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The Rise of Science and the Fall of Theology

Introduction

For many Americans in the 21st century “religion” and “science” are the names given to two very different and complex human practices,¹ both of which purport to provide answers to the most basic questions of human existence: “what is the meaning of life?”; “why is there something rather than nothing?”; “from where did all of this come?; “what is consciousness?”; “how can I be certain of anything?”. For many the answers that science and religion offer are in direct conflict with one another, as is the methodology by which each arrives at their determination. Science is the systematic pursuit of certain knowledge through a very particular method by which rational beings speculate, investigate, and measure the natural world, and either demonstrate or falsify conclusions. Religion is a cultural complex that systematizes and celebrates truths which are extra-rational. That is to say, the religious person holds certain truths on faith which can never be uncovered by reason alone but come to light only by some additional external revelation. Where religious revelation contradicts the findings of science, faith must prevail. For those who adhere to this view of the necessary conflict of religion and science, reconciliation is impossible, and on any of the “big questions” every individual must line up behind either reason or faith, science or religion — and on the question of human origins — evolution or creationism. I hope to show over the course of this paper that this view of inevitable opposition is historically problematic. Indeed, the phenomenon of creationism arises within a very particular historical context, and is a result of a very particular theological deviation from the classical theism which predated it. Finally, the persistence of creationism and the peculiar theology that made it possible

¹ “By a practice I am going to mean any coherent and complex form of socially established cooperative human activity through which goods internal to that form of activity are realized in the course of trying to achieve those standards of excellence which are appropriate to, and partially definitive of, that form of activity, with the result that human powers to achieve excellence, and human conceptions of the ends and goods involved, are systematically extended.” Alasdair MacIntyre, *After Virtue*, 2nd ed. Notre Dame University Press, 1997, p. 187.

almost disappear by the beginning of the 20th century everywhere except in the United States (where recent polls have shown that almost 40%² of the population has doubt about the veracity of evolutionary theory), and in much smaller numbers in England and Australia.

In order to understand how this view of a necessary conflict between religion and science came to pass, it will be important for us to more fully investigate the history of changes in theology that occur from the transition from the pre-modern to modern era.

Aristotle

The principle way in which pre-modern philosophers understood nature was via Aristotle's (c. 384 - 322) four categories of causation³: material, formal, efficient, and final.

1. The material cause is the matter from which a thing is formed (the wood out of which the chair is made)
2. The formal cause is that which makes a thing what it is and the qualities that adhere in its specific peculiarity (the shape, solidity, levelness, representational form, etc.)
3. The efficient cause is that which instantiates the formal into the material (the carpenter/chair-maker and her tools)
4. The final cause is the ultimate goal, purpose, or effect of a thing, or the consequence that it (un)consciously serves, which draws an efficient cause to itself (the need for a chair upon which to sit).

For Aristotle, the systemic observation of the natural world began with the analysis of the four causes, yet the very existence of these causes in the physical world necessitated a metaphysical fact. The necessary metaphysical claim underlying the very existence of the four causes was, according to Aristotle, a divine, eternal, unchanging, non-material "substance" which he named the Prime Mover. The Prime Mover itself was never moved, but was the cause which actualized every other. It is important to note that for Aristotle the Prime Mover was not a catalyst (that is to say the Prime Mover is not the first chair-maker, i.e., the first efficient cause in a series of mechanistic efficient causes), but was what later came to be described as a fifth (and singular) type of cause, the ontological cause. (Ontological means having to do with the being, becoming, and the nature of existence). To put it another way the Prime Mover did not answer

²Newport, Frank (November 19, 2004). "In U.S., 42% Believe Creationist View of Human Origins". *Gallup.com*. Omaha, NE: Gallup, Inc. Retrieved 2014-05-10.

³Aristotle, "Book 5, section 1013a", *Metaphysics*, Translated by Hugh Tredennick Aristotle in 23 Volumes, Vols. 17, 18, Cambridge, MA, Harvard University Press; London, William Heinemann Ltd. 1933, 1989; (hosted at perseus.tufts.edu.) Aristotle also discusses the four causes in his *Physics*, Book B, chapter 3.

the question of “how the physical universe of causes came to exist” but the question posed by the fact “that” there is something rather than nothing.⁴

The Medieval Aristotelian-NeoPlatonic Consensus

The Islamic philosopher Ibn Sina (c. 980 - 1037 Avicenna) elaborated on the ontological cause in the writings of Aristotle,⁵ noting that it named the difference between contingent being and necessary being. Contingent being is that which can have existence only due to something other than itself. The chair does not exist itself, but only in relation to its causes. For Avicenna, any being that is contingent requires actualization in order for it to come into being. My own personal existence is due to an almost infinite web of efficient causes outside of myself that have worked together to bring myself into existence (including my parents, grandparents, evolution of homo sapiens, formation of the earth, universe, etc.). For Avicenna the universe itself is this fantastically complex web of contingent beings working together to bring new contingent beings into existence. Every thing in the universe is itself contingent upon some other thing within the universe. The universe is itself the “set” of contingent being. Yet for Avicenna, as for Aristotle, all of this contingency necessitates a very particular metaphysical fact, the ontological cause. The contingent universe could not exist without Necessary Being, argues Avicenna, because a closed system, in which every part is contingent on some other part for its existence, would never itself come into existence. A closed set in which every object in that set is contingent on some other object in that set will never exist because there is no-thing to actualize it. Thus, for Avicenna the ontological cause is necessary, singular, and without characteristics. If Necessary Being had characteristics it would be dependent on the those characteristics, and thus contingent. If there were multiple Necessary Beings each individual would be dependent for its identity on its relation to the others, and thus contingent. Necessary Being, according to Avicenna could not be the first efficient cause in a series of causes, but must be outside of the set, itself providing Being to beings. This ontological cause which provides Being to beings *is* Allah, the necessary being who continuously actualizes the contingent universe.

The Necessary Being named God did not construct the universe (via the rearrangement of contingent beings) but created out of no-thing. This definition of God as “that infinite source of being that donates being to every contingent thing, and to the universe as a whole”⁶ was the dominant theological position systematized not only in Islam, but in Christianity with the writings of Thomas Aquinas, and in Judaism with the writings of Moses Maimonides. Furthermore, there are parallels to this view of Being held in Vedantic and Bhaktic Hinduism,

⁴ Hart, *The Experience of God*

⁵ Avicenna, *Metaphysics of the Healing/Kitab al-shifa', Metaphysics II*, (eds.) G. C. Anawati, Ibrahim Madkour, Sa'id Zayed (Cairo, 1975), p. 36

⁶ Hart, *The Experience of God*, p 55

Sikhism, in certain instantiations of Mahayana Buddhism (Buddha Nature / Buddha Consciousness / The Unconditioned), and in Taoism.⁷ There are of course rich variations on Avicenna's account even within Islam, and differences between each religious account of the God who is Being should be taken seriously - unfortunately now is not the time to do so. For the present, we will need to focus our attentions on the evolution of this account in the West, and with particular attention given to Christianity, if we are going to understand why some believe an opposition to have developed between religious and scientific world views.

In the theology of the medieval West there persisted an Aristotelian-neoPlatonic consensus, in which God was defined as the ground of Being in whom the entire universe lived, breathed, and had its being. Jewish, Christian, and Islamic medieval philosophy emphasized the inability for beings (us) to speak/think about God. The philosophers claimed that any positive speech about God is necessarily false. For the medievals, God is qualitatively different from beings; God is the the Other, Being itself. God is not *a* being with super powers and a magic wand. To say that God is good, or wise, or powerful is to lie. Even to say that God exists is nonsensical. Rather: God is the ontological cause, donating existence to contingent universe and in so doing holding the closed system of material contingency in Being. It did not make sense to ask whether or not God exists for the medieval precisely because "existence" was one possible property of contingent beings that may or may not be actualized materially. (So the chair as a contingent being may or may not have the quality of existence depending on whether or not carpenter/chair-maker actualizes it). God did not have the attribute of existence, God was Existence-itself.

Speaking the Unspeakable

This led to a pair of tricky theological conundrums: 1) how to speak about the unspeakable God who is Other, when such speech is, according to reason, qualitatively impossible? 2) what ought a philosopher-theologian to do with scriptural sources that appear to make positive claims about the nature of God?

For the medievals who held the view that God was Being itself it was inappropriate to speak of God in the same way as one would speak of things in the world. Things in the universe have attributes, and in fact are contingent upon having those attributes including the attribute of existence. God as the qualitative other and absolutely simple does not have attributes. Rather than sitting in silence, theologians began to speak of God *via negativa* (by negation), by describing what God is not. (For example: God is not lacking in justice, or God is not lacking in power). Christian theologian Thomas Aquinas thought this view to be overly impoverished, and modified this negative approach, claiming that while speech about God is necessarily equivocal (qualitatively non-identical), it could also be analogical. Take as an example two sets of utterances:

- (1) "Socrates is wise"

⁷ Hart

and

(2) “God is wise”

Aquinas and the negative theologians would both agree that the uses of the word “wise” in these utterances is equivocal. The word wise can not mean the same thing for God as it does for Socrates because God is qualitatively different from Socrates. That is not to say that Socrates and God are quantitatively or numerically different, but that Socrates is a contingent being and God is qualitatively not. Yet where Aquinas diverges from the strictly negative approach to theology, is in noting that while God is Being itself (who donates existence to contingent beings) and Socrates is a recipient of God’s *donum*, an imperfect analogy can be made between beings and Being. For Aquinas we can learn something about what it means to say that God is wise by understanding what it means to say that Socrates is wise. For Aquinas, contingent beings receive existence as donation from the God who is Being itself. Theological language will always fail when directed at God, yet becomes possible when directed at the relationship between Being and beings (God and the contingent universe). For example, we might talk about bread as being healthy or unhealthy, but the word “health” in no way applies to the bread in itself but only to our relationship to it. The possibility of discovering such analogies was predicated on the systematic investigation of the contingent universe. For Aquinas, investigating the natural world is simultaneously an exploration of the analogies which tell us about what the God, who holds the natural world in being is like. In the same way as the painting gives a glimpse into the “style” of the painter, the world gives a glimpse into the style of God⁸. For Aquinas this opened the ordinary world and ordinary language up to the impossible.

The second conundrum (as to the positive claims about God made in Scripture) was not viewed as much of a problem by the Medievals. The majority of Jewish and Christian thinkers read the Biblical texts as allegorical or figurative. In the late 300’s CE St. Augustine of Hippo spends almost the entirety of Book XII in his autobiography (*Confessions*) examining the mythological language found in the Genesis accounts of Creation, arguing *against* any literal reading of the text, identifying the creation myth as an allegory. According to Augustine, the account of creation in Genesis reveals spiritual truths rather than literal history (ex. Cain and Abel and the *pax Romana*). Similarly, Maimonides spends almost half of his *Guide for the Perplexed* (c. 1190) pointing out that all language used about God is allegorical (ex. God is my rock, the hands of God, as a goose in the wilderness, God spoke to Moses, etc). Figurative readings of scripture identified key moments in the narrative of Biblical Texts as foreshadowing of God’s redemptive

⁸ For Aquinas the style of God is named by the transcendentals: True, Beautiful, Good, Justice, Being. Yet the transcendentals are convertible insofar as saying “God is Good” is identical with “God is Justice” and with “God is Being.” Moreover, for Aquinas, the God whose Being is convertible with his Beauty, shines through the natural world and the relationships between contingent beings, which God holds in existence. In this way it was possible to speak not about God, but about the relationship between God and contingent beings (ex. healthy bread)

work which was continuing in the present day (Exodus during diaspora, Jesus Christ as the new Adam, etc.).

Scholars did not use the same exegetical method to read every Biblical text. The Bible was correctly viewed, not as a single tome, but as a collection of disparate texts collected and written over centuries. Moreover such texts were written in a myriad of different genres, including: myth, epic history, satire, piety law, wisdom literature, apocalyptic, prophetic, gospel, epistle, erotica. For the pre-modern scholar, different skills and methods were required for reading different genres. As anyone familiar with Barnes and Noble system of book classification knows, one does not expect to read poetry the same way that one reads a self-help book, and one does not read “young adult paranormal romance” (fiction) the same way that one reads a physics text book. For these textual scholars it would have been unthinkable to believe that every text should be read as historically literal, or as a set of normative moral prescriptions. The premodern believed that Biblical texts were there to be struggled with and argued about. It is only in the modern era that reading the text of scripture came to be thought of as a “pure gazing at a pure object,”⁹ in which any properly reasonable and literate person (with a Bible) had at their disposal an easily accessible literal repository of human history - or depending on the flavor of one’s fundamentalism, a very useful moral guidebook.

The Shift to Univocity/Modernity

The shift toward modernity began not with the rise of scientific practice and method, but with a radical shift in Christian theology. In the generation following Aquinas, a theologian and philosopher by the name of John Duns Scotus rejected the Aristotelian-neoPlatonic consensus, arguing:

- 1) God is knowable in the same way that any other object of knowledge is knowable, and
- 2) that human knowledge is representational.

In the first case Scotus claimed that when I say that “Socrates is wise” and when I say that “God is wise”, the middle term “wisdom” is identical. For Scotus “wisdom” *is* “wisdom” for both God and Socrates, the difference between the wisdom of God and the wisdom of Socrates is only a matter of degree and proportion. So for Scotus, the wisdom, beauty or existence of God might be infinitely greater than the wisdom, beauty, or existence of Socrates, yet the predicates means the same thing when applied to both God and Socrates. This account of the relationship between God and the natural world identified the difference between God and the world as quantitative rather than qualitative. For Scotus, God is no longer considered to be the ground of Being, donating existence to beings - rather, God is *a* being with specific comprehensible attributes

⁹ John Caputo, Philosophy and Theology

(infinitely powerful, infinitely knowing, infinitely good).¹⁰ Knowing about God and believing about God were synonymous with knowing about particular predicates and believing about specific propositions. After Scotus, any self-respecting theologian, presuming that God was a being with comprehensible attributes such as strength, could ask (in all seriousness) as to whether God, whose strength was infinite, could make a rock so big that he could not pick it up.

Scotus' argument as to the univocity of being percolated through the Roman Catholic church and the medieval universities leading to a number of theological changes, the most important of which were:

- (1) that a shift occurred in philosophical method from a beginning in ontology (what kind of things there are), toward epistemology (how we know what kind of things there are); and
- (2) God came to be seen not as the ontological cause of the universe, but as the first in a series of mechanical efficient causes.

It was the move toward epistemology that in the 1600's allowed Rene Descartes, the father of modernity, to assert the primacy of the *cogito*, the thinking and reasoning self, which in its quest for certainty must test every proposition. The principle used to test every proposition was supplied by Descartes' contemporary Gottfried Leibniz, who identified every thing in existence as subject to having a reason for being (the principle of sufficient reason). God, as an object about which the *cogito* could know, and propositions about God and God's predicates (such as existence) were subject to the critical test of human reason.

The Birth and Method of Science

Contrary to popular belief, during the Medieval period the investigation of nature did occur (it was called natural philosophy) and was viewed both as important theologically and as a good in its own right. During this period the dominant model of investigation was Aristotelian, and with the proliferation of Aristotelian thought first in Islam and then Christianity natural philosophy came to be taught in the curricula of the fledgling universities springing up across Europe. In a process that began in the 15th century and came to fulfillment in 17th, the Aristotelian model of natural philosophy as systematic observation of the physical world was replaced with experimental science. The difference being

[e]xperiments do not involve simply the observation of nature; they involve the isolation, control and manipulation of natural process in order to measure outcomes. Performing experiments allowed natural philosophers (the term 'scientist' came later) such as Galileo to predict and therefore manipulate natural processes much more carefully.¹¹

¹⁰As for Scotus' second argument, that all knowledge is representational, Scotus rejected the idea that the objects of creation were known only in relation to God, positing that all knowledge of objects were only knowledge of their representation in the mind.

¹¹ Simon Oliver, "Introducing Radical Orthodoxy" in Radical Orthodoxy Reader

Yet how did such a change occur? The key was in the development of a method by which natural occurrences could be more predictively modeled. With their grounding in the understanding of natural philosophy of Aristotle, proto-scientists realized that the attempt to describe all four causes (material, efficient, formal, and final) was problematic because it was difficult to find appropriate empirical evidence for formal and final causes. Beginning with the work of Francis Bacon in the early 1600's formal and final causes were excluded from analysis and a method of observation shifted the focus to material causes (matter), and efficient causes (the laws and forces which operate on matter). Indeed, the word "method" means pathway, and pathways require limits. This new method purposefully excluded from view subjective, mental, and metaphysical causes, and through the construction of mechanistic models of the natural world created engines for prediction that have been wonderfully useful.

Literalism

The simultaneous quest for certain knowledge (a la Descartes) and descriptive predicates about the being called God led 17th century theologians to speak about the need for "clear and distinct ideas"¹² about God. For many Christians, the central source of these clear and distinct ideas was the Biblical text. Yet it was necessary for those pursuing clear ideas in Scripture to avoid the traditional exegetical tools of allegory, metaphor, and figure. As Gavin Hyman puts it,

it is not difficult to see why a doctrine such as Aquinas's on analogy would come to be regarded with suspicion [for such Christians]. For... [Aquinas] emphasised the necessary centrality of uncertainty, imprecision and the theological propriety of linguistic indeterminacy. To the modern mind, therefore, analogical language obfuscated rather than clarified, and inevitably came to be viewed as a hindrance to the quest for scientific certainty.

It seemed much more natural for the early modern Christian to read the Biblical text as akin to a scientific treatise, objectively recording empirical facts. The most infamous example of this modern exegesis occurred in the 1650's when Archbishop James Usher added up all of the genealogies in the Bible and calculated the world to have been created in 4004 BC. Usher's timetable was added via in-text notation to many English translations of the Bible, and Charles Darwin once confessed that for many years he was unaware the Usher's dating was not part of the original text.¹³ For Usher and his contemporaries, clear ideas about God could only be available if one were to treat Scripture as a literal, historical record, scientifically true in all its

¹² Funkenstein in Hyman

¹³ Gavin Hyman

parts. By the 19th century, for most Christians, science and theology were fused into one singular discourse.¹⁴

Biblical Criticism

Modern Biblical literalism, fueled by a desire for certain knowledge about God ran headlong into new movement, funded by an equal desire for certainty, called Biblical criticism.¹⁵ Central proponents of this movement were Benjamin Jowett (who proposed that the Bible be read and subjected to the same scrutiny as any other book) and John W. Colenso (who mathematically disproved specific Biblical propositions¹⁶) By the middle of the 19th century, it became obvious that clear ideas about God and the universe derived via a literal, scientific reading of the Biblical texts was untenable. Not only were the Biblical texts failing to be supported by scientific findings about the natural world, but they were failing under the weight of their own claims. (Darwin as an example of the former, and Colenso an example of the latter). *It was as if theology and science were asking the same questions but providing different answers, and every individual had to line up on one side or the other.* In some instances this criticism was embraced, leading to an increase in vocal agnostics and atheists. In others it led to a rejection of the findings of modern science and an epistemological fideism (the belief that faith is separate from and superior to reason).

Within Christianity the most prevalent response to this clash of scientific propositions in the 20th century has been the recovery of classical theism.

The largest Christian denomination is Roman Catholicism

Example Francis: God is not a being with a magic wand and superpowers. Hoyle (big bang) was a Jesuit. Prayer for the hungry.

Mainline Protestants -

The religion / science debate is not a religion problem or a science problem but primarily an American problem and theology and science do not provide different answers to the same question, but different answers to different questions.

¹⁴ Hyman, 90 - Usher late 1500's

¹⁵ Colenso, 1850's

¹⁶Yet how was it possible that two or three men should have discharged all these duties for such a vast multitude? The single work, of offering the double sacrifice for women after child-birth, must have utterly overpowered three Priests, though engaged without cessation from morning to night. As we have seen, ... the births among two millions of people may be reckoned as, at least, 250 a day, for which, consequently, 500 sacrifices (250 burnt-offerings and 250 sin-offerings) would have had to be offered daily. Looking at the directions in L[eviticus] i, iv, we can scarcely allow less than five minutes for each sacrifice; so that these sacrifices alone, if offered separately, would have taken 2,500 minutes or nearly 42 hours, and could not have been offered in a single day of twelve hours, though each of the three Priests had been employed in the one sole incessant labour of offering them, without a moment's rest or intermission."