that certain aspects of Cartesian philosophy are "compatible with a theology which has been found to be unorthodox, and therefore unchristian," Foster says, "the whole contention that there is a necessary implication between Christian theology and modern natural science

¹⁵⁵ Davis 1999, 75.

¹⁵⁶ *Ibid.*, 81.

would be imperilled.”¹⁵⁷

The words “necessary implication” have confused Davis: like Weeks and Jacobs, he does not understand the concept of *implied possibility* and its mixing of *a priori* and *a posteriori* methodologies; unlike Weeks and Jacobs, he has extrapolated from ‘necessary implication’ to ‘direct cause.’ Davis concludes his chapter by saying, “Voluntarist theology neither ‘caused’ modern science nor acted as the single cause of a particular kind of science. It was rather one factor, albeit a very important one, in giving modern science its strong empirical bent.”¹⁵⁸ In so doing, he—like Gruner before him—defeats an argument Foster never made.

The second point also relates to Gruner, who argued that Foster was engaging in a kind of apologetics by arranging for Christian theology to ride on modern science’s coattails. Davis parrots that argument:

It seems fair to say that his articles go beyond historical revisionism to the point of engaging in apologetics: by showing the fundamental significance of Christian theology for modern science, he hoped to use the prestige of the latter to benefit the former.¹⁵⁹

Davis, who in 1984 wrote that Gruner’s 1975 article arguing against Foster’s ‘revisionism’ was an “astute critique”¹⁶⁰ of the Foster Thesis, continues to believe it fifteen years later. I argue that Gruner and Davis each argue against a position which is not sustainable upon a closer, more careful reading of the Foster Thesis.

2001: Alister E. McGrath’s *A Scientific Theology: Volume I (Nature)*

In discussing the implications of Christian theology for a philosophy of nature, McGrath describes Foster’s *Mind* articles—which he describes as “remarkable in many respects, chiefly in that they do not appear to have been occasioned by any specific

¹⁵⁷ *Ibid.*, 91, n. 17.

¹⁵⁸ *Ibid.*, 89.

¹⁵⁹ *Ibid.*, 79.

¹⁶⁰ Davis 1984, 177.

controversy at the time”¹⁶¹—as arguing that “the Christian doctrine of creation, especially when contrasted with Greek philosophies of nature, played an essential role in the evolution of the natural sciences.”¹⁶² In using the words “played an essential role,” McGrath avoids accusing Foster of claiming ‘causation’ for Christian theology. McGrath also finds ‘middle ground’ when describing Foster as arguing, “The doctrine of creation *ex nihilo* allowed the scientist to approach nature with the expectation that the divine rationality would be reflected in its structures and workings.”¹⁶³ Interestingly, McGrath does not appear to read the Foster Thesis as a document primarily concerned with voluntarism *as against* rationalism. Although he says the Foster Thesis “remains an important discussion,”¹⁶⁴ when McGrath writes that the Foster Thesis “has been critiqued in several important respects”¹⁶⁵ he only lists Gruner’s contribution from 1975. McGrath contributes his own criticism which might be paraphrased this way: Foster was not ‘apologetic’ enough. Given Foster’s emphasis on the doctrine of creation, McGrath wonders why Foster did not ask or answer the question, “Why did modern science arise within Christianity and not Judaism or Islam which also have a doctrine of creation?” McGrath’s own answers to this question lie outside the scope of this paper.

2004: Arthur Peacocke’s *Creation and the World of Science*

See Appendix B.

2004: Andrew J. Robinson’s “Continuity, Naturalism, and Contingency”

See Appendix B.

2006: Loren Wilkinson’s *Circles and the Cross* (forthcoming)

¹⁶¹ McGrath, 140.

¹⁶² *Ibid.*, 90.

¹⁶³ *Ibid.*, 140.

¹⁶⁴ *Ibid.*

¹⁶⁵ *Ibid.*

Loren Wilkinson has been particularly generous in sharing with me an early draft of his book.¹⁶⁶ Subtitled “Recovering the Christian Doctrine of Creation in Late-Modern Culture,” it traces the development (and occasionally the loss) of the Christian doctrine of creation in the history of ideas, and particularly in the history of Christian theology. In a chapter titled, “Knowledge of Creation and Knowledge of Nature: Some History, and Some Problems,” Wilkinson makes significant use of Foster’s *Mind* articles. As we have seen elsewhere in books attempting to ‘think together’ science and religion, Wilkinson holds up the Foster Thesis as a potent—and intellectually respectable—counterexample to the ‘warfare model.’ But more than that, Wilkinson does so in the context of an analysis of the contrasting implications of the ideas of “nature” and “creation,” emphasising the different implications these ideas have for science and arguing that the replacement of the primarily Greek idea of “nature” with the primarily Christian idea of “creation” was crucial in paving the way for the rise of modern science. There is, of course, much resonance between the structures of Wilkinson’s analysis and the Foster Thesis.

Wilkinson avoids many of the common pitfalls of other Fosterian commentators. First, while acknowledging the crucial role of the rising tide of voluntarism in the story of the rise of modern science, Wilkinson is aware that the Foster Thesis is *not* a wholesale rejection of rationalism but rather an analysis of its transformation. Second, Wilkinson finds an elusive middle way: he gives significant time and credit to the Foster Thesis in the main body of the text, but he also engages with and criticises Foster’s argument where he feels it falls short. His criticism centres primarily around the complete absence of any reference to divine Love in the *Mind* articles, without which, Wilkinson argues, no doctrine can be fully understood as Christian. At the same time, Wilkinson shows an awareness that the intellectual climate of Foster’s time may have made that kind of discussion nearly impossible, especially in the journal *Mind*. Third, there is no intimation in Wilkinson’s analysis that the Foster Thesis argues for a direct, causal relationship

¹⁶⁶ The book is currently expected to be published by Paternoster Press in early 2007. Because this is an early draft, I will include no direct quotations or page numbers. My working assumption is that Wilkinson’s major themes will remain unchanged at publication.

between Christianity and modern science or that the Foster Thesis is an act of apologetics. And fourth, Wilkinson has done more research than most, quoting from all three *Mind* articles and even from Wybrow's introductory essay in Wybrow 1992.

In many ways, Wilkinson's analysis is similar to Peck's: (1) it acknowledges the apologetic *value* of the Foster Thesis without saying that it *is* apologetics, (2) it displays an awareness of the intellectual context of the Foster Thesis, (3) it acknowledges the primarily *philosophical* character of the Foster Thesis, and (4) it attempts to 'fill out' the Foster Thesis theologically.

2.10 Concluding Remarks and Future Directions

The Foster Thesis and the literature responding to it are rich with philosophical discussions and yet filled with the possibilities of many further discussions. It has been a pleasure to listen to them all and to make a few remarks myself. If I had the opportunity to rejoin the discussion in the future, I would like to explore the role of trinitarian theology in the story as presented by Foster. My hunch is that, historically, it played a larger role than the one assigned to it by Foster. Trinitarian metaphysics may open up the possibility of thinking *together* the categories of immanence and transcendence, of universal and particular, and the Christian doctrines of Word and Love and Law. Perhaps the doctrine of the Trinity was yet another in the "constellation of factors" that led to modern science having arisen within Western Christianity. Perhaps the doctrine of the Trinity can help us understand how the *Christian* logical structure might have been more favourable than others to the particularisation we see in the rise of modern science. Or perhaps not. But it would be interesting to look into it.

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Wybrow, Cameron, ed. *Creation, Nature, and Political Order in the Philosophy of Michael Foster (1903–1959): The Classic Mind Articles and Others, with Modern Critical Essays*. Lewiston: Edwin Mellon Press, 1992.

Appendix A: Complete List of the Published References to the Foster Thesis

- 1937: Francis Macdonald Cornford's *Plato's Cosmology*.
- 1949: E. L. Mascall's *Existence and Analogy*.
- 1952: John Baillie's *Natural Science and the Spiritual Life*.
- 1955: Arthur F. Smethurst's *Modern Science and Christian Beliefs*.
- 1956: Mascall's *Christian Theology and Natural Science*.
- 1959: Langdon Gilkey's *Maker of Heaven and Earth*.
- 1964: Robert Peck's Th. D. dissertation, "The Apologetic Philosophy of Michael Beresford Foster"
- 1966: George Grant's *Philosophy in the Mass Age*
- 1969: Daniel O'Connor and Francis Oakley's "General Introduction" in *Creation: The Impact of an Idea*
- 1969: O'Connor's "Introduction: Two Philosophies of Nature" in *Creation: The Impact of an Idea*.
- 1972: R. Hooykaas' *Religion and the Rise of Modern Science*
- 1975: Rolf Gruner's "Science, Nature and Christianity" in *Journal of Theological Studies*
- 1977: Eugene Klaaren's *Religious Origins of Modern Science*
- 1981: Colin Wright's "Comment on Professor Jeffner's Paper, Religion and Understanding" in *Religious Studies: An International Journal for the Philosophy of Religion*
- 1981: Thomas Torrance's *Divine and Contingent Order*
- 1984: Edward B. Davis' PhD dissertation, "Creation, Contingency, and Early Modern Science: The Impact of Voluntaristic Theology on Seventeenth-Century Natural Philosophy"
- 1985: Margaret Osler's "Eternal Truths and the Laws of Nature: The Theological Foundations of Descartes' Philosophy of Nature" in *Journal of the History of Ideas*

- 1985: Colin Russell's *Cross-currents: Interactions Between Science and Faith*
- 1985: George Grant's *English-Speaking Justice*
- 1985: David J. Hawkin's *Christ and Modernity: Christian Self-Understanding in a Technological Age*
- 1986: David C. Lindberg and Ronald L. Numbers' "Introduction" to *God and Nature: Historical Essays on the Encounter between Christianity and Science*
- 1991: Davis' "God, Man, and Nature: The Problem of Creation in Cartesian Thought" in *Scottish Journal of Theology*
- 1991: John Brooke's *Science and Religion: Some Historical Perspectives*
- 1991: Cameron Wybrow's *The Bible, Baconianism, and Mastery Over Nature*
- 1992: John C. Greene's "From Aristotle to Darwin: Reflections on Ernst Mayr's Interpretation in *The Growth of Biological Thought*." This is from the *Journal of the History of Biology*.
- 1992: Cameron Wybrow's *Creation, Nature, and Political Order in the Philosophy of Michael Foster*
- 1992: Wybrow's "The Life and Work of Michael Beresford Foster"
- 1992: James Patrick's "The Place of Michael Foster's Protest in the Controversial Historiography of Modern Science"
- 1992: Ian Weeks and Struan Jacobs' "Theological and Philosophical Presuppositions of Ancient and Modern Science: A Critical Analysis of Foster's Account"
- 1992: Stanley Jaki's "Telltale Remarks and a Tale Untold"
- 1993: Colin Gunton's *The One, the Three and the Many*
- 1994: Osler's *Divine Will and the Mechanical Philosophy*
- 1994: Davis' review of Wybrow in *Isis and Perspectives on Science and Christian Faith*
- 1996: Jitse M. van der Meer's "Introduction" to *Facets of Faith and Science*

- 1996: Davis' 're-issue' of his PhD dissertation in *Facets of Faith and Science*
- 1997: Catherine Wilson's "Theological Foundations for Modern Science?" [review of Osler's book] in the journal *Dialogue*
- 1997: Jan W. Wojcik's *Robert Boyle and the Limits of Reason*
- 1998: John Brooke and Geoffrey Cantor's *Reconstructing Nature: The Engagement of Science and Religion*
- 1998: Gunton's *The Triune Creator*
- 1999: Davis' "Christianity and Early Modern Science: The Foster Thesis Reconsidered," chapter 3, pp. 75–95, in *Evangelicals and Science in Historical Perspective*, ed. by David N. Livingstone, Mark A. Noll, and D. G. Hart. This is an expansion of an essay from 1996's 're-issue' of his PhD dissertation.
- 2001: Alister E. McGrath's *A Scientific Theology: Volume I (Nature)*
- 2004: Arthur Peacocke's *Creation and the World of Science* (originally published in 1979)
- 2004: Andrew J. Robinson's "Continuity, Naturalism, and Contingency: A Theology of Evolution Drawing on the Semiotics of C. S. Peirce and Trinitarian Thought" in *Zygon*
- 2006: Loren Wilkinson's *Circles and the Cross: Recovering the Christian Doctrine of Creation in Late-Modern Culture* (forthcoming)

Appendix B: Summaries of ‘Non-Critical’ References to the Foster Thesis

1937: Francis Macdonald Cornford’s *Plato’s Cosmology*

In a translation and commentary of Plato’s *Timaeus*, Cornford makes the first published reference to Foster’s *Mind* articles. When Cornford explains that the Demiurge should not be “equated with the one God of the Bible, who created the world out of nothing and is also the supreme object of worship,”¹⁶⁷ he adds in a footnote, “The contrast between the Demiurge and the Christian Creator is developed in an interesting paper by Mr. M. B. Foster [in Foster 1935 and Foster 1936].”¹⁶⁸ Cornford, therefore, does not mention the entire Foster Thesis, nor does he offer any analysis or criticism.

1959: Langdon Gilkey’s *Maker of Heaven and Earth*

Gilkey makes a very short remark about being “greatly indebted to the excellent article by M. B. Foster,”¹⁶⁹ but only refers to Foster 1934. Nothing noteworthy is added to the discussion.

1985: Colin Russell’s *Cross-currents: Interactions Between Science and Faith*

In arguing for connections among God’s will, nature’s contingency, and modern science’s empiricism, Russell refers very briefly to Foster’s work. As is typical for those commentators emphasising voluntarism over rationalism, Russell only refers to Foster 1934.

1985: George Grant’s *English-Speaking Justice*

In an endnote to an assertion in the main text that Christian theology and modern science are linked, Grant writes, “[I]t is still necessary to single out the early articles of

¹⁶⁷ Cornford, 35.

¹⁶⁸ Ibid.

¹⁶⁹ Gilkey, 125, n. 2.

M. B. Foster as most theoretically illuminating. See *Mind* 1934-35-36.¹⁷⁰ As in 1966, while Grant keeps Foster's name out of the main body of the text, he nevertheless describes the Foster Thesis as "illuminating."

1986: David C. Lindberg and Ronald L. Numbers' "Introduction"

In the book *God and Nature: Historical Essays on the Encounter between Christianity and Science*, Lindberg and Numbers use Foster as a counterexample to the 'warfare model': the view that science and religion must necessarily be in conflict:

Indeed, Whitehead and Foster became convinced that Christianity, rather than impeding science, had actually encouraged it by establishing that nature behaves in a regular and orderly fashion—a basic premise of modern science.¹⁷¹

The word "encouraged" is more true to spirit of the Foster Thesis than "caused." However, the authors seem to miss that, according to Foster, Christian theology's special contribution was more than nature's regularity and orderliness; the Greeks had already established that. Rather, Christian theology 'innovation' was the *contingency* of nature combined with the *omnipotence* of a rational Creator which resulted in the empiricism-within-rationalism characteristic of modern science.

1991: Davis' "God, Man, and Nature: The Problem of Creation in Cartesian Thought"

Edward B. Davis returns to the discussion with an article published in the *Scottish Journal of Theology*. This is essentially a reworking of the "Descartes" chapter of his PhD dissertation, and it offers no new analysis of the Foster Thesis.

1991: John Brooke's *Science and Religion: Some Historical Perspectives*

In the "Bibliographic Essay" at the end of Brooke's book, the Foster Thesis is mentioned:

¹⁷⁰ Grant 1985, 100-101.

¹⁷¹ Lindberg and Numbers, 3-4.

There is an extensive literature on the doctrine of creation as a presupposition of the uniformity of nature and of modern science. The case was argued with philosophical sophistication by Michael Foster in three articles that appeared in *Mind*¹⁷²

Brooke goes on to list authors who have argued that particular traditions within Christianity have made the crucial contributions to the rise of modern science. He then writes, “The argument has not been confined to religious apologists.”¹⁷³ It is unclear whether Brooke considers Foster a religious apologist or whether that name is limited to those who argue for the importance of particular Christian traditions. Whatever the case, Brooke has nothing further to say about Foster.

1991: Cameron Wybrow’s *The Bible, Baconianism, and Mastery over Nature*

Subtitled “The Old Testament and Its Modern Misreading,” this book attempts to debunk what Wybrow calls the ‘Mastery Hypothesis’: the view that sees the Bible (and especially the Old Testament) as the source of the Western idea that humanity can and should subdue nature. According to Wybrow, the sources of this Mastery Hypothesis are many and varied. In the list that follows we find several familiar names:

[I]n the literature of a wide range of disciplines (philosophy, history, theology, and sociology), and in the writings of a number of scholars respected in those disciplines (including Pierre Duhem, Stanley Jaki, Nicolas Berdyaev, Michael Foster, R. G. Collingwood, Peter Berger, Lynn White, Harvey Cox, Theodore Roszak, Arnold Toynbee, and George Grant), one can find forceful arguments connecting the Christian worldview with the rise of the modern attempt to subdue non-human nature to human purposes.¹⁷⁴

Wybrow frequently refers to Foster and to the Foster Thesis—including all three *Mind* articles—in trying to show that Foster’s argument for a link between Christian theology and modern science demonstrates his support of the Mastery Hypothesis.

While Wybrow wonders aloud whether, for early modern scientists, innovation came first “and the religious consideration was a welcome afterthought, or even an

¹⁷² Brooke 1991, 352.

¹⁷³ Ibid.

¹⁷⁴ Wybrow 1991, 3.

insincere justification,”¹⁷⁵ his criticism of Foster is primarily limited to Foster’s interpretation of Old Testament texts.

1992: John C. Greene’s “From Aristotle to Darwin”

In the *Journal of the History of Biology*, Greene published an article with the full title, “From Aristotle to Darwin: Reflections on Ernst Mayr’s Interpretation in *The Growth of Biological Thought*.” One reference is made to the Foster Thesis:

As to [a mechanistic substitute for Aristotle’s cosmology], Michael Foster and Reijer Hooykaas have argued cogently that Judeo-Christian creationism was an essential ingredient in the intellectual developments that gave rise to the mechanical worldview, but in Mayr’s opinion this development, infused as it was with static creationism, was a totally negative factor in the history of evolutionism.¹⁷⁶

This is another example of using the Foster Thesis as a kind of counterexample to the presumed conflict between science and religion. Greene never returns to Foster’s work.

1993: Colin Gunton’s *The One, the Three and the Many*

Subtitled “God, Creation and the Culture of Modernity (The 1992 Bampton Lectures),” Gunton’s book traces some of the paradoxes of modernity, not least of which is Christian theology’s major role in shaping the very modernity which in turn questioned theology as an intellectually worthwhile endeavour.¹⁷⁷ The rise of modern science is a significant part of Gunton’s analysis of this paradox, and he refers to Foster’s “justly celebrated and frequently reprinted article”¹⁷⁸ on several occasions, primarily to bolster a debunking of the ‘warfare model’ concerning Christianity and science.¹⁷⁹ Interestingly, while he refers only to Foster 1934—a limitation which leads other commentators to see

¹⁷⁵ Ibid., 176. Other historians—especially Davis—have found that theology *did* play an formative role in the methods used by many early modern scientists.

¹⁷⁶ Greene, 266–7.

¹⁷⁷ As the title hints, Gunton suggests Trinitarian theology may help bridge that gap.

¹⁷⁸ Gunton 1993, 75.

¹⁷⁹ Ibid., 4, 109 n. 20, and 119.

the Foster Thesis as primarily voluntaristic—Gunton also sees the importance of rationalism for Foster. Gunton paraphrases Foster's view this way:

Modern science studies the world of space and time, not some reality beyond them, and arose when a logical quest for timeless patterns gave way to a mathematical, hypothetical and experimental approach to the contingent rationality of space and time¹⁸⁰

Gunton offers no criticism of the Foster Thesis but demonstrates an adequate understanding of it.

1994: Margaret Osler's *Divine Will and the Mechanical Philosophy*

Osler's book explores how different theologies in the late medieval and early modern periods led to different philosophies of nature and, subsequently, different methodologies in science. She explores the relationships between voluntarism and empirical, *a posteriori* methods and between rationalism and *a priori* methods. Although the Foster Thesis has clearly informed Osler's discussion—as she stated explicitly in her 1985 article—her only references to Foster in this book are in footnotes which indicate she is using his definition of theological rationalism.¹⁸¹

1997: Catherine Wilson's "Theological Foundations for Modern Science?" in *Dialogue*

This very short article is actually a review of Osler 1994. In introducing the book, Wilson writes, "Drawing on the work of Michael Foster and Francis Oakley, the book begins by considering intellectualism and voluntarism as opposing theologies articulated in the thirteenth and fourteenth centuries."¹⁸² Wilson says nothing more about Foster or Oakley, however.

1997: Jan W. Wojcik's *Robert Boyle and the Limits of Reason*

¹⁸⁰ Ibid., 75.

¹⁸¹ Osler 1994, 17 and 19.

¹⁸² Wilson, 598.

In a book exploring the relationship between Boyle's theology and his presuppositions about the power and limitations of human rationality—presuppositions which in turn affected his scientific methods—Wojcik writes, “This thesis [connecting voluntarism and empiricism] was originally formulated by M. B. Foster”¹⁸³ and “has been received favorably”¹⁸⁴ by Oakley, Klaaren, and Davis, among others. No further analysis is offered.

1998: John Brooke and Geoffrey Cantor's *Reconstructing Nature*

Subtitled *The Engagement of Science and Religion*, this book is clearly dealing with some of the same issues in the Foster Thesis. In Chapter 1—“Is There Value in the Historical Approach?”—the authors mention Foster as an example of an historical narrative which does *not* consider religion and science to be ‘at war.’¹⁸⁵ However, while the authors write that Foster used the doctrine of the Trinity “ingeniously,” they also call him a “Cambridge philosopher,”¹⁸⁶ something he most emphatically was not.

2004: Arthur Peacocke's *Creation and the World of Science*

Originally published in 1979, this re-issue makes a very brief reference to the Foster Thesis, describing it as “seminal”¹⁸⁷ and quoting from it at some length in order to dispel what Peacocke believes is the ‘myth’ that war between religion and science is inevitable.

2004: Andrew J. Robinson's “Continuity, Naturalism, and Contingency”

Subtitled “A Theology of Evolution Drawing on the Semiotics of C. S. Peirce and Trinitarian Thought” and published in *Zygon*, a journal of religion and science,

¹⁸³ Wojcik, 190, n. 2.

¹⁸⁴ *Ibid.*, 199.

¹⁸⁵ Brooke and Cantor, 19–20.

¹⁸⁶ *Ibid.*, 19.

¹⁸⁷ Peacocke, 8.

Robinson's article explores the relationship between Christian theology and evolutionary theory. As part of that exploration, Robinson identifies three types of contingency and refers to Foster in his explication of one of those types, which

corresponds to the theological idea that the world depends on God and the closely connected notion that the way that the world is depends on how God willed it to be. As Michael Foster argued in the 1930s, this theological voluntarism may be regarded as distinguishing the Christian doctrine of creation from Greek thought.¹⁸⁸

Robinson continues with a brief discussion in which he portrays Foster as writing about the *failure* of rationalism rather than its *transformation*. Other than a brief mention of Foster's claim that the Trinity helped Christian theology distinguish between the acts of generation and manufacture, Robinson offers no further analysis.

¹⁸⁸ Robinson, 129.