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Joseph Gerth April 12, 2016

Modern Natural Science and the Doctrine of Creation:

An Evaluation of the Thesis of Michael B. Foster

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Abstract

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By: Joseph Gerth

My work considers Michael Foster. Considering the ancient science of Greece, Foster notes that their work was essentially *a priori* science on eternal forms. Their eternality avoided the problem of science on an ever-changing nature. Foster seeks to answer: Where does the empirical component of modern science come from? His answer: Christian religion, specifically Creation.

Foster believes a religion necessitates a certain philosophy, which in turn entails a certain science. Foster proposes Christianity depends on a voluntaristic theology; this means that God's creating the world is arbitrary. Final cause must thus be rejected. Reason, then, cannot seek to find this final cause to understand the world. The modern scientist *must* look to his experience. This embodies the turn of modern science.

I analyze Foster on both logical and historical grounds. Early on, Foster criticizes Leibniz for holding both a voluntarist theology and a rational epistemology. Later, Foster pivots to hold precisely the same 'incompatible' union. Leibniz also represents a thinker who held to a voluntarist theology and a notion of final cause. I set up the distinction that either Leibniz is a hack philosopher, or his work is logically possible. Supposing the latter, the logical necessity between theology and philosophy and science is not as clear as Foster believes.

Historically, Foster claims that the Scholastics have not understood creation *philosophically.* Instead, they continued to perform ancient science. I argue that Foster's problematic relationship between modern and ancient/medieval science stems from his focus on Descartes. Descartes' ambiguity in terms of freedom and determination leads to a troubling account of science in general.

Ultimately, I argue that Foster is convincing regarding relationship between the Christianity and the rejection of final cause. This seems to be the impetus of modern science. I do not believe that Christianity *must* do this, however. Foster's troubling account of the progression of science precludes me from accepting his thesis completely. Instead, I propose R.G. Collingwood as a better alternative to Foster. The recasting of Foster's work into a larger historical project allows for future work in the examination of the most contemporary of sciences.

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Acknowledgements

Countless students and faculty at Emory have contributed to my thesis without their knowledge by indulging me in seemingly trivial conversations about God, science, and theories of will. I owe them many thanks, as many of my scribbled notes from these conversations became prominent ideas throughout my thesis.

I owe a great debt to my community within Reformed University Fellowship, especially the Reverend Stephen Maginas for providing clarifying theological knowledge, Austin Blodgett for being a wonderful sounding board for my ideas, as well as the love and acceptance of many others.

My parents deserve the utmost acknowledgment, both for listening to philosophical ideas that they had no interest in, as well as answering all of my complaints with genuine reassurance and love.

My best friend, Sarah Seyler, went above and beyond throughout the thesis process. She always gave me motivation to continue writing, even when it was the last thing I wanted to do. Despite her busy work schedule, she was always present to inspire me.

Despite my getting it to him very late in the process, Mr. Kevin Wall went above and beyond to edit my thesis in time for the final submission. His work and influence in my life have helped to shape my writing and work on this thesis.

Finally, my thesis would be without any merit whatsoever if it was not for the help of Dr. Ann Hartle. Her support and guidance in this process, as well as the last four years, have been critical to whatever success this thesis finds. I would also like to acknowledge Dr. Ursula Goldenbaum for unofficially advising me in the philosophy department office while I worked. Her detail honed my thesis, as well as sharpened my own thought. A final acknowledgement is owed to Dr. Levi Morran for taking the time to read a thesis in a subject area outside of his own specialty. His teaching inspired me to pursue science in a new light, which I hope comes through in this work.

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Introduction

For the religious believer, what is believed can only with time and meditation become understood. This endeavor of faith seeking understanding was theology to the medieval philosophers. They pursued this understanding by using worldly wisdom, mainly that of the ancient Greeks, to hone and rationalize their Christian belief. This attempt at harmonizing faith and reason, whatever the outcome, was the practice of philosophy for the better part of a millennium. Throughout his work, Michael B. Foster attempts to show that this dialectic between faith and reason actually remained at the core of philosophy into the early modern period. Rather than a harmony, however, Foster claims it was the progressive winning out of true Christian ideas in the modern era over the philosophies of the ancients that resulted in modern natural science. Our ultimate epistemological enterprise – modern science – is the ultimate example of belief coming to understand itself.

Starting with the ancient Greeks, Foster examines how their rational theology influenced their rational philosophy of nature. Their rational philosophy of nature subsequently influenced their rational natural science. He traces the change in theology from a rational pagan theology to a rational Christian one, detailing the necessary resulting changes in philosophy of nature and natural science. His final conclusion is that without this new Christian theology, modern natural science as it is would not have arisen. Specifically, the Christian doctrine of creation, which forces us to account for the sensuous realm and not merely perform science in the realm of ideas, spurs the radical success of modern science.

Foster's work is present exclusively in journal articles and lectures. These works include: "The Opposition between Hegel and the Philosophy of Empiricism", which was read at a conference in Italy in 1933, and his two articles in the philosophy journal *Mind,* "The Christian Doctrine of Creation and the Rise of Modern Natural Science" which was published in 1934, and "Christian Theology and Modern Science of Nature" which was published in two parts, the first in 1935 and the second in 1936. The *Mind* articles were published in a time when a growing return to medieval philosophy was present. James Patrick considers this to be the reason Foster's articles were published in the journal *Mind* in the first place. The journal, at the time edited by G.E. Moore, who was a leading figure in the analytic movement, had not published articles that were basically historical or about religion or God. Patrick speculates that Foster's alternative to the Neo-Scholastics would have been intriguing to Moore and the other editors of *Mind.*

Foster, a Christian, held the modern development of thought to be innately Christian, a point that the growing group of Neo-Scholastics would have thoroughly rejected. Foster cites perhaps the most prominent Neo-Scholastic, Étienne Gilson, by name: "my whole article is a rebellion against Gilson's assumption that we must look to the resurrection of Scholasticism for a continuation of this great task (assimilating the Christian dogmas with Greek philosophy), and against his implied judgment that the work of the modern philosophers represents a declension from the path on which medieval philosophy set out." (Footnote 3, 68) The two *Mind* articles cite the doctrine of creation as the impetus for modern science. The only reason that this doctrine did not cause a more effective science sooner was *because* of the influence of Greek philosophy, specifically Plato and Aristotle, on Christianity, Foster argues.

The *Mind* articles did not provoke much discussion at the time of their publication, however. They were mostly reexamined later in Foster's life as he gained notoriety as a thinker. Works like *Mystery and Philosophy,* as well as further journal articles published throughout the 1950's all contributed to Foster's notoriety. The articles are considered classic for many historians of science, and they are a valuable resource for those seeking to reconcile the relationship between faith and reason.

This work will begin, in Part One, by exploring Foster's thesis through examining the lecture and articles mentioned above: "Hegel and Empiricism", "Christian Doctrine", and "Christian Theology". This section moves chronologically through Foster's work, detailing the progression of his intricate argument. This involves the rudimentary idea of his thesis in "Hegel and Empiricism", the establishment of the difference between ancient science and modern in "Christian Doctrine" (as well as the question: how is this modern science possible?), and the answer to the possibility of modern science in "Christian Theology".

I will turn, in Part Two, to analyzing Foster's interpretation of modern thought. By examining the work of René Descartes, I hope to show that the "peculiar rationalism" of Christianity was in fact first elucidated in the early modern period. Descartes was chosen because he is Foster's prime example of modern thought, and Foster ultimately falls victim to the same problems as Descartes does. The section will consider the merits of Foster's thought, and it will conclude with some possible implications of his work.

Ultimately, Foster's work gives us keen insights into the foundation of modern natural science. His work touches on points of the history of science, epistemology, metaphysics, and the philosophies of religion and science. My greatest interest follows his

tracing of religious thought throughout philosophy, which at every step assumes that belief shapes understanding. This idea will be followed through both parts of this thesis.

The Life of Foster

Michael Beresford Foster was born in 1903 into a family of some means. His mother died when he was still a young boy, and many speculate that this was the beginning of psychiatric problems that would trouble him until his ultimate suicide. It certainly contributed to the meek nature for which he is often remembered. After receiving a first-rate primary education, he entered St. John's College, Oxford, in the early 1920's. He earned his doctorate in Germany, focusing on modern philosophy and Hegel in relation to Christian theology. He then returned to Britain, teaching in various capacities, mostly at Christ Church, Oxford, until the war. Before the war, Foster focused primarily on political philosophy, particularly Hegel and Plato, and also published his famous *Mind* articles. During his service, Foster became a decorated soldier. His advanced knowledge of German and his towering intellect, coupled with his relative shyness, made him a natural intelligence officer. The war marked a significant shift from philosophical work to more theological work. He briefly taught at Cologne following the war, hoping to contribute to the effort to improve relations between Britain and Germany. He then taught again at Christ Church until his suicide in 1959.

The reasons for his suicide remain unclear, for many of the details of his life are unknown. Cameron Wybrow, who compiled the volume of Foster's work and a history of Foster's life, speculates that, in addition to his psychiatric condition, Foster struggled with a

diminished sense of self-worth. This was true both in his status as a tutor and as a man in relation to God. His puritanism, noted by his contemporaries and students, may have contributed to the latter feeling. This faith, which one commentator says, "is in the vein of a peculiar form of Protestantism," has elements from many different sources – likely due to Foster's world travels and place in the university. Wybrow details Foster's timid personality in an exchange at the Socratic Club, a creation of C.S. Lewis, in which Foster proposed a rudimentary form of his thesis on creation and the origins of modern science. A.J. Ayer attacked him quite harshly, and Foster was silent to the criticisms. Lewis took up Foster's argument, and he and Ayer proceeded to have a heated debate for the rest of the meeting.

This background knowledge of Foster the man, as for all thinkers, is useful in understanding his work. A proper examination of a thinker's personal life often leads to valuable conclusions about his work. Further, in this case, his religious beliefs are critical to the argument. This is true, not simply because it is a fundamentally religious argument, but because of the logically necessary connection that Foster seeks to draw between Christianity, modern philosophy, and modern science.[1]

[1] Cameron Wybrow, Introduction to *Creation, Nature, and Political Order in the Philosophy of Michael Foster (1903-1959): The Classic Mind Articles and Others, with Modern Critical Essays.* (Lewiston, NY: E. Mellen, 1992.) 3-19.

Part One

Foster's Thesis: Creation & the Origin of Modern Science

Theology Precedes Philosophy of Nature, and Philosophy of Nature Precedes Science of Nature

Foster begins the second *Mind* article, "Christian Theology and Modern Science of Nature (I)" with the claim that "every science of nature must depend upon presuppositions about nature which cannot be established by the methods of the science itself."[2] This idea – that a systematic philosophy of nature is necessary for any science – is an idea that stems from Aristotle. It is impossible to study nature without a belief that there is order in it – that nature itself has a nature. For Foster, "philosophy of nature" is likely an *a priori* position, since he claims that his philosophy of nature "is exhausted in the two assertions that nature is subject to universal laws and that it is uniform in the sense required by inductive natural science."[3] (90) If there were no order, science would simply study particulars. No conclusions could be applied to the whole of nature, and the whole project would remain in the realm of phenomena; it could never be theoretical.

Foster proceeds to claim that a philosophy of nature must depend on a theology in the same way that a science of nature depends on a philosophy of nature. A theology must produce a picture of the world, insofar as it represents a God or Gods responsible for the making of the world. Certain relationships must follow from the attributes of a God, so

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[2] Michael B. Foster, "Christian Theology and Modern Natural Science (I.)," in *Creation, Nature, and Political Order in the Philosophy of Michael Foster (1903-1959): The Classic Mind Articles and Others, with Modern Critical Essays,* ed. Cameron Wybrow (Lewiston, NY: E. Mellen, 1992), 89.
[3] Ibid., 90.

certain worlds are logically possible under some theologies and not others. The picture of the world produced by a theology is a philosophy of nature. In the same way that a philosophy of nature constitutes the nature of science, theology must constitute the nature of the philosophy of nature. This provides the presuppositions of the philosophy of nature in a way that stems from belief.

Even the science of our day, which often presupposes agnosticism in regard to religion, Foster claims, is merely a refusal to embark on a theology. By not embarking on a theology, the scientist does not deny what must be there as a presupposition. He merely decides not to consider it; he only considers what must be possible for his science. Atheism, too, must present a theory concerning God: nature is self-contained and self-explanatory.

The formulation of a theology preceding a philosophy of nature preceding a science of nature is, I believe, akin to the formulation of faith seeking understanding. While theologians constituted the whole endeavor of faith seeking understanding as "theology", Foster's formulation extends the attempt to understand faith throughout all the fields of philosophy. This is coherent because all fields of philosophy produce understanding. Faith still begins the search for truth for Foster, but seeking to understand it constitutes the whole of philosophy. Foster's claim is a radical one: the medieval formula is correct to proceed in this order, but it uses the wrong means to attempt to understand. His claim is that by relying on the ancient philosophers of the West, the medieval theological philosophy *is not Christian enough.* Rather, Foster believes all philosophy through modern philosophy arises out of the *struggle* between this ancient philosophy and the Christian faith. It is only in the modern era that a deeper assertion of Christian ideas against Greek

ones, which led to the proper use of experience in natural science, produced the rudiments of the science we know today.

Foster claims that this turn to experience stems from the two major differences between ancient theology and Christian theology: paganism and rationalism. The rejection of paganism was simple for the early Christians to work out. Their God was clearly outside of nature, whereas the pagan God of the Greeks was clearly within nature. The subtle difference between ancient and Christian rationalism, however, took fifteen hundred years to work out. It was only with the coming of the Reformation, and voluntaristic theologies (or theologies that elevated the will as the active component of God, rather than the intellect) in particular, that an efficacious belief in creation made the examination of experience a genuine part of science.

By following the order of the publications of Foster's articles, the development of his argument can be seen most clearly. In "On the Opposition between Hegel and Empiricism", Foster's goal is not to focus on the origins of science, but instead to show how the Reformation produced a certain necessity for empiricism – a necessity that Hegel ignores. The seeds of an idea were born in this essay, and the essay should be considered as an introduction to his thesis on creation and the origins of modern science. A year later the first *Mind* article, "The Christian Doctrine of Creation and the Rise of Modern Natural Science" appeared. This work takes the ideas present in "Hegel & Empiricism" to their logical conclusions. "Christian Doctrine" displays the tension between Greek philosophy and Christian theology, and it attempts to put forth an explanation of why Greek philosophy was incapable of producing a science as useful as the modern science. "Christian Doctrine" proposes that the absence of the Christian revelation, specifically the

absence of the Christian doctrine of creation, prevents the possibility of a useful science, because it precludes the empirical nature of modern science. The fact that empiricism is demanded from an idea of creation means that a new philosophy of nature and subsequent science of nature must develop. Ultimately, the first *Mind* article supplies the need for the scientific revolution, but leaves us asking how this science of nature is possible.

The final *Mind* article, "Christian Theology and Modern Science of Nature" attempts to show how such a science is not only possible, but also *logically necessary* given the presupposed theology and philosophy of nature. Divided into two parts, the two articles tackle the two differences between Greek theology and Christian theology, paganism and rationalism. The first article displays the difference between the paganism of Greek theology and its incompatibility with Christian theology. The second article, which is most central to Foster's argument, displays the subtle modification which rationalism undergoes in Christian theology compared to Greek theology. This modification constitutes the basis of the "rational science" that Foster believes is present in modern science. *A priori* deduction supplies the possible philosophies of nature given the attributes of God in Christian theology, but empiricism must supply the knowledge of the contingent world around us. Foster appears to change his mind from "Hegel and Empiricism" in arguing for this rational science of nature, but Foster believes himself only to be changing his emphasis. "Christian Theology (II.)" presents Foster's fully formed idea of science, whereas "Hegel and Empiricism" supplies the necessity of empiricism in science, *not* the necessity that science be nothing but empiricism.

Rationalism and Christianity at Odds – "The Opposition between Hegel and Empiricism."

The essay, "The Opposition between Hegel and Empiricism" is a useful look into the beginning of Foster's thesis on creation and the origins of modern science. It is important to note that the goal of this article is different from that of the two *Mind* articles. "Hegel and Empiricism" has only a few passages relevant to the creation thesis, but they are at the core of the thesis. It is useful to see the progression of these ideas as Foster progresses, especially his emphasis on the empirical nature of modern science in "Hegel and Empiricism" compared to "Christian Theology (II.)", when he emphasizes the rationalist nature of modern science.

Foster begins "Hegel and Empiricism" by putting forth two assumptions about rationalism: first, the essence of the sensible world is a nature distinct from the accidents of its sensible embodiment, and, second, the subjective conception is an activity of reason that is independent of experience. Foster draws these two assumptions to be commonly associated with the movement of rationalism in modern philosophy, but Foster also means to apply it to any philosophy that satisfies the two conditions. The first assumption operates under the ancient notion of essence. An object has something that makes it what it is universally, but it also has accidents that make it a particular. This leads to the second assumption: the accidents are useless to knowledge and are known through experience, whereas the essence is known by pure reason, devoid of experience, and is useful for knowledge.

Foster sets up empiricism, conversely, as the philosophy that rejects these two assumptions. Total empiricism denies the possibility of a distinct conception of an

insensible ground of the sensible world and denies the possibility of non-empirical knowledge. Stated differently, empiricism rejects the possibility of essences known apart from experience, as empiricism claims that no knowledge apart from experience is possible. Again, Foster is willing to use this term in an anachronistic fashion, applying it to any time period that satisfies the conditions of rejecting the assumptions of rationalism. Foster indicates that this formulation of empiricism is not necessarily just a negative philosophy. There is a positive philosophy to be had in this formulation if it asserts that the sensible is more than mere appearance. This distinction helps to differentiate ancient empiricism from modern empiricism. The ancient notion of empiricism is essentially the negative empiricism, and the modern empiricism is essentially the positive empiricism.

Foster claims that if we accept this formulation of rationalism and empiricism, then both Plato and Aristotle are rationalists. So much so, that he claims, "In the Greek world there could not be opposition between rationalism and empiricism within the field of philosophy. Greek philosophy was rationalism; to oppose rationalism was not to oppose a school of philosophy, but to oppose philosophy."[4] Thus when Foster speaks of the "ancient empiricism", it is more a conception of a philosophy than a philosophy actually practiced. Foster's claim is that the dualism of both Plato and Aristotle points toward matter as a corruption of the form or universal. Matter is thus merely sensible, and it is not intelligible or positive. This is because of the rationalistic nature of their respective philosophies.

Disregarding the specifics of their respective metaphysics, specifically the theory of forms and the theory of hylomorphism, Foster claims that both Plato and Aristotle suffer

[4] Michael B. Foster, "The Opposition Between Hegel and Empiricism," in *Creation, Nature, and Political Order in the Philosophy of Michael Foster (1903-1959): The Classic Mind Articles and Others, with Modern Critical Essays,* ed. Cameron Wybrow (Lewiston, NY: E. Mellen, 1992), 48.

from the same problem: the material world contributes nothing to true knowledge. This is why the prevailing science of their day, which was ruled by the canon of Aristotelian logic, focuses on categorization of species and genus via the syllogism. Even Aristotle's extensive record keeping of organisms was useful only for the purpose of categorization, *not* for adding new information through experience.

Modern empiricism differs from the conception of ancient empiricism in that, for modern empiricism, matter has a real, positive being. Ancient empiricism views matter as a mere sensibility, a corruption of the true form (or at least accidental to it). It is here that Foster first connects this novel component in modern empiricism with creation. The doctrine of creation supplies the missing impetus for this modern view of nature because it posits that matter *is* more than merely sensible. Matter is positive and intelligible because God creates it. What constitutes its creation is not a form, but rather a will. God *wills* the creation of matter rather than just conceiving it. This differs from the ancient theologies, where the form is intelligible because it is a creation in the mind of the Demiurge (or the forms preexist in some cases). Matter is not created by the Demiurge but is combined after, so matter is thus only accidental or a corruption. Foster then draws out why this distinction is responsible for the positive element of matter in modern empiricism.

Foster outlines the difference between the theology of a Demiurge (an example of Greek theology) and the theology of a Christian Creator. "The two characteristics which differentiate the activity of a Demiurge from that of a Creator are (1) that it is purposive, and (2) that it is informative*, i.e.,* (1) that it is determined by an end conceived antecedently to the execution; (2) that it extends only to the formation of a given matter, not to the

making of a matter *ex nihilo*.[5] The Demiurge is a basically rationalistic conception of God, and thus we see Foster draw the conclusion as such.

> The two principles of Rationalism follow inevitably from these differentiae. (1) Because the essence was conceived by the Demiurge antecedently to its embodiment, the essence can be the object of science in distinction from its embodiment; while the matter, not being derived from any activity of the Demiurge, cannot be the object of any knowledge at all. (2) As form alone is knowable, reason alone can be knowledge. Sensation (which is the subjective conception of the matter in an object) must constitute a defect of knowledge, as embodiment constitutes a defect of knowability.[6]

This theology of a Demiurge is contrasted with the Christian theology of a Creator. Creation by God, in this case, is the voluntarist alternative to the rationalist Demiurge's shaping of the world. Foster sums it up neatly when he says:

> The act of creation extends to the matter; matter is therefore knowable and sensation a way of knowing. The ground of this matter, that which confers existence upon it, is not a form (which can be conceived antecedently to its embodiment) but a will (which cannot be conceived antecedently to its execution). Therefore there can be no knowledge of this matter *a priori*, or by a reason from which sensation is excluded. Created matter, in a word, becomes knowable but remains contingent.
>
> But creation, though it extends to the material element of things, is not confined to this element. Contingency therefore extends to the whole nature of a created thing, and of the thing as a whole we must say that it is knowable, but is not knowable *a priori, i.e.* by distinct conception of its essence.[7]

It would thus be a conflation of Demiurge and Creator to assert that God creates the world and then informs the matter he created, *i.e.* it is wrong to merely attribute creation to the Gods of Plato and Aristotle. The medieval philosophers were wrong to attach creation to these theologies and subsequent philosophies of nature because doing so disregards the two limitations of the Demiurge mentioned before. A Demiurge, limited by an end and a preconceived matter, *cannot* create given these two limitations. To attribute creation to a

[5] Ibid., 54.
[6] Ibid., 54.
[7] Ibid., 55.

Demiurge would be to conflate rationalist and empiricist conceptions of God, and this error by the medieval philosophers precluded an empirical science of nature.

Foster concludes, "Creative activity is free from both of these limitations. Its freedom from a preconceived matter has the consequence that sensible things are knowable empirically; its freedom from a preconceived end has the consequence that their ground or 'real essence' or form is not knowable at all. Thus, the doctrine of creation both reinforces Empiricism in its denial and supplies it with a positive basis of assertion."[8] Foster will revisit the intersection of rationalism and Christianity again in "Christian Theology (II.)", where he elaborates on the relationship in a more nuanced way.

A Familiar Question: "Christian Doctrine of Creation and the Rise of Modern Natural Science."

In addition to Foster's Christian belief, it is important to note his Kantian background. When he studied in Germany, commentators speculate, those who influenced him were attempting to put Kant in a more "Christian" light. We see Foster follow Kant's argument in a certain sense with "Christian Doctrine of Creation and the Rise of Modern Natural Science." The explicit question put forth in "Christian Doctrine" is this: "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? 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?"[9] As has been

[8] Ibid., 55.
[9] Michael B. Foster, "The Christian Doctrine of Creation and the Rise of Modern Natural Science," in *Creation, Nature, and Political Order in the Philosophy of Michael Foster (1903-*

suggested in "Hegel and Empiricism", the answer to the first question is Christianity, and the answer to the second is the Christian doctrine of creation.

It seems that Foster's deeper question, the one that the article leaves us asking, is how this science of nature is possible? This is precisely Kant's question in the second part of the *Prolegomena to any Future Metaphysics.* "Christian Doctrine" ultimately provides us with all of the knowledge to discern the difference between ancient and modern science, completing what "Hegel and Empiricism" began. Foster holds that the proof of this science is not only possible, but also necessary from the given theological and philosophical position of Christianity, as he explains in his final *Mind* article, "Christian Theology and Modern Science of Nature."

Foster begins "Christian Doctrine" by noting that the forerunners of modern natural science, rationalist and empiricist alike, had to presuppose certain truths about nature in order to do their science. These presuppositions, just as for the ancients, stem from a philosophy of nature and a theology. If they were rationalist, they attributed these presuppositions to deduction, until they reached a point where they had to turn to the "natural light of reason". If they were empiricist, they attributed these presuppositions to experience, until they reached a point where they had to turn to "common sense". Foster is attempting to show that these presuppositions were actually given by faith. While it is true that the forerunners of modern science held different theologies, there is one element shared by nearly all of them: the world was created. Foster claims that it was this faith that kept the two epistemologies of rationalism and empiricism developing. If it were not for

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1959): The Classic Mind Articles and Others, with Modern Critical Essays, ed. Cameron Wybrow (Lewiston, NY: E. Mellen, 1992), 89.

thinkers like Berkeley and Malebranche appealing to revelation to save their philosophies, then the two opposing philosophical systems would never have served their purpose in working together to create the modern natural science. This language is already a significant development from "Hegel and Empiricism," where Foster seemed to indicate that Christianity was synonymous with empiricism.

In "Hegel and Empiricism", Foster tells us, "From the foundation of Christianity throughout the Middle Ages the opposition between faith and reason was the spring of development of all philosophy."[10] Why, then, did modern science of nature not arise sooner after the advent of the Christian idea of creation? Why, during a thousand-year period where philosophy was explicitly Christian, did no novel science arise? Foster answers this question by saying that this process of rejecting the ancients (with mostly Plato and Aristotle in mind) was a slow one, specifically with respect to creation.

> The medieval philosopher had of course believed the Christian doctrine that nature is created. But the belief had been efficacious only in his theology. In his science of nature he had continued to seek for final causes, to define essences and to deduce properties: in a word, he had continued to employ the methods of Aristotelian science, entirely oblivious of the fact that Aristotle's science was based upon the presupposition that nature is not created. The modern investigators were the first to take serious in their science the Christian doctrine that nature is created, and the main difference between the methods of ancient and the methods of modern natural science may be reduced to this: that these are and those are not methods to the investigation of a created nature.[11]

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[10] Michael B. Foster, "The Opposition Between Hegel and Empiricism," in *Creation, Nature, and Political Order in the Philosophy of Michael Foster (1903-1959): The Classic Mind Articles and Others, with Modern Critical Essays,* ed. Cameron Wybrow (Lewiston, NY: E. Mellen, 1992), 50.

[11] Michael B. Foster, "The Christian Doctrine of Creation and the Rise of Modern Natural Science," in *Creation, Nature, and Political Order in the Philosophy of Michael Foster (1903-1959): The Classic Mind Articles and Others, with Modern Critical Essays,* ed. Cameron Wybrow (Lewiston, NY: E. Mellen, 1992), 89.

Foster begins his exegesis of the Greek theologies by touching on the same point mentioned in "Hegel and Empiricism": there is an empiricism in modern science absent in ancient science.

> The methods of Greek Natural Science depend upon the assumption that the essences of natural objects are definable…. That in objects which is intelligible is what the Greeks called their form, whereas that in objects which is sensible is what the Greeks called their matter. That the form of things is intelligible, and therefore definable, does not of itself constitute the whole of the assumption required to justify the procedure of Greek science, namely that the essence of things is intelligible, and therefore definable. It needs the complementary assumption, which the Greeks also made, that the form of things is also their essence.[12]

This philosophy of nature has consequences for science of nature. Foster argues: "Because this 'intelligible nature' is the ground of both all being and all action in the actual world (whereas matter accounts only for diminution of being and impediment of action), it follows that intelligent comprehension of form is sufficient for understanding both what is and what happens in the actual world. Sensual experience represents no addition to, but only defect of, such understanding."[13]

Once Foster has examined how the ancient philosophy of nature produces the ancient science of nature, he changes direction and examines how the theology behind this view of nature produced it.

> This theory of nature presupposes that neither of the two elements [form and matter] of which nature is composed is dependent for its being upon a power outside nature, i.e. that neither of them is created. 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. We may say in advance, then, that any development of Greek theology, if it is to remain consistent with the presuppositions of Greek natural science, must stop short of the attribution to God of an omnipotent power over nature.[14]

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[12] Ibid., 74.
[13] Ibid., 75.
[14] Ibid., 75.

Foster proceeds to examine specific Greek theologies to flesh out this conclusion. These theologies include three known theologies in the Greek world: God as a generator, God as pure theoretical activity, and God as an artificer.

The core argument is simple and the same as the one presented in "Hegel and Empiricism": because sciences of nature flow *necessarily* from philosophies of nature, and philosophies of nature flow *necessarily* from theologies, without Christianity, there is no modern science. The purpose of Foster's analysis is to show the key differences between the Christian and Greek theologies, to show the necessary result of the differences of their philosophies of nature, and to show the necessary result of the differences of their natural sciences. This distinction is the core of Foster's argument, and the differences between God as generator, artificer, and pure theoretical activity from God as Creator represent the primary framework of Foster's argument, primarily in the two parts of "Christian Theology and Modern Science of Nature."

On God as generator, Foster says:

> The great philosophical distinction which Socrates initiated and Plato worked out between the idea and the sensible object was only the explication of the distinction which had already been made in Greek religion between God and the sensible object…. If it be granted that the possibility of Greek natural science depended ultimately upon the distinction between God and nature achieved even by Greek religion, there may be a readier acceptance of the thesis that the far higher development of the modern natural science depends upon the far deeper distinction between God and nature achieved by Christian religion."[15]

The difference between the form and the material was the same as the difference between the divine and the material because the divine *generated* the form from his own mind, or perhaps more accurately, out of his own essence. Foster postulates that the distinction between this God and nature, which is slight at best, is responsible for whatever success

[15] Ibid., 77.

the ancient natural science found. The further division of God and material in Christianity is *precisely what constitutes* the further success of modern science. Considering that the generation theology must produce an explicitly rational science of nature, it is prevented from producing a useful science of nature.

On God as pure theoretical activity, Foster says:

> Aristotle's God, though admitted to be transcendent, is bereft of any power over nature except the single power of originating motion. Neither the matter nor the form depends on him, and even of motion in nature he is not himself the efficient but only the final cause. He is not the source of energy in nature; that must arise within nature from the active potency of the form to realize itself, but is only the end upon which all energy in nature is directed…. The attribution to God of an activity of will sweeps away this restriction [of God's operation on the world], and with it the possibility of maintaining the pagan conception of nature as self-dependent.[16]

Foster claims that the conception of God as pure theoretical activity is both a step forward and a step backward compared to the view of God as generator. In terms of paganism, the theoretically active God transcends the limits of nature. But the theoretically active God takes a step backwards in creative agency, as he does not even create forms as the generator-God does. He is merely the end of all energy in the system, contemplating the forms passively. This lack of creative power again precludes this theology from producing a useful (empirical) science, and Foster draws the further distinction that the complete absence of will in this conception of God as theoretical activity further prevents such a science. This will in the creation-theology is precisely what constitutes a creative philosophy of nature and the subsequent empirical science of nature that follows.

On God as artificer, Foster says this:

> There is one Greek doctrine of God which ascribes to him a power of efficient causation in the constitution of the actual world…. This is Plato's doctrine that God is a Demiurge or artificer. The doctrine that God is a Demiurge is perfectly consistent with the contrast

[16] Ibid., 78.

between the conception of God as a Creator, because the activity of a Demiurge (techné) is essentially both (i) *informative* and (ii) *purposive.* That is to say, his work is (i) confined to the information of a given matter, and (ii) directed by the antecedent conception of an end…. The ascription to God of the activity of a Demiurge is thus compatible with the fundamental assumption of Greek Natural science, that form and matter are eternal.[17]

This is the same formulation utilized in "Hegel and Empiricism". This is simply because the doctrine of God as artificer and "the Demiurge" are the same conception of God.

Once Foster has clearly elucidated Greek theology for his purposes, he turns to Christian theology and the ensuing modern science.

> By Greek science I shall mean such science, or attempted science, of nature as conformed to the canons of Aristotelian science…. One of the most important and striking differences, though no doubt not the only difference, between the methods of modern and those of ancient natural science is the presence in the former of an empirical element lacking in the latter. Modern Science describes natural substances instead of defining them, it discovers their properties by observation and experiment instead of by 'intuitive deduction' and demonstration, it classifies their species instead of dividing their genera, it establishes between them the relation of cause and effect instead of relation of ground and consequent…. This is not to say that sensuous experience played no part in ancient science, but that it played a different part: it supplied the illustration but not the evidence of the conclusion of science.[18]

The idea of definition played a critical role in the categorization of ancient science. Definition was the attempt to rationalize the form in words. It is also critical to the theology of the time, as it represented the form conceived by the Demiurge or other gods. Conversely, modern science rejects this method, and it does so on the grounds of its theology. As Foster says, "For an object to be definable, two conditions must be satisfied: (i) its form must be intelligible, and (ii) its form must be its real essence…. But the doctrine

[17] Ibid., 79.
[18] Ibid., 74.

that nature is created involves the denial that natural objects can satisfy either condition."[19]

In regards to (i):

> The form of the artifact is thus distinguishable, because the activity of the Demiurge who made it was purposive, that is to say, was directed by the conception of an end. What he conceived as an end, we distinguish as form…. But the work of creation is not purposive; and as there is no end distinctly conceived by the Creator in advance of his execution, so there is no form distinguishable by us from the accidents of its embodiment…. If God is a Creator, natural objects can have no form distinguishable as the object of the intellect.[20]

In regards to (ii):

> The doctrine of creation attributes to God an autonomous activity of will, but it is characteristic of the work of a Demiurge that in it the practical is wholly subordinated to the theoretical. The entire activity of the artificer, in so far as he is an artificer, is dictated by a plan or end, which is the object of his theoretical perception.
>
> That an artificial object which is not necessitated by its idea is the contingent, and just as the insubordination of will is nothing but an imperfection in the artificer, so the presence of the contingent is nothing but a defect in the artifact…. Natural objects are contingent, i.e., they fail to conform to their idea, precisely in so far as they are material… as being material is a defect and not an increment of being, sensation is an imperfection of knowledge, not a way of knowing.[21]

So a Creator would constitute a bad artificer, since all he makes is contingent because it is not the fulfillment of a preconceived, rational end.

This series of quotations displays the fulfillment of the argument begun in "Hegel and Empiricism." The two distinctions necessary for a definition follow from the two limitations of a pagan God: limitations by matter and limitations by a preconceived end. These two limitations flow directly from the suppositions of rationalism: (1) that the essence of the sensible world is a nature distinct from the accidents of its sensible embodiment, and (2) that the subjective conception is an activity of reason that is

[19] Ibid., 81.
[20] Ibid., 82.
[21] Ibid., 83.

independent of experience. Thus Foster ends "Christian Doctrine" the same way that he ends "Hegel and Empiricism": by rejecting rational theology and its subsequent rational philosophies of nature and science of nature. By selecting the voluntarist theology instead, Foster is left with an empirical science, stemming from the arbitrary will of the creative theology and its subsequent philosophy of nature.

Foster summarizes his argument from "Christian Doctrine":

> The voluntary activity of the Creator terminates on the contingent being of the creature. If such voluntary activity is essential to God, it follows that the element of contingency is essential to what he creates. 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 more than an embodiment, namely a creature.
>
> But the contingent is knowable only by sensuous experience. If, therefore, the contingent is essential to nature, experience must be indispensable to science of nature; and not indispensible 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 of reason, and science therefore must depend, in regard to this element, upon 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 a proper object of an empirical science.[22]

After the basic differences between Greek theology, philosophy of nature, science of nature, and the corresponding Christian theology, philosophy of nature, and science of nature have been established, we see that the two sciences of nature must be fundamentally different if Foster's analysis is correct. It remains for Foster to demonstrate *how* modern science arises with this new empirical element. Foster ends "Christian Doctrine": "The failure of modern Rationalism was its failure to do justice to this un-Greek

[22] Ibid., 84.

element, the failure of modern Empiricism was to do justice to anything else. 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."[23] The nature of the varied success of modern rationalism and empiricism sets the stage for what will be, in the style of Kant, a synthesis of the two ideas.

On the Rejection of Paganism: "Christian Theology and Modern Science of Nature (I.)"

If "Christian Doctrine" supplies the question of how a science of nature is possible, then "Christian Theology and Modern Science of Nature" supplies the answer. It begins by stating the relationship of theology, philosophy of nature, and science of nature.

> Every science of nature must depend upon presuppositions about nature which cannot be established by the methods of science itself…. To assert the truth of what natural science presupposes is not science of nature but philosophy of nature. It may be, for all I wish to assume to the contrary, that the philosophy of nature is exhausted in two assertions that nature is subject to universal laws and that it is uniform in the sense required by inductive natural science…. Philosophy of nature is dependent in its turn upon theology.[24]

As before, Foster's primary goal is to distinguish the order of Greek theology, philosophy of nature, and science of nature from the corresponding Christian order. We saw in "Christian Doctrine" that there were three primary conceptions of God for the Greeks: generator, pure theoretical activity, and artificer. These three conceptions of God embody two themes in Greek theology that are incompatible with Christian theology: paganism and rationalism.

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[23] Ibid., 88.
[24] Michael B. Foster, "Christian Theology and Modern Natural Science (I.)," in *Creation, Nature, and Political Order in the Philosophy of Michael Foster (1903-1959): The Classic Mind Articles and Others, with Modern Critical Essays,* ed. Cameron Wybrow (Lewiston, NY: E. Mellen, 1992), 90.

The first part of the article deals with the *rejection* of paganism in Christianity and the ensuing philosophy and science of nature, and the second part deals with the *transformation* of rationalism in Christianity and the ensuing philosophy and science of nature.

Foster begins his discussion of paganism with a definition and then proceeds to contrast it with Christianity: "Paganism I shall define as the failure to distinguish God from nature…. The denial that God is natural necessarily involves the denial that nature is divine, and the conception of a nature not divine entails a modification of pagan views of nature no less profound than the modification of pagan views of deity demanded by the conception of a spiritual God."[25] Two of the Greek theologies described in "Christian Doctrine" can be ascribed to Plato: God as both generator and artificer (or Demiurge). We see that, in Foster's interpretation, Plato does not have two distinct theologies but a single conflated one. The conception of God as generator is tied to Plato's idea of God as an artificer, expressed in the *Timaeus*.

> Offspring, the product of generation, and artifacts, the product of an artificer, are alike embodiments of form, but the form is present in each in a different way. In the former it 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, insomuch as it exhibits itself in a positive effort to preserve it in its being and to resist its disintegration. It is characteristic of the artifact that it is dependent throughout upon the artificer for that spring of activity which the living creature can supply from within itself… the motive power of the artifact must be supplied from moment to moment from without by the activity of the artificer, and the process stops when he ceases to be active; whereas the growth of a living thing is as though the power of the craftsman had been included within his product.[26]

Essentially, the form is present in artifacts as an embodied concept and in the generated product as an embodied soul.

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[25] Ibid., 94.
[26] Ibid., 98.

In juxtaposing the two theologies, Foster hopes to show that Plato has a serious problem in his theology. The two theologies are mutually incompatible, and they certainly cannot produce a fruitful philosophy of nature and science of nature if both ideas are to be included in the theology. On the other hand, Foster is also setting out to show that one of these views is more compatible with the Christian revelation than the other. The artificer supplies a certain life force to its artifacts while still having to subsist in order for the artifacts to exist. This idea is similar to the Christian doctrine of creation.

Interestingly, for Foster, Aristotle seems to have the same problem in his theology. Aristotle's science turns on a view of God as generator of natural objects, which Foster calls the "animist idea". This identity of natural objects as "animal" is unique to each species of "animal", or in other words, each classification of objects has its own form, derivative of God. This means that the motion specific to a species is different in each case. The motion of a dove is different from the motion of a turtle, etc. God also makes non-natural objects, or simply inert matter, which Aristotle fittingly terms artifacts. These non-natural objects are made through a work of *techné*, just as the Demiurge makes them. So Aristotle's God also falls prey to the same problem that Plato's God does: he is both a generator and an artificer. Since Aristotle classed natural objects as animals, his science of nature turned on the philosophy of nature which viewed God as generator.

It is exactly this view that modern science rejects. While medieval Christians had already rejected the theological idea that God generated the world, they had still continued to practice Aristotelian science, working with this animist conception. So even though they rejected the generator view theologically, as Foster states, the view of God as Creator was not yet efficacious philosophically for the medieval Christians. This is evidenced by the fact

that the medieval philosophers continued to engage in a science incompatible with their theology. So Foster concludes that the medieval philosophers had not effectively purged Christian thought of paganism.

The modern view instead views objects much like artifacts. Foster says,

> But the fundamental principle of modern science of mechanics, that the laws of motion are the same for all material objects, involves the denial that the motion of an object can be affected by the kind of object it is. This science again is possible only upon the assumption that the quantity of motion of a natural object is precisely commensurate with the force communicated to it. That is to say, its possibility presupposed that natural objects are in these respects to be classed with the artifact and not with the animal.[27]

This has the important implication that "the denial of these characteristics to objects in nature is a necessary consequence of the denial that nature is produced by God in an act of generation. It is clear, therefore, that Christianity, by eliminating this pagan doctrine from theology, supplied the condition of the development of modern natural science."[28] Not only does this mean the rejection of the theological paganism present in the view of God as a generator, but also the rejection of the paganism present in conducting medieval science based on Aristotelian logic. This rejection, Foster argues, did not happen until the early modern period. The view of God as an artificer, as we have seen in "Christian Doctrine", is in fact a rationalist theology, however. If Foster's argument about the logical necessity of a theology producing a philosophy of nature and a science of nature is coherent, this must mean that the rationalism of the ancients is of a different kind from the rationalism present in Christianity, since a different science of nature was produced from each theology.

Foster summarizes in order to present us with a way forward:

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[27] Ibid., 101.
[28] Ibid., 102.

> The confusion inherent in Aristotle's philosophy of nature is thus radically the same as that of Plato's theology in the Timaeus; and 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'. Thus the Logic, which presupposes the 'rationalist' philosophy of nature, assumes an importance in medieval philosophy out of all proportion to its prominence in Aristotle himself.[29]

"Christian Theology (II.)" is dedicated to discussing how the rationalism of modern science, philosophy, and theology are all different from the ancient, which is how Foster concludes his argument thus far: "But the modern philosophy of nature is not simply Aristotle minus his animism. The elimination of the latter was a necessary, but not in itself a sufficient condition of its development…. The modern philosophy of nature depends likewise not merely upon the adoption of Aristotle's rationalism, but upon its *Transformation*."[30] Thus, the rationalism adopted by the ancients by maintaining the view of the artificer of nature must be modified in some way for Foster's argument to work. Rationalism, then, is contrasted with the other incompatible notion of Greek and Christian thought, paganism, which modern science must completely reject. Foster posits that the rationalism modern science includes is merely transformed from the ancient rationalism.

Foster must make a distinction in order to not contradict his earlier ideas. In "Hegel and Empiricism", as well as "Christian Doctrine", he made the claim that simply adding the creative faculty to the artificer view was not good enough; it was a conflation of the two ideas in a way that would not produce an empirical science. He seems to soften his stance, as he now claims that this move by the medieval philosophers was not completely unjustified: it simply required a basic modification of the rational theology present in the

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[29] Ibid., 116.
[30] Ibid., 117.

artificer view to become consistent with Christian doctrine. This softened stance leads to his more nuanced position in "Christian Theology (II.)", and it is critical to note the turn in his argument. Now, Foster continues to anticipate his ultimate goal: a rational-empirical science. He has, up to now, done so much work to show the merits of empiricism only because that was precisely the element missing in the ancient science. He knows, however, that modern science does include a certain rationalism, and his telling remarks at the end of each of the articles we have examined indicate that he recognizes this.

On the Transformation of Rationalism: "Christian Theology (II.)"

In "Christian Theology (II.)", Foster defines rationalism in theology. "What I shall term 'rationalism' in theology is the doctrine that the activity of God is an activity of reason. It implies the corollary that the activity of reason in man, in so far as it is pure, is itself divine. The purity of reason consists in its freedom from admixture with sensuous elements, so that the consequence follows that the human reason has only to liberate itself from the impressions of experience in order to think the thoughts of God."[31] This corresponds to Foster's philosophical definition of rationalism found in "Hegel and Empiricism". This theological rationalism is pure rationalism; it demands a God determined to act by the dictates of his intellect, and the rationality of this dictate allows an intelligible nature to the human mind. This conception of God demands a rationalist science that cannot be empirical.

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[31] Michael B. Foster, "Christian Theology and Modern Natural Science (II.)," in *Creation, Nature, and Political Order in the Philosophy of Michael Foster (1903-1959): The Classic Mind Articles and Others, with Modern Critical Essays,* ed. Cameron Wybrow (Lewiston, NY: E. Mellen, 1992), 119.

We also saw in "Hegel and Empiricism", however, that the Christian God does have a will. Foster remains steadfast in his formulation:

> 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 in the methods of natural science…. The product of an arbitrary will is contingent, and of the contingent there can be no knowledge beyond experience…. If there can be no defect in the divine nature, then the ascription of arbitrary will to God implies not that he is a bad Demiurge, but that it is his nature to be something other than a Demiurge…. But if this is so, then the experience to which alone the contingent is accessible, will be itself a knowledge of their nature, and natural science can no longer begin with the transcendence of experience, but must be itself empirical.[32]

So the will, as discussed at the end of "Christian Doctrine", returns to help differentiate the Greek from the Christian God. The Demiurge is compelled to "make" the world by constituting form with matter. The Christian God is contrasted with the Demiurge in that he wills the creation of matter. This faculty of will, having been alluded to through all four articles, is the exact component of creation that demands an empirical science. Here, though, Foster shows the fullness of his philosophy. He has not been arguing for pure voluntarism – and hence pure empiricism – but instead a rational science that admits experience.

The hybrid view that Foster adopts requires great intellectual finesse. He begins by saying,

> But since ideas are the proper objects of scientific understanding, it must follow that natural objects, in so far as they are material, are not proper objects of science…. The productive activity of a Christian God could not be held to be thus limited by the recalcitrance of an alien material. But if it is not, then the consequence follows that the ideas that are objects of God's reason are exactly carried out, not imperfectly represented, in the material world. But if this is so, then the material world is, *qua material,* the proper object of exact science.[33]

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[32] Ibid., 124.
[33] Ibid., 125.

He continues:

> It [Christian Theology] was set the task therefore of preserving the rationalist principle that God's reason governs his will (since if this is surrendered, the conclusion might well have seemed unavoidable that neither theology nor science of nature was possible), but of preserving it without sacrificing the divine omnipotence. The former principle demands the limitation of God's will by subordination to his reason, and therefore to whatever ideas are objects of his reason; but 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. The activity by which they are produced cannot itself be an activity of will, since this would entail the liberation of God's will from all limits, and consequently the surrender of the rationalist principle. There must therefore be ascribed to God an involuntary activity of producing the ideas upon which his reason may terminate and by which the subsequent act of creating the world may be determined.[34]

This hybrid view of God, one that proposes that *the only limitation God has is self-imposed from within*, must produce a necessary change in the philosophy of nature and subsequent science of nature.

> It follows that a modification of the conception of God's reason (the reason which governed the making of nature) implies a correlative modification of the conception of our reason (the reason which constitutes the science of nature). If God's reason is freed from the limitations of a Demiurge, so that it is not directed upon independent objects, but itself produces its own objects, our reason must also be freed likewise. Its proper activity must be held to be not contemplation, in which the mind is turned outwards upon an eternally subsistent intelligible world, but meditation, in which it develops a system of intelligible ideas from within itself.[35]

This quote has the theoretically active God in mind, as it posits that God does have a capacity of mind; it is merely meditative rather than contemplative. So God is not pure arbitrary will but also is intellectual. This change in understanding God's rationality requires the modification of our own rationality.

> It is important to bear in mind that what I have designated the orthodox Christian theological doctrine is thus still rationalist. The law which God imposes upon the

[34] Ibid., 126.
[35] Ibid., 129.

> 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.
>
> Therefore the modern scientist found within material nature the intelligible law which was the proper object of his science; whereas his Greek or medieval predecessor could find in matter no more than an approximation to the intelligible idea, of which alone scientific knowledge was possible, and in order to know which therefore he had to turn his intellect away from material nature to a realm of intelligible objects suggested by it, but never perfectly realized by it.[36]

This is the consequence of what Foster has maintained since "Hegel and Empiricism": that the intelligibility of a created material allows for true knowledge of the laws that govern that material. This must be compared to the ancient science, where the laws that govern the material were merely an approximation. The material they govern is merely a poor imitation of the form.

The conclusion about the modern science stemming from a creative theology is reduced to two assumptions, the first being empirical, and the second being rationalist. "Hence are derived two assumptions… the first assumption that the scientist has to look nowhere beyond the world of material nature itself in order to find the proper objects of science. The second… that the intelligible laws which he discovers there admit of no exception."[37] Foster explains this quote:

> A divine Creator who is not limited by a recalcitrant material can embody his ideas in nature with the same perfection in which they are present to his intellect, so that the scientist can find in nature itself the intelligible objects of which he is in search, and not merely imperfect ectypes of them. Similarly, the laws of an omnipotent lawgiver cannot be related to the objects of his creation as ideals to which they more or less conform, but as rules to which their submission is absolute, both extensively, in the sense that there can be no exceptions to them, and intensively, in the sense there can be in no given case a degree of submission which is less than perfect.[38]

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[36] Ibid., 133.
[37] Ibid., 133.
[38] Ibid., 134.

This hybrid system is what allows Foster, in "Hegel and Empiricism", to criticize rationalism so severely, while at the same time, here in "Christian Theology (II.)", argue for a rational science.

Once Foster believes that he has shown that the Christian theology has a rational character, he turns to wedding the conclusions of both parts of "Christian Theology". The conclusions of the first part are the contingency of nature, the arbitrary will of God, and the need of empirical observation. The conclusions of the second part are that intelligible laws can be found in nature to be deducible, but God is not mandated to produce anything due to his omnipotence. Foster says on this:

> A Christian rationalist theology was bound to admit an element of voluntarism unto itself.
>
> It is bound to admit it in the following two regards:
>
> (i) Although what God produces must be held to be completely determined by the ideas of his understanding, the like necessity cannot extend to the decision whether he is to produce anything. In this sense his will must be arbitrary, in the sense of being free from determination by his reason.
>
> (ii) A rationalist theology is logically bound to admit a further voluntarist element. The objects of God's reason, in so much as they are intelligible, must be universal, and no universal contains in itself a ground of necessity of its own existence."[39]

The whole system is summed up most clearly when Foster says:

> The implication of this admission for the methods of natural science is obvious. The scientist will be able to discover *a priori* whatever was the object of God's understanding and will be able to delimit the sphere of the possible without any appeal to the evidence of experience. But he will depend upon the evidence of experience not merely to assure him that anything is actual at all, but in order to determine which of the alternatives known *a priori* to be possible is actual in nature. He will rely upon empirical evidence, that is to say, not merely to establish presuppositions upon which the validity of his procedures depends, but as part of the procedure by which his scientific conclusions are themselves established.[40]

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[39] Ibid., 137-138.
[40] Ibid., 139.

So Foster draws from rationalists like Leibniz, distinguishing between the logically possible and the actually existent. These conceptions can be arrived at completely *a priori,* through geometric deduction. To know that they actually exist, however, the scientist *must* look to nature to understand what of the possible is actual.

Foster's final corollary to this idea is that, to be truly contingent,

> The really existent, although it may realize a universal, must be individual; it must therefore possess a contingent element of being, added to the universal nature and not derived from it. God's arbitrary choice, therefore, cannot be limited merely to the selection of one among possible intelligent schemes, in order to realize it in the creation of the world. 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 universal, God's will is arbitrary in the production of it.[41]

The ultimate end of God's will in creation, then, is to confer actual existence. God's intellect, conceiving of all rationally possible objects immediately, must *arbitrarily choose* to create some possibilities and not others. This conferring of existence must add an ontological status to the possible idea. The conferring of existence takes a universal idea and adds to it a sense of particularity.

So where does this leave us? It leaves us with a science of nature that does not assume final causes, that does not define objects, and that does not attribute unique motion to species.

> Natural objects will, indeed, embody the ideas and fulfill the laws; but, simply in order either to embody the one or fulfill the other, they must be held to be endowed with an element of particular being undetermined by them either.
>
> The result of this modification of the philosophy of nature will not be to make *a priori* science of nature any the less possible; but it will enforce the recognition that such a science, while necessarily true of all natural objects, does not exhaust the whole being of any. Thus experience will have a use beyond any which it has been found necessary to attribute to it so far. It will be necessary not merely to determine

[41] Ibid., 144.

> which of alternative intelligible schemes is realized in the actual world. Granted that this has been determined, there will still be a particular element in the nature of the actual which is not exhausted in its being the embodiment of a universal scheme. Of this particular element there can be none but empirical knowledge, and thus, although natural science will be itself no less *a priori* than before, yet, since it is admitted incapable of extending to the whole nature of actual things, it must be supplemented by experience if the whole nature of things is to be known.[42]

The conclusion is one Kant would accept: we cannot know objects in themselves, especially through solely empirical or solely rational sciences. Only through the union of the two can we know the most about nature. We have an *a priori* science of nature to help us deduce intelligible laws, and we must look to experience to substantiate them. Foster, it seems, contributes to the Kantian critical system by more clearly acknowledging what it borrows from faith, since faith can admit more than "religion within the bounds of mere reason."

[42] Ibid., 145.

Part Two

A Critical Analysis and Evaluation of Foster's Thesis

Overview of Part Two

With Foster's work presented, the next task is to examine his thesis critically. Foster's aim is to show that Christianity is a necessary condition for modern science. Foster intends to prove this by showing that the philosophy of nature embodied in the early modern era, which in turn caused modern natural science, was itself caused by a proper understanding of the Christian doctrine of creation. Modern science, for Foster, is at its core a Christian endeavor at understanding God's creation. While Foster does not see science as a theological endeavor, his later works show his ultimate goal. That goal is to recognize the possible danger that results from the modern project of science. This danger arises from the power man has seized from nature through the power of modern science. Where nature used to be seen as God's primary control on the world, the fact that man can now control nature troubles Foster. To prevent the misuse of this newfound power, Foster seeks to remind mankind of the power that continues to reign over man: God.

My goal will be to determine the value of Foster's thesis by examining both his defenders and critics. The critics (and defenders replying to them) generally fall into two camps, criticizing Foster on either historical or logical grounds. My analysis will show that on both grounds, Foster's thesis runs into some problems. Logically, I will examine Foster's characterization of both theological and philosophical rationalism. This analysis will show that his claim that modern science is rationalist in "Christian Theology (II.)" may be

problematic. Historically, I will examine Foster's claim that the first fifteen hundred years of the Christian religion accepted the doctrine of creation theologically, though the religion did not accept it philosophically. Foster cites that the lack of a contingent philosophy of nature without final causes in this time period supports such a claim. Further, given the conclusions of my logical analysis, I will determine that what Foster claims to be the theological impetus of modern science could have only been an implicit impetus. I will then consider, following the distinction made by James Patrick and carried forward by Stanley Jaki, the possibility that Foster's thesis fails in light of the historical claims elucidated by Étienne Gilson. This distinction will illuminate how central René Descartes is to Foster's conception of both modern science and modern rationalism.

In sum, my analysis will show that Foster argues persuasively for the importance of the Christian doctrine of creation in the development of the empirical component of modern science, particularly through the mechanical idea of nature. He does not, in my estimation, prove that Christianity is a necessary condition of this modern science. He fails in this endeavor by failing to establish the possibility of his implied voluntarist-rationalist theology. If Foster cannot prove the possibility of this theology, which must precede the rational-empirical modern philosophy and corresponding science of nature, then he cannot prove the necessity he is after. Rather than work from within rationalist or empiricist arguments and account for limited sense experience or deduction, Foster tries unsuccessfully to seek a middle ground.

I believe that Foster's work is not to be completely discounted, however. I will consider the work of R.G. Collingwood as a possible development of Foster's thesis. By situating Foster's historical analysis of modern science and accompanying view of nature

within a larger framework, Collingwood potentially solves some of the problems Foster has, especially historically.

Logical Analysis of Foster

In the first chapter, my goal was to present Foster's thesis with as much internal consistency as possible. Here, I wish to test that consistency. I presented the first three works ("Hegel and Empiricism", "Christian Doctrine", and "Christian Theology (I.)") as a cohesive unit with the goal of inquiring where the empirical element, new to natural science in the modern age, originated. Foster is steadfast: it comes from Christianity and specifically the Christian doctrine of creation. This doctrine of creation includes in it the freedom of God from any preconceived rational end, or, stated another way, God creates out of a purely arbitrary will. This freedom leads to the contingency of creation. This contingency requires, for Foster, an empirical component within the science of nature. This created contingency corresponds to the prominence of voluntarist theologies in Reformation thinkers, and it helps to purge the lingering paganism present in Christian philosophical systems since the early days of the faith.

"Christian Theology (II.)" is a new perspective on this same argument. Whereas the modern science of nature (and the preceding philosophy of nature and theology) had to reject the ancient paganism and its subsequent philosophy of nature and science of nature, it could modify the ancient rationalism. This modification allows for the mechanical view of nature prominent in modern natural science, as it modifies the ancient Demiurge theology with the creative contingency of Christianity. Foster argued that this modification was a

logical necessity for the voluntarist. Voluntarism, he argued, is bound to admit a certain element of theological rationalism in order to prevent sheer arbitrariness. Without doing so, God would be a commander, and we would have no *reason* to do good other than His command. Moral philosophy would not be possible. This danger leads Foster to emphasize the rational component of modern science in "Christian Theology (II.)". He was, in essence, arguing for a hybrid voluntarist-rationalist theology and a hybrid rationalist-empiricist philosophy of nature in order to correspond with the hybrid rational-empirical science he sees modern science to be. He had chosen to emphasize the new element of modern science, namely empiricism, in the first three articles. "Christian Theology (II.)" is an attempt first to display the rational component demanded by a voluntarist theology, and then tie everything together.

Recounting the critical components of Foster's work in "Christian Theology (II.)" helps to make this clear.

> A Christian rationalist theology was bound to admit an element of voluntarism.
> It is bound to admit voluntarism in the following two regards:
> (i) Although what God produces be held to be completely determined by the ideas of his understanding, the like necessity cannot extend to the decision whether he is to produce anything. In this sense his will must be arbitrary, in the sense of being free from determination by his reason.
> (ii) A rationalist theology is logically bound to admit a further voluntarist element. The objects of God's reason, in so far as they are intelligible, must be universal, and no universal contains in itself a ground of necessity of its own existence.[43]

And he finishes:

> The scientist will be able to discover *a priori* whatever was object of God's understanding and will be able to delimit the sphere of the possible without any

[43] Michael B. Foster, "Christian Theology and Modern Natural Science (II.)," in *Creation, Nature, and Political Order in the Philosophy of Michael Foster (1903-1959): The Classic Mind Articles and Others, with Modern Critical Essays,* ed. Cameron Wybrow (Lewiston, NY: E. Mellen, 1992), 137-138.

> appeal to the evidence of experience. But he will depend upon the evidence of experience not merely to assure him that anything is actual at all, but in order to determine which of the alternatives known *a priori* to be possible, are actual in nature. He will rely upon empirical evidence, that is to say, not merely to establish presuppositions upon which the validity of his procedures depends, but as part of the procedure by which his scientific conclusions are themselves established.[44]

This is meant to be the summary of modern natural science: modern science is a hybrid of rational and empirical elements. This does in fact seem to be the case: modern science *does* admit these two opposing epistemologies. The reality is more nuanced than this. "Christian Theology (II.)" is not a complete break with the first three articles. Foster maintained throughout "Hegel and Empiricism", "Christian Doctrine", and "Christian Theology (I.)" that modern empiricism was not the entirety of modern science. Modern empiricism, too, had certain pitfalls philosophically. "The failure of modern Rationalism was its failure to do justice to the un-Greek element of philosophy, the failure of modern Empiricism was to do justice to anything else."[45] At the end of "Hegel and Empiricism", Foster claims that:

> This paper is not made from an empiricist standpoint. I have endeavored to lay bare the ground of the opposition between the Hegelian and the Empiricist philosophies, not to take sides with either opponent, and I do not believe that either position is defensible against the other.
>
> If it is true that Hegel's philosophy is unable to maintain itself against the empiricist objection because it excludes an element of truth which Empiricism has realized, it does not follow that empiricism is the true philosophy (any more than the doctrine of creation is the whole of the Christian revelation), but only that the true philosophy must include that element of truth.[46]

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[44] Ibid., 139.
[45] Michael B. Foster, "Christian Doctrine of Creation and the Rise of Modern Natural Science," in *Creation, Nature, and Political Order in the Philosophy of Michael Foster (1903-1959): The Classic Mind Articles and Others, with Modern Critical Essays,* ed. Cameron Wybrow (Lewiston, NY: E. Mellen, 1992), 88.
[46] Michael B. Foster, "The Opposition between Hegel and Empiricism," in *Creation, Nature, and Political Order in the Philosophy of Michael Foster (1903-1959): The Classic Mind Articles*

Foster is true to his final conclusion here: modern science draws on both rational and empiricist philosophies.

A problem begins to arise, though, when Foster tries to elucidate what the wedding of rational and empiricist philosophies (as well as rational and voluntarist theologies) might look like. In "Christian Theology", we see two elements to the science of nature. Ian Jacobs and Struan Weeks state:

> Modern science, Foster believes, is in its nature dualistic, not monistic. Certain of its disciplines – inductive, generalizing sciences – are wholly empirical; others are *a priori.* While this last term is of unsettled determination in "Christian Theology (II.)", Foster chiefly uses it to signify 'deductive or demonstrative' science or science of 'pure reason'. Consistent with his central doctrine, Foster reasons that these two kinds of science must emanate from different theologies and philosophies of nature.[47]

I believe Foster would agree with the first formulation – that *one* science is *dualistic* – more than he would with the second – that there *are two* separate sciences.

So if the true science has elements of both rationalist and empiricist philosophy, it should follow in Foster's formulation that there ought to be elements of both rational and voluntarist theology preceding such a philosophy. Foster admits precisely this. *One* theology (a rational-voluntarist hybrid) does precede *one* philosophy of nature (a rationalist-empiricist hybrid), which does precede *one* science of nature (a rational-empiricist hybrid). It may seem like an evasion that these single systems are all hybrids, but I do not think it means that Foster's entire system fails. The trouble arises, however,

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and Others, with Modern Critical Essays, ed. Cameron Wybrow (Lewiston, NY: E. Mellen, 1992), 63.

[47] Ian Jacobs, Struan Weeks, "Theological and Philosophical Presuppositions of Ancient and Modern Science: A Critical Analysis of Foster's Account," in *Creation, Nature, and Political Order in the Philosophy of Michael Foster (1903-1959): The Classic Mind Articles and Others, with Modern Critical Essays,* ed. Cameron Wybrow (Lewiston, NY: E. Mellen, 1992), 263.

when we consider some of Foster's comments on the relation of voluntarism and theological rationalism before "Christian Theology (II.)."

Foster seems to directly contradict this conclusion in earlier statements from "Christian Doctrine". While I have made it clear that his goal there was different, some of his conclusions there seem incompatible with his nuanced view in "Christian Theology (II.)". Whereas he presented voluntaristic and theologically rationalistic conceptions of God as not only compatible, but also logically dependent on one another in "Christian Theology (II.)," he presents them as mutually exclusive in "Christian Doctrine." In "Christian Doctrine", Foster writes:

> Descartes' "clear and distinct idea" of God is the idea of an infinite thinking substance, and although the influence of Christian doctrine is strong enough in many places to modify his language, so that, having proved the existence of God, he proceeds to attribute to him activities other than theoretical, what constitutes him Rationalist is precisely that this attribution is not more than verbal…. His Rationalist doctrine of nature corresponds to 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 the divine activity with thought. Spinoza carried the Rationalism of Descartes to its logical conclusion…. It is obvious that the Rationalist doctrine of nature is incompatible in its turn with the presuppositions of empirical science.[48]

Foster acknowledges that Descartes and Spinoza admit a bit of empiricism to their philosophies in the practical sense. His problem with them is that they do not admit this element philosophically. It seems that what Foster means by "not accepting empiricism philosophically" is the rationalist distinction that deduction and experience are not equal. Considering the fact that deduction is not possible in all situations, at times the lesser-trusted experience must be used as a sort of discounted knowledge. The fact that

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[48] Michael B. Foster, "Christian Doctrine of Creation and the Rise of Modern Natural Science," in *Creation, Nature, and Political Order in the Philosophy of Michael Foster (1903-1959): The Classic Mind Articles and Others, with Modern Critical Essays,* ed. Cameron Wybrow (Lewiston, NY: E. Mellen, 1992), 86.

experience is lesser is precisely the problem: if the modern rationalists had accounted for creation completely, they would have put experience on par with deduction; the two are merely appropriate to different situations. Deduction can be used to determine logical possibilities, and experience can be used to determine which of these logically possible scenarios is actually existent. Critically, Foster does not read this element in either Spinoza or Descartes, which are the sources of his criticism of modern rationalism.

The Rationalists seem to fall victim to the same essential trouble as the Scholastics. Descartes' belief in creation did not permeate his philosophy enough. Spinoza failed to acknowledge the doctrine of creation at all, which explains the absence of contingency in his philosophy. It must be noted that Spinoza did undertake certain scientific undertakings that Foster would likely consider empirical; this seems to be a blind spot in his reading of Spinoza. While Foster can be questioned on both of these interpretations, my focus here is to understand his argument. He seems to be saying that it is the fault of modern rationalism to have accepted a certain element of Christianity (the contingency of creation), evidenced by the empirical projects present in their works, but they did not accept it completely or else they would have included this empiricism in their philosophical systems. This acceptance, as stated previously, would have looked like an acceptance of the equality of *a priori* deduction and *a posteriori* observation. It seems that this point can be reconciled with Foster's final thesis: proper modern philosophy of nature and modern natural science *do* accept empiricism philosophically *because they do accept a voluntaristic theology*, which requires an empiricism. It is again unclear that any modern philosopher personally accepted this voluntarist view while also maintaining certain rationalist ideas. Again,

Foster must reiterate that it is not a *pure* voluntarism, but a nuanced rationalist-voluntarist hybrid theology.

In a footnote within "Christian Doctrine", Foster says:

> The rationalist doctrine that sense is only the defect of the understanding may be seen to be incompatible with the attribution of will to God. According to this doctrine, the sensible is the intelligible imperfectly known, *i.e.,* it derives its sensible character from the imperfection of human perception, and therefore not from an activity of God. Leibniz maintains a rationalist epistemology side by side with a voluntarist theology, *in spite of their mutual incompatibility***.** Nothing short of the authority of Christianity could have prevailed upon him to admit the latter doctrine into his philosophy in the teeth of the opposition of the former. If he had but attached yet more weight to this authority, it would have led him to reform his rationalist presuppositions into consistency with his theology, and thereby into consistency with the procedure of empirical science.[49]

Foster's original logic in "Hegel and Empiricism" and "Christian Doctrine" and this criticism of Leibniz cohere nicely. A rationalist philosophy of nature can only flow out of a rationalist theology; Leibniz holds a rational epistemology and a voluntarist theology, which seems incompatible. It is perhaps telling that Foster does not comment more on Leibniz.

It seems that for Foster, Leibniz represents someone who accounts for empiricism philosophically due to his theological belief of contingency (which stems from his voluntarism with respect to creation). Foster must also posit, though, that Leibniz does not account for contingency philosophically, but only theologically, given his teleological philosophy. I believe that this is the "mutually incompatible" component Foster wants to draw out in Leibniz, but it in fact weakens his own argument. It puts Foster against Leibniz in a way even more clearly than against Descartes and Spinoza: either Leibniz holds a completely logically incompatible system, or *a voluntarist theology does not necessitate a rejection of teleology.* Supposing that we accept the second conclusion, it would also seem

[49] Ibid., 87.

to be true that *theological rationalism does not demand a belief in teleology* either. I do not think that Leibniz has to be correct in order to accept this. His position must only be logically possible. Many other implications can be drawn from these conclusions if we continue to operate within Foster's system. A voluntarist system does not guarantee the philosophical acceptance of contingency (and subsequently, of empiricism). In short, I believe that Foster's characterization of Leibniz fails, and his characterization of logical necessity between theology and philosophy of nature and science of nature fails with it.

The quotation regarding the inconsistency of Leibniz proves even more fatal to Foster when we consider his own characterization of science. This characterization in "Christian Theology (II.)" seems to draw on Leibniz so clearly, and yet he maintains Leibniz's inconsistencies there as well. Foster seems to do precisely what he accuses Leibniz of doing: holding a rationalist epistemology (I believe epistemology for Foster here is akin to a philosophy of nature) side by side with a voluntarist theology. Perhaps Foster considers himself immune to his own critique, as he considers his position as neither purely empirical/voluntaristic nor purely rational. If Foster means that voluntarism and rationalism are incompatible *only insofar as the latter does not proceed logically from the former,* then perhaps this can be the case. Leibniz is incompatible precisely because his *entire* theology is voluntarist, and his *entire* philosophy is rational. Foster, on the other hand, believes that he himself is consistent because his hybrid theology produces the proper hybrid philosophy of nature and hybrid natural science.

This, clearly, cannot be the case. Foster levies this charge because he believes *elements of voluntarism to be logically incompatible with elements of theological rationalism.* Thus the product of theological voluntarism cannot be compatible with the product of

theological rationalism. This is an altogether different claim from the one that Foster made about Descartes and Spinoza: their rationalism does not satisfactorily account for its element of empiricism, and this is because their theologies do not effectively translate to their philosophy. Foster may be able to satisfactorily account for this, but regarding Leibniz, he cannot escape certain damning consequences to his argument. If it is incompatible to hold two contradictory views at the same time, no amount of logic can undo this incompatibility. This difficulty is the primary source of my criticism of Foster's logical argument.

Compare the previous quote regarding Leibniz with this quote from "Christian Theology (II.)":

> It [Christian Theology] was set the task therefore of preserving the rationalist principle that God's reason governs his will (since if this is surrendered, the conclusion might well have seemed unavoidable that neither theology nor science of nature was possible), but of preserving it without sacrificing the divine omnipotence. The former principle demands the limitation of God's will by subordination to his reason, and therefore to whatever ideas are objects of his reason; but 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. The activity by which they are produced cannot itself be an activity of will, since this would entail the liberation of God's will from all limits, and consequently the surrender of the rationalist principle. There must therefore be ascribed to God an involuntary activity of producing the ideas upon which his reason may terminate and by which the subsequent act of creating the world may be determined.[50]

This quote, as stunning as it may be, supplies the proof that Foster is willing to mix voluntarism and theological rationalism. Foster's earlier comments aside, there remains the question of whether this mixture is actually logically inconsistent. I believe that the

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[50] Michael B. Foster, "Christian Theology and Modern Natural Science (II.)," in *Creation, Nature, and Political Order in the Philosophy of Michael Foster (1903-1959): The Classic Mind Articles and Others, with Modern Critical Essays,* ed. Cameron Wybrow (Lewiston, NY: E. Mellen, 1992), 126.

characterization that Foster puts forth of "the task of Christian theology" to be accurate. It seems to me, though, that the question of divine omnipotence and divine freedom remains debatable and perhaps mysterious to the Christian. In a philosophical context, I believe his rendering here does succeed as a possible substrate of a future philosophy and science of nature. I am not as convinced, however, that his position is how it *must be.*

Weeks and Jacob raise similar concerns:

> Rationalism and voluntarism have been turned by Foster from mutually exclusive categories into complementary ones. Recall that the declared aim of "Christian Theology (II.)" is to show that rationalist Christian theology underlies and implies *a priori* modern science. Given the eventual plain indication that the Christian theological substrate of modern science is not, after all, rationalist in the strict sense, our objection is, not that he fails to support his conclusion, but that the conclusion which Foster claims to argue he actually passes off for another. Earlier in the paper Foster writes that God's law for the created world 'is the product of his understanding (reason) and his will is wholly subject to it.' He now says that the shape of the world, the embodiment in other words of ideas in it, to a very considerable extent is arbitrarily decided by God.
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> …
>
> Not only does Foster fail to show that rationalist theology underlies *a priori* science, his *explanans* shifting to a compound voluntarist-rationalist theology, but the *explanadum* itself explicitly undergoes a corresponding expansion from *a priori* modern science *simpliciter* to *a priori*-empirical modern science. Foster chiefly uses '*a priori* science' to refer to demonstration or deduction, which raises the question, 'From what source are the premises of such science obtained?' On more than one occasion Foster suggests the source is also *a priori*, namely intuition or 'pure reason'. For God's laws of nature to be accessible to intuition they must have the property of necessity. Were antecedents and consequents, or subjects and attributes, not linked by inherent natures but cases of constant conjunctions, natural relations could not be objects of reason.[51]

[51] Ian Jacobs, Struan Weeks, "Theological and Philosophical Presuppositions of Ancient and Modern Science: A Critical Analysis of Foster's Account," in *Creation, Nature, and Political Order in the Philosophy of Michael Foster (1903-1959): The Classic Mind Articles and Others, with Modern Critical Essays,* ed. Cameron Wybrow (Lewiston, NY: E. Mellen, 1992), 265-266.

A final criticism of Foster's goal: if Christianity is a logically necessary prerequisite for modern science to develop, why it is that the science of our day so readily rejects the religion that caused it? The critic Rolf Gruner formulates this nicely:

> Modern science has not followed religious lines and has not been pursued in the spirit in which, according to the revisionist [Foster], it should have been pursued…. Even if one wants to speak here of a gigantic misunderstanding of either science or religion or both, one still has to explain how it could arise and be so widely shared. The revisionist, therefore, has to say in one form or another that something went wrong somewhere but that this development was not a necessary one, that is was not either inherent in modern science from the very beginning or one of its logical outcomes.
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> …
>
> If there is a straight path, a natural connection between Christian faith and science and between science and a non-religious attitude and way of life, then this faith carried within itself from the beginning the seeds of its own destruction. And this no true Christian can admit. For him, therefore, there is either no such logical connection between his religion and his science, or the development of science towards religious indifference was not inevitable…. In short, the revisionist has to believe that one can have a civilization that is intensely scientific and intensely religious at the same time… the whole philosophy of naturalism is taken to be based on insufficient knowledge or fallacious reasoning.[52]

This is a conclusion that Foster would come to accept. While he does not account for it in "Hegel and Empiricism" or the two *Mind* articles, he does develop an answer in his later works. Doubtlessly influenced by what Whitehead claims in *Modes of Thought,* Foster claims that science can be built on presuppositions it has nonetheless come to reject. For both Foster and Whitehead, this constitutes an error on the part of science. Foster claims that to get back to these presuppositions, science needs to return to its Christian roots – specifically the metaphysical truths stemming from the Christian religion – that underlie the philosophy of nature of modern science. While Christianity has seen a development in

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[52] Rolf Gruner, "Science, Nature, and Christianity," in *Creation, Nature, and Political Order in the Philosophy of Michael Foster (1903-1959): The Classic Mind Articles and Others, with Modern Critical Essays,* ed. Cameron Wybrow (Lewiston, NY: E. Mellen, 1992), 219-220.

one sense – the growth of technological power as an example of the dominion of man over nature prescribed throughout Genesis – it has seen a decay in another sense: the moral power to regulate this dominion over nature. This moral power is, for Foster, only possible through a humility found through faith.

Historical Analysis of Foster

Foster's interpretation of modern rationalism calls for closer examination. While his interpretation of Plato and Aristotle deserves such an examination as well, my primary goal in this chapter will be an examination of his characterization of Scholasticism and the rationalist philosophy. I will argue that Foster's historical approach is a real weakness for his thesis. His lack of historical work affirms my conclusions from the preceding section: Foster argues persuasively for the role of Christianity in the modern view of nature as a machine. This is due in no small part to a rejection of final cause stemming from the acceptance of the Christian theology, specifically creation. While the view of nature as a machine doubtlessly *impacted* modern natural science, modern science is more than just this view of nature. Considering that all the other elements of modern science arise from different sources, I believe there to be no causal link between belief in the Christian doctrine of creation and modern science.

By examining the work of Stanley Jaki and James Patrick, I will show that Foster is overly simplistic about the scholastic philosophers. Jaki and Patrick both discuss the work of Étienne Gilson, the thinker from whom Foster distinguishes himself in "Christian Doctrine". By examining Gilson's work, I seek to show that some of Foster's historical

missteps arise because of his narrow focus on Descartes as a model for modern science. Foster's ultimately reductive historical work will also contrast with the Collingwood thesis: that a systematic science of history is necessary to construct a history of ideas of nature.

Regarding the 'paganism' of all Christianity before the Reformation, Foster seems to be on shaky grounds. While he admits that the medieval philosophers did believe the world to be created, this admission is half-hearted. Foster himself recognizes the work being done in the scholastic revivalist movement: "The opposition between Christian revelation and Greek philosophy is as old as Christianity itself, and the endeavor to overcome it through the progressive assimilation was the spring of the whole development of medieval philosophy. This is brought out with fine lucidity in E. Gilson's *L'espirit de la Philosophie Medievale."* However, Foster is not entirely convinced: *"*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."[53]

Foster outlines how it is that the scholastic philosophers erred in their thinking. "The medieval philosopher had of course believed the Christian doctrine that nature is created. But the belief had been efficacious only in his theology. In his science of nature he had continued to seek for final causes, to define essences and to deduce properties: in a word, he had continued to employ the methods of Aristotelian science, entirely oblivious of the fact that Aristotle's science was based upon the presupposition that nature is not

[53] Michael B. Foster, "The Opposition Between Hegel and Empiricism," in *Creation, Nature, and Political Order in the Philosophy of Michael Foster (1903-1959): The Classic Mind Articles and Others, with Modern Critical Essays,* ed. Cameron Wybrow (Lewiston, NY: E. Mellen, 1992), 68.

created." [54] Foster over-generalizes the philosophical rationalism of the scholastic philosophers, and this is a mistake on his part. Stanley Jaki provides us with some historical background:

> Since Foster proceeded in this reasoning as one embodied in the history of philosophy, he should have proceeded in the manner of a historian…. Had he been pressed, Foster would have, in all likelihood, granted that Christian opposition to the detractors of matter had been strong long before the time of the Reformers. It would have been difficult to take lightly the resistance of pre-Reformation Christians to Gnostics, to Manicheans, to Cathars, to Bogomils, and many other lesser-known threats to human civilization. But then Foster would have said that pre-Reformation Christians, especially Scholastics, failed to be nearly as perspicacious in their philosophy as they were in their theology. But this is precisely the concession that the Reformers would have refused to grant. To a man they were far more interested in their insights into theology than into philosophy.[55]

The scholastic era embodies a more diverse set of philosophies than Foster credits it with having. Many of these philosophies included an efficacious belief in creation; they rejected a belief in final causes. Jaki's prime example is that of Jean Buridan, a 14th century scientist-priest. Buridan derived the 'impetus theory', which was a forerunner of the inertia principle, on theological grounds. His theology was influenced much more by the likes of Thomas Aquinas, a theological rationalist, than William of Ockham, the primary theological voluntarist. Though the impetus theory is established rationally, it posited that forces could be imputed onto bodies rather than having to be continuously maintained by an external force. Critically, this early idea of a mechanical nature emerged without a voluntarist theology. This should not be possible given Foster's formulation.

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[54] Ibid., 72.

[55] Stanley L. Jaki, "Telltale Remarks and a Tale Untold," in *Creation, Nature, and Political Order in the Philosophy of Michael Foster (1903-1959): The Classic Mind Articles and Others, with Modern Critical Essays,* ed. Cameron Wybrow (Lewiston, NY: E. Mellen, 1992), 275-276.

Not only is Foster's characterization of the scholastic philosophy problematic, he mischaracterizes the modern rationalist philosophy as well. To recount, Foster sets up modern rationalism as a semi-successful endeavor. It successfully modified ancient rationalism to admit a certain empiricism, doing so by admitting freedom in God. Modern rationalism fails, however, to account for this empirical element adequately in a philosophical sense. Foster's complicated relationship with rationalism may be due in large part to his focus on Descartes. While he criticizes Descartes for his purely rationalist theology, Foster must at the same time affirm parts of Descartes' general project (and the science that arises from it). Patrick discusses how Foster's goal predisposes him to accept Descartes as a genuine Christian thinker, whereas Gilson must reject him.

> For Foster, the crucial figure was naturally Descartes, who had freed nature from, or at least begun to do so, the divine by construing nature as mathematically and universally predictable. For Gilson… Descartes represented a decisive failure in philosophy, having posited a world of thought, devoid of quality, which had no necessary relation to the world of being. 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, the Greek element in philosophy being always liable to collapse into monism because the idea of the Demiurge, a manipulator of forms that were divine and matter that was nonexistent, lurked beneath the pre-Cartesian concept. The conflict between Foster and Gilson requires the testing of the assertion: Modern science was (or was not) the result of the transcending of a defective methodology implicit in medieval theology by the mathematician Descartes, which abandoned a metaphysic of real contingent beings in favor of a metaphysic of extension and matter. It would be possible to give another account, and Gilson has done so, according to which this tendency of Cartesian philosophy is the background for the atheism of the late twentieth century.[56] (253-254)

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[56] James Patrick, "The Place of Michael Foster's Protest in the Controversial Historiography of Modern Science," in *Creation, Nature, and Political Order in the Philosophy of Michael Foster (1903-1959): The Classic Mind Articles and Others, with Modern Critical Essays,* ed. Cameron Wybrow (Lewiston, NY: E. Mellen, 1992), 253-254.

Edward Davis in *Evangelicals and Science in Historical Perspectives* treats Foster's focus on Descartes the same way I would:

> Thus Descartes used the voluntarist notion of a free Creator as a *reductio ad absurdum*, in a way that closely paralleled the process of methodic doubt for which he is so well known. The evil genius who haunted Descartes' sleep of reason was exactly like the radically free God who could create arbitrary and continually changing truths. Either one would undermine the possibility of absolute certainty, which Descartes could not allow. Both the evil genius and the nightmare God had to be dismissed by an act of faith in the veracity of a more reasonable God who could not change his mind or deceive his human creation.
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> At the same time, God's freedom to employ his absolute power was not altogether denied. Initially to determine which laws to make true and which mechanisms to place in nature remained the privilege of the divine will, not the human mind; and the results of that determination were shed only partially. The general fabric of the world followed from the first principles of Cartesian physics, which were fully revealed to us by the light of reason and could not be otherwise, so that there could only be one kind of world. But within this world, God could have placed an infinity of particular things, unfettered by the necessity to choose one or another to instantiate. And the general principles by which Descartes sought to explain these contingent things were so vast and so fertile, so simple and so general, that a particular phenomenon could be explained in any number of ways. God could have chosen to employ any one of an infinite number of possible mechanisms to produce a given phenomenon. Which one he had actually chosen could be found only from experimentation. The human mind could not separate reality from possibility, actuality from contingency, without an appeal to experience.[57]

Davis makes clear that when Descartes admits *some* freedom in God, he comes the closest to what Foster sees as the ideal rational theology. This freedom of God corresponds to a certain freedom in the image of God, man, as well. A tension arises, however, considering Descartes' real desire to create a completely *a priori* science of demonstration. This science would only be possible *without such a freedom in nature,* as such a freedom makes determination impossible. This is where Descartes comes up short for Foster, as he

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[57] Edward B. Davis, "Christianity and Early Modern Science: The Foster Thesis Reconsidered," in *Evangelicals and Science in Historical Perspective,* ed. Livingstone, David N., D. G. Hart, and Mark A. Noll. (New York: Oxford UP, 1999), 83-84.

represents the "failure of modern rationalism". It is precisely this freedom that would admit experience (and hence a science of empiricism) on the same philosophical level as deduction. Much has been written on this tension, but Davis summarizes it well once again.

> Descartes therefore saw the impossibility of creating a purely *a priori* physics all the way down to the last detail. In a letter to the Minim friar Marin Mersenne that is strikingly similar to Galileo's letter to Gallenzoni, Descartes told of how he had sought to find "the cause of the position of each fixed star." Though they seemed "very irregularly distributed in various places in the heavens," Descartes believed there was "a natural order among them which is regular and determinate." To discover this would be "the key and foundation of the highest and most perfect science of material things which men can ever attain. For if we possessed it we could discover *a priori* all the different forms and essences of terrestrial bodies, whereas without it we have to content ourselves with guessing them *a posteriori* from their effects. The science I describe is beyond the reach of the human mind; and yet I am so foolish that I cannot help dreaming of it though I know this will only make me waste my time."
>
> But Descartes' dream of an *a priori* science was never really given up. In spite of an unmistakable element of voluntarism in this theology of nature, Descartes' ideal of science remained essentially rationalistic. Though God was free to produce the particulars of nature in a variety of ways, the fundamental laws of nature necessarily conformed absolutely to the innate truths implanted in our souls, or else God would be deceiving us. Grounded on such a theology of creation, Cartesian natural philosophy was largely rationalistic; experience was required to augment pure reason precisely and only where the vestiges of divine will remained.[58]

E.A. Burtt, in *The Metaphysical Foundations of Modern Science,* affirms Davis' analysis of Descartes, emphasizing the goal of the Cartesian view of nature and the impossibility of placing experience on the same level with deduction:

> For Descartes, it is, to be sure, the sensible world about which our philosophizing goes on, but the method of correct procedure in philosophy must not rest upon the trustworthiness of sense experience at all. "In truth we perceive no object such as it is by sense alone (but only by our reason exercised upon sensible objects). In things regarding which there is no revelation, it is by no means consistent with the character of a philosopher… to trust more to the senses, in other words to the inconsiderate judgments of childhood, than to the dictates of mature reason."[59]

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[58] Ibid., 84.

[59] E.A. Burtt, *The Metaphysical Foundations of Modern Science,* (Atlantic Highlands, NJ: Humanities, 1980), 116.

Perhaps, then, Foster's interpretation of Descartes (and modern rationalism in general) is not preferable to Gilson's thesis. The absence of final cause is not what makes creation contingent, as we have seen in scholastic philosophy and thinkers like Leibniz. Considering Gilson's thesis once more, perhaps a return to the scholastic thinking (at least in a teleological sense) is preferable to the Foster thesis. Patrick illuminates the two theses best when he says,

> The issue was not whether philosophical understanding had in fact assimilated Christian dogma; that much was accepted by both Foster and Gilson. For Foster, however, we must look not to a renewed Scholasticism but to a playing out of the ideas implicit in Reformation doctrine, ideas to which science had historically looked as it continued the work of assimilating Christian dogma. The question was squarely one of the influence of presuppositions belonging to philosophy and theology on science. Like Whitehead, Foster argued "the method of natural science depends upon presuppositions which are held about nature, and the presuppositions about nature in turn upon the doctrine of God." But for Foster it had been the destiny of philosophy, especially natural philosophy, finally to break out of the defective synthesis with theology. Descartes and his successors had simply continued the struggle against Aristotle, with Aristotle taken as representative of Greek philosophy, which had been to some degree characteristic of Christian thought from the beginning. Foster's whole article is directed against Gilson's interpretation; the future of the philosophy of science lay along the path described by Descartes, not in a reconsideration of the relation between philosophy and theology, God and nature, proposed by the great medievals…. Thus Foster's purpose was to answer Gilson, reinterpreting the relation between Christian theology and Greek philosophy in the Middle Ages and defending the early modern philosophical tradition as a transcending of the limitations of medieval thought rather than, as Gilson would have it, an intellectual dead end.[60]

So Foster's claim is essentially this: Christianity caused the modification of rationalism to include a bit of empiricism because of the contingency entailed in creation. Modern rationalism helps to establish modern science, and so Christianity helps to

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[60] James Patrick, "The Place of Michael Foster's Protest in the Controversial Historiography of Modern Science," in *Creation, Nature, and Political Order in the Philosophy of Michael Foster (1903-1959): The Classic Mind Articles and Others, with Modern Critical Essays,* ed. Cameron Wybrow (Lewiston, NY: E. Mellen, 1992), 250-251.

establish modern science. Modern rationalism does not go far enough, however, just like the medieval philosophy which came before it, in its belief in creation. So modern rationalism gets some parts right and some parts wrong, just like modern empiricism. So modern rationalism *does* do justice to the Greek element of rationalism, but not to the Christian element of creation. Modern empiricism does do justice to the Christian element of creation, but not to the Greek element of rationalism. It is not inconsistent for Foster to claim such a thing, but a question remains: how useful is it to carry out such a historical analysis in the way Foster does?

The problem with using historical theologies and philosophies of natures as premises lies in their expansiveness. Neither "modern rationalism" nor "modern science" can be reduced to a single definition. While it might be useful to think of science as a progression, to try to deduce logical necessity from historical movements requires definitions that perhaps *must* exclude elements essential to them. Edward Davis says this on the matter:

> At the very least, we have seen that theological presuppositions were closely allied with conceptions of scientific knowledge, and in just the way that Foster suggested. Galileo's lack of emphasis on divine freedom was mirrored in his *a priori* attitude toward a scientific knowledge. Descartes' belief that God cannot deceive us led him to claim that the first principles of physics can be discovered by pure reason. For Boyle, however, an emphasis on divine will went hand in hand with a commitment to the primacy of phenomena.
>
> But were these parallel emphases any more than just parallel emphases, as interesting as it may be to discover them? If one believes that thoughtful people tend to strive for consistency among various parts of their minds, then these parallel emphases are in and of themselves evidence that a genuine conversation between science and theology had taken place, leading toward a unified vision of reality.
>
> There remains another group: those who are convinced, as Foster was, that Christian theology actually caused modern science, insofar as it led early modern thinkers to break with Greek notions of science in direct response to biblical teaching about the contingency of created nature. I reject such a claim – not because

> I doubt that theology influenced science in this way, but because I do not accept the narrow definition of modern science that is implicit in the claim. During what is often called the "scientific revolution," several fundamental changes took place, each a result of a variety of factors… but voluntarist theology contributed little or nothing to this central feature of the scientific revolution.
>
> What voluntarism did affect was an important debate within the scientific revolution that was already under way – the debate about what sort of knowledge the new science ought to take for a foundation: necessary truths demonstrable from pure reason, or contingent truths emergent from phenomena. If many natural philosophers of the early modern period were convinced that the Aristotelian worldview had to be replaced, they were not all equally eager to abandon the Aristotelian notion that science consists of (or at least contains) necessary truths. Many of those who took this step were, like Boyle and Newton, committed to a high view of divine freedom that was undoubtedly related to their understanding of the Bible – and this is an important historical claim that suggests a strong consonance between modern science and a particular form of Christian theology.
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> But we must not be too quick to conclude that theological voluntarism was either necessary or sufficient to bring about an empirical science of nature. The very fact that Descartes used radical voluntarism to uphold his program of pure reason gives the lie to such a simple claim about voluntarist theology. Nor is there any obvious connection between theology of creation and the religious split caused by the Reformation. For every Protestant voluntarist like Boyle, there was a Catholic voluntarist like Pierre Gassendi; for every Catholic rationalist like Galileo, there was a Protestant one like Gottfried Leibniz.
>
> The full historical picture is complex: science, philosophy, and theology are inextricably intertwined. To single out one factor as the sole cause is to misrepresent the actual situation. 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.[61]

It has been my goal to establish that there are certain problems with Foster's thesis, both logically and historically. Logically, Foster's error consists primarily in a conflation of rational and voluntarist theologies, which he elsewhere claimed were logically incompatible. I believe that, by examining the scholastic philosophers and Leibniz, I have

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[61] Edward B. Davis, "Christianity and Early Modern Science: The Foster Thesis Reconsidered," in *Evangelicals and Science in Historical Perspective,* ed. Livingstone, David N., D. G. Hart, and Mark A. Noll. (New York: Oxford UP, 1999), 89.

successfully proven that there is not a necessary link between certain theologies and certain philosophies, although there are certainly consequences in philosophy for the consistent theological thinker. Foster's difficult relationship with modern rationalism may be due to his focus on Descartes, but he ultimately tries to reconcile his original thesis (to show that the empirical element of modern science is due to the rejection of final causes because of voluntarism) with what he sees science to be – a hybrid of rationalism and empiricism.

In sum, my evaluation is that Foster argues convincingly for the importance of the Christian doctrine of creation for the empirical dimension of at least early modern science. So far as this doctrine helped to create the modern view of nature as a machine, he has successfully shown that Christianity influenced this science. This view of nature necessitates a *certain* empirical science, but modern science is more than just the product of a view of nature. It seems that the presuppositions of modern science, which include the rejection of final cause, could have come from certain theological doctrines, but do not *necessarily* come from them. For Foster, his Christian theology must entail (especially given that "theology precedes philosophy of nature, precedes science of nature") modified rational elements and compromised voluntarist elements, creating a sort of hybrid theology. While this could explain the hybrid rational-empirical science, it does not cohere with Foster's argument in his first three articles. Foster's internal consistency certainly leaves a lot to be desired, as does his very broad characterization that all modern science, including contemporary science, is essentially the same.

Foster and Collingwood

Foster's later works reveal a more developed theological thinker. These works include the articles, "Some Remarks on the Relations of Science and Religion", "Man's Idea of Nature", and "Greek and Christian Ideas of Nature." In "Man's Idea of Nature", Foster draws on Descartes once again. Foster acknowledges that the fact that modern science leaves the mind and God outside of nature stems from Christianity.

> The Greeks thought that nature included all that is. It included beings, material and immaterial, inorganic and living, earthly and heavenly, human and divine. But the classical modern view, at least in the form in which it was expounded by the great philosophers and assumed by the great scientists of the 17th century, held that nature was not all that there is. Mind and God were not parts of nature but were something else than nature.
>
> I think we are bound to say that the 'classical modern' view of nature, although it has been found not to be wholly true, at least has more truth than the Greek view. The Greeks, with all the brilliant successes that they had in mathematics and philosophy, failed in natural science. But the classical modern natural science, though its assumptions may be liable to criticism and though it is in some respects out of date now, succeeded.[62]

The acknowledgment that the mind is outside of nature is, for Foster, what constitutes the overwhelming success of modern science. It allowed for man to subdue nature in a way different from before, when man was under the control of nature.

For Foster, modern science, in providing the Christian with a way to subdue and rule the earth, has forced man also to humble himself even though he no longer "needs" God to sustain his life. He can now sustain his life on his own to a large extent precisely

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[62] Michael B. Foster, "Man's Idea of Nature," in *Creation, Nature, and Political Order in the Philosophy of Michael Foster (1903-1959): The Classic Mind Articles and Others, with Modern Critical Essays,* ed. Cameron Wybrow (Lewiston, NY: E. Mellen, 1992), 164-165.

because he has more control over nature than ever. In "Some Remarks on the Relation of Science and Religion", he says:

> We should all agree upon the cause which has brought man into his dangerous relation with nature: it is the growth of modern natural science (i.e., of that natural science which began about the time of Descartes and has been growing ever since). We have gained enormously in power to control nature, but not in the knowledge that would enable us to use that power rightly. The increase is man's power over nature must therefore be due to something specific to modern natural science. I suppose the simple answer is that modern science is true, whereas ancient science, though ingenious, happens to have been erroneous.[63]

Foster's more important answer is: "The Moderns approach nature as an object to be mastered, the Ancients as an object to be worshipped."[64] Because of this relation,

> It is a consequence of the difference noted between ancient and modern science, that while ancient science was divorced from technology, modern science grew up in close alliance with it. The new element, then, in modern natural science is that it is designed to be an instrument for the domination of nature. The success of this design has put us in this present danger. It has caused it in two ways. The first is obvious: it has given man the power over nature which he can now abuse. The second is perhaps less obvious, but I think it is not less important. Modern natural science, in the same measure in which it has submitted nature to man's control, has emancipated man from guidance by nature.[65]

The way forward, Foster posits, is to utilize this power in a way that pays homage to the religion that brought us to this science: by yoking it to the will of the Christian God. In order to continue to subdue and rule, the Christian must not rule in his own name but must do so in the name of him who constituted nature in the first place.

> What is worshipped is not nature, but the Power above nature, by which nature is controlled. Piety requires submission to the course of nature, not as the working of a natural power, but as the manifestation of God's will. The course of nature is regarded as the finger of God.

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[63] Michael B. Foster, "Some Remarks on the Relations of Science and Religion," in *Creation, Nature, and Political Order in the Philosophy of Michael Foster (1903-1959): The Classic Mind Articles and Others, with Modern Critical Essays,* ed. Cameron Wybrow (Lewiston, NY: E. Mellen, 1992), 149-150.
[64] Ibid., 150.
[65] Ibid., 151.

> It is this identification that the growth of modern natural science has made impossible. So far as the course of nature has come under man's control, he cannot regard it as the revelation of God's will, to which he must submit. If man can avert a natural disaster, his submission is an act of choice; and although his choice may still be submitted to God's will, it must be to God's will revealed elsewhere than in nature.[66]

The response to this is not archaism – longing to return to a time when God *did* seem to reveal himself through nature – but to move forward with a spirit of humility toward God. Just as man's relation to God has evolved, so must our view of nature and science of nature evolve.

Foster's later works are doubtlessly influenced by the writings of his colleague, R.G. Collingwood. Collingwood's work constitutes a better alternative to Foster than Gilson, as it presents an argument more true to Foster's thesis. Rather than the scholastic approach that Gilson takes, Collingwood takes an evolutionary approach, citing an ultimately teleological view of nature. This differs in key ways from Foster, but I believe that Collingwood's *The Idea of Nature* takes the successful elements of Foster's thesis and casts them in a better light. It is uncertain what influence Foster had on Collingwood (if any), but *The Idea of Nature* certainly coheres with Foster's thesis on creation and the origins of modern science in an undeniable way. I would argue that Foster himself recognized this, as is evidenced by the fact that Foster calls *The Idea of Nature* "brilliant" in his own later work, titled "Man's Idea of Nature".

Where Foster distinguishes between ancient and modern science (with a scholastic middle ground between the two), Collingwood has a further distinction: ancient science, renaissance science (which is the same as Foster's 'modern science'), and evolutionary

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[66] Ibid., 153.

science. This third idea of nature shrinks the size of 'modern science', allowing us to see a clearer relation between Christianity and modern science. It also provides a more sure way to discuss the relation Christianity has to evolutionary science, to see if the same effect on modern science is still relevant.

Collingwood takes a similar approach to Foster when he considers the Greek view of nature. The Greek natural science was based on the principle that the world of nature is saturated or permeated by mind. This mind constituted the orderliness of nature that made science possible. The world was full of bodies in motion, and this motion stemmed from the soul – the potential becoming the actual. The world of nature is not only alive but also intelligent, and so the Greeks viewed nature as an organism. "The Greek view of nature as an intelligent organism was based on an analogy: an analogy between the world of nature and the individual human being, who begins by finding certain characteristics in himself as an individual, and goes on to think of nature as possessed of similar characteristics. The world of nature as a whole is then explained as a macrocosm analogous to this microcosm."[67]

The Renaissance view (what Foster would call the modern view) sees the world as a machine. Collingwood, perhaps drawing on Whitehead, takes the influence of Christianity on this view of nature for granted. It is precisely Foster's thesis to prove this influence, and so far as it is considered as an influence, I believe Foster to be successful. In the mechanistic view, the nature of the world is thus devoid both of life and of intelligence. Nature cannot constitute its own movements, and is incapable of moving itself at all. The nature within the world was not from within as the Greeks thought, but was from without: it stemmed from

[67] R.G. Collingwood, *The Idea of Nature,* (Oxford, England, Clarendon, 1945), 8.

the intelligence and force of the Creator. For the Greeks, the mind was the immanent material of science. For the late Renaissance and early modern thinkers, matter was the immanent material, while mind was the transcendent 'material'. This seems to be in complete accord with Foster.

"The Renaissance view of nature as a machine is equally analogical in its origin, but it presupposes a quite different order of ideas. First, it is based on the Christian idea of a creative and omnipotent God. Secondly, it is based on the human experience of designing and constructing machines. It was a very easy step to the proposition: as a clockmaker or millwright is to a clock or mill, so is God to nature."[68]

Collingwood continues:

> Modern cosmology, like its predecessors, is based on an analogy. The modern view of nature, which first begins to find expression towards the end of the eighteenth century and ever since then has been gathering weight and establishing itself more securely down to the present day, is the analogy between the processes of the natural world studied by natural scientists and the vicissitudes of human affairs as studied by historians.
>
> Just as it took the rise of the industrial age to produce the analogy of a machine, so it took the development of theories of science throughout time to produce an idea like this – largely the idea of evolution both as a theory and as a principle governing other theories.
>
> The question at issue was a far-reaching one: under what conditions was knowledge possible? For the Greeks it had been an axiom that nothing is knowable unless it is unchanging. The world of nature, according to the Greeks, is a world of continual and all-pervading change. It might seem to follow that a science of nature is impossible. But Renaissance cosmology had avoided this conclusion by making a distinction. The world of nature as it appears to our senses was admitted to be un-knowable; but it was argued that behind this world of secondary qualities lay other things, the true objects of natural science, knowable because they are unchanging…. The question was: How are we to find a changeless and therefore knowable something in, or behind, or somehow belonging to, the flux of nature-as-we-perceive-it? In modern evolutionary natural science, this question does not arise.[69]

[68] Ibid., 9.
[69] Ibid., 12.

Collingwood then considers the new evolutionary view of nature and the science that arises from it.

> The question [How are we to find a changeless and therefore knowable something in, or behind, or somehow belonging to, the flux of nature-as-we-perceive-it?] became meaningless because its presuppositions had undergone a revolutionary change by the beginning of the nineteenth century. By then historians had trained themselves to think, and had found themselves able to think scientifically, about a world of constantly changing human affairs in which there was no unchanging substrate behind the changes, and no unchanging laws according to which the changes took place. History had by now established itself as a science, that is, a progressive inquiry in which conclusions are solidly and demonstrably established. It had thus been proved by experiment that scientific knowledge was possible concerning objects that were constantly changing. Once more, the self-consciousness of man, in this case the corporate self-consciousness, provided a clue to his thoughts about nature. The historical conception of scientifically knowable change or process was applied, under the name of evolution, to the natural world.[70]

Collingwood believes this view of nature returns to teleology, considering the progress that history has shown us. Contemporary evolutionary science may not usually take this step, but Collingwood (also doubtlessly influenced by Whitehead) considers his own thought to stem from the original Darwinian idea of evolution, positing a view of nature that can account for itself as evolving from the history of ideas. He ends *The Idea of Nature* by outlining his ultimate goal: to consider thought as scientifically as possible, while simultaneously accepting that philosophy must depend on history without being reduced to it. This endeavor would become *The Idea of History,* his most famous work.

> 'This is as far as science has reached.' All that has been said is a mere interim report on the history of the idea of nature down to the present time. If I knew what further progress would be made in the future, I should already have made that progress. Far from knowing what kind of progress it will be, I do not know that it will be made at all.
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> The question is: 'Where do we go from here? What constructive suggestions arise form the criticisms I have raised?' I will try to answer it.

[70] Ibid., 13.

> Throughout the long tradition of European thought it has been said… that nature, though it is a thing that really exists, is not a thing that exists in itself or in its own right, but a thing which depends for its existence upon something else. I take this to imply that natural science is a going concern, able to raise its own problems and to solve them by its own methods, and to criticize its own solutions it has offered by applying its own criteria: in other words, that natural science is not a tissue of fancies or fabrications, mythology or tautology, but is a search for truth, and a search that does not go unrewarded: but that natural science is not, as the positivists imagined, the only department or form of human thought about which this can be said, and is not even a self-contained and self-sufficient form of thought, but depends for its very existence upon some other form of thought which is different from it and cannot be reduced to it.
>
> I think that the time has come when we should ask what this other form of thought is, and try to understand it, its methods, its aims, and its object, no less adequately than men like Whitehead have tried to understand the methods and aims of natural science, and the natural world which is the object of natural science….
>
> What is this other form of thought that nature must depend on? I answer, 'History'.
>
> Natural science consists of facts and theories. A scientific fact is an event in the world of nature. A scientific theory is a hypothesis about that event, which further events verify or disprove. An event in the world of nature becomes important for the natural scientist only on condition that it is observed. The scientist who wishes to know that an event has taken place in the world of nature can know this only by consulting the historical record left by the observer and interpreting it, in such a way as to satisfy himself that it did happen. This consultation and interpretation of records is the characteristic feature of historical work.
>
> …
>
> I conclude that natural science as a form of thought exists and always has existed in a context of history, and depends on historical thought for its existence. From this I venture to infer that no one can understand natural science unless he understands history: and that no one can answer the question what nature is unless he knows what history is. That is why I answer the question, 'Where do we go from here?" by saying, 'We go to the idea of history.'[71]

I do not think that Foster is interested in evolutionary thought, nor do I think that evolutionary thought encapsulates all of contemporary science (both Collingwood and Foster admit that the most contemporary science was at that point too early to be

[71] Ibid., 177.

analyzed). While Collingwood differs from Foster in significant ways, particularly in regard to teleology, Collingwood more successfully completes the historical inquiry that Foster took up. Many of the merits of Foster's thesis rest in this historical claim, and I believe that Collingwood's thesis, though markedly different, is a successful adaptation of Foster's conclusion situated within a larger historical project. This project helps to show a more honest relation between science and philosophy than Foster's project.

A further inquiry into the contemporary view of nature would be most helpful, and I believe that such an inquiry would be the timeliest research for my future work. In the world of big data, I have heard many professors argue that a new science is at hand. If this is true, then such a science that turns on such empty data could be seen as a return to the modern view of nature: an empty machine turning in a predetermined way. While a new view of nature might be at hand, a kernel of this possible development is alluded to in Foster's later works.

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