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St. Thomas Aquinas and Fr. Réginald Garrigou-Lagrange on Wonder and the Division of the Sciences

This essay is a comparison between St. Thomas Aquinas's and Fr. Réginald Garrigou-Lagrange's conceptions of philosophical wonder and the division of the sciences. While these two great philosopher-theologians are separated by almost 700 years, they have largely compatible views on these topics. This is due, no doubt, to the fact that Garrigou-Lagrange (1877–1964), being a Dominican himself, is deeply indebted to Aquinas, but he does also make some significant developments of his own, which is to be expected.

Thomas Aquinas needs no introduction, but, these days, Garrigou-Lagrange does. He is simply one of the greatest philosopher-theologians within the Thomistic tradition of the last century and whose most famous student was Pope St. John Paul II. Garrigou-Lagrange has, up until recently, been largely forgotten for two intertwined reasons. First, he was (in)famously labeled as "the Sacred Monster of Thomism" (which forces most people to make an immediate judgment based on their personal views of Thomism as practiced in the early 20th century).[1]

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[1] See, for example, Richard Peddicord's *The Sacred Monster of Thomism: An Introduction to the Life and Legacy of Réginald Garrigou-Lagrange, O.P.* (South Bend, Ind.: St. Augustine's Press, 2005).

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Second, immediately following the Second Vatican Council, there was a widespread rejection of Thomism and the manualist tradition which it promoted. Thus, Fr. Réginald Garrigou-Lagrange appeared to be relegated to the dustbin of time. Recently, however, there has been a great renewal in Thomism and particularly those great commentators that came after Aquinas. Among these is Garrigou-Lagrange. He wrote no less than 28 books and hundreds of articles, and this essay will use one of his works which was translated just last year.[2]

This essay comes in two parts. First, the notion of philosophical wonder will be treated. This will be followed by part two on the division of the sciences. This division is somewhat artificial because philosophical wonder and the division of the sciences are deeply intertwined, but it is done for the purpose of greater clarity on each topic.

Philosophical Wonder

Introductory Notes

In order to understand St. Thomas Aquinas's and Garrigou-Lagrange's doctrines of wonder, it is important to establish the existence and essence of wonder in ancient times. Neither Aquinas nor Garrigou-Lagrange should be credited with coming up with the notion of wonder, though they do have their own unique understandings of it. Since this will only be a *brief* historical study, we will focus only on the two most important places of this doctrine in Plato and Aristotle.

While there is evidence of a notion of wonder before Plato, Plato is the one who *officially* established wonder as the foundation for philosophy when he records Socrates as saying that the "sense of wonder (θαυμάζειν) shows that you are a philosopher, since wonder is the only

[2] Fr. Réginald Garrigou-Lagrange, O.P., *The Sense of Mystery: Clarity and Obscurity in the Intellectual Life*, trans. Matthew K. Minerd (Steubenville, Ohio: Emmaus Academic, 2017).

beginning of philosophy (ἀλλη ἀρχή φιλοσοφίας)."[3] Another translation has it that wonder "is where philosophy begins and nowhere else."[4] In the context of *Theaetetus* (the source of this quote), it is clear that wonder is understood as a recognition of tension between sense experience (in this case, a constant number of dice) and the judgment of the intellect (the group of dice being considered as greater or smaller in comparison with another group).[5] It is this tension (wonder), which is composed of both fear (of the unknown) and hope (that the unknown can be known) which leads one to think in a philosophical matter about the nature of reality.

Aristotle follows Plato on this score. He states in his *Metaphysics* that "it is through wonder (θαυμάζειν) that men both now begin and at first began to philosophize; wondering originally at obvious difficulties, and then by gradual progression raising questions about the greater matters."[6]

Besides the explicit agreement with Plato at the beginning, Aristotle adds two important points that were only implicit in Plato. First, wonder begins with "obvious difficulties." For example, wonder does not begin with considering the relationships of subatomic particles. Rather, wonder begins by considering why a stick appears to bend when placed in water. In the latter, there is an obvious opposition between sense experience (the stick appears to be bent) and intellectual

[3] Plato, *Theaetetus*, 155d, trans. David Vincent Meconi, in his "*Philosophari in Maria: Fides et ratio* and Mary as the Model of Created Wisdom," in *The Two Wings of Catholic Thought: Essays on* Fides et ratio, ed. David Foster and Joseph Koterski (Washington, D.C.: The Catholic University of America Press, 2003), 71.

[4] *Ibid*., trans. Myles Burnyeat (a revision of M. J. Levett's translation), in *Plato: Complete Works*, ed. John Cooper (Indianapolis, Ind.: Hackett Publishing Company, 1997), 173.

[5] *Ibid*., 154c–155c.

[6] Aristotle, *Metaphysics*, A2, 982b12–14, trans. David Vincent Meconi, *The Two Wings of Catholic Thought*, 72.

judgment (the stick is not really bent), which leads one to wonder about the cause of such opposition.

The second important addition by Aristotle is that, after this initial experience of wonder, there is a "gradual progression raising questions about the greater matters." That is, philosophers are not satisfied with answering the question of water refraction. Instead, they seek the "greater matters," such as: what is the cause of all that is, what is the distinction between essence and existence, and why is there something rather than nothing? Thus, through wonder, a philosopher tends to follow a natural progression to more and more abstract (intellectual) questions which require different, more intellectual activities to answer.[7]

Aquinas on Wonder

While Aquinas acknowledges the reality and necessity of wonder, he rarely deals with it in an explicit way within his corpus. The most concentrated and explicit exposition of wonder is his *Commentary on the Metaphysics* (of Aristotle), almost exclusively in Book 1, Lesson 3.[8] Since it is a commentary, Aquinas obviously follows Aristotle, but he adds more depth to the few words Aristotle devotes to wonder.

While it has been noted above that wonder is concerned with *causes*, this is something that is made explicit by Aquinas: "That they [scientists/philosophers][9] seek to escape from ignorance is made clear

[7] This will be dealt with below when we deal with the division of the sciences. Certainly, Aristotle has some more to say in this section in *Metaphysics* about wonder, but this will be dealt with below within the context of Aquinas's commentary.

[8] Thomas Aquinas, *Commentary on the Metaphysics*, bk. 1, l. 3, trans. John P. Rowan (Chicago 1961). Available online—see the section *References* for details.

[9] It is worth noting at the onset that for Aquinas (and practically all those before him) science and philosophy speak of the same reality. Both are concerned with necessary truth (i.e., truth concerning reality that is immutable; as opposed to practical truth which "could be otherwise"), organizations, and causes. It is only in modern times that science and philosophy have been severed from each other, though, as will be argued below, Aquinas would have a difficult time calling modern science "science" at all.

from the fact that those who first philosophized and who now philosophize did so from wonder about some cause."[10]

Following Aristotle, Aquinas argues that scientists/philosophers progressed in wonder from less important problems to more important, and more obscure, problems.

> [T]hey began to raise questions about more important and hidden matters, such as the changes undergone by the moon, namely, its eclipse, and its change of shape, which seems to vary inasmuch as it stands in different relations to the sun. And similarly they raised questions about the phenomena of the sun, such as its eclipse, its movement and size; and about the phenomena of the stars, such as their size, arrangement, and so forth; and about the origin of the whole universe, which some said was produced by chance, others by an intelligence, and others by love.[11]

Thus, there is a movement from considering more particular, material realities to more universal, immaterial realities.[12]

Aristotle goes on to say that "someone who puzzles or wonders . . . thinks himself ignorant . . . So if indeed it was because of a desire to avoid ignorance that they engaged in philosophy, it is evident that it was because of a desire to know that they pursued scientific knowledge, and not for the sake of some sort of utility."[13] Aquinas comments that it is precisely from ignorance that wonder arises. That is, a primary condition for wonder is that one must *consciously acknowledge* that one does not know the relationship between the contraries he is aware of.

This acknowledgement of ignorance, however, is not enough, for, as Aquinas continues, "Since wonder stems from ignorance, they

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[10] Thomas Aquinas, *Commentary on the Metaphysics*, bk. 1, l. 3, no. 54.

[11] *Ibid.*

[12] Which will be important to keep in mind when the division of the sciences is dealt with below.

[13] Aristotle, *Metaphysics*, 982b15–21, trans. C. D. C. Reeve (Indianapolis, Ind.: Hackett Publishing Company, 2016).

[scientists/philosophers] were obviously moved to philosophize in order to escape from ignorance. It is accordingly evident from this that 'they pursued' knowledge, or diligently sought it."[14] Thus, in addition to acknowledging ignorance, one must *seek* to escape from ignorance. This, it seems, is where most people get hung up. There are many (the *hoi polloi*,[15] as is often called in Plato and Aristotle) who will acknowledge that they are ignorant of many aspects of reality, but there are remarkably few who are willing to put in the effort to escape it. This is why few call themselves scientists/philosophers, and why even fewer actually deserve the name.

Lastly, in this section, Aquinas briefly paraphrases Aristotle and says that "they [scientists/philosophers] pursued knowledge . . . only for itself and not for any utility or usefulness."[16] This is an important point that will have implications in the divisions of the sciences dealt with below. Briefly though, Aquinas understands science/philosophy as something primarily speculative rather than practical or productive. On the contrary, what is today called "modern science" is held in great esteem for what it can *do* for us (e.g., make cell phones, vaccines, satellites, etc.); the speculative aspects of these sciences are largely ignored (unless there is something practical/productive directly associated with it) and scoffed at as "useless" (though, technically, this is not an improper classification).

[14] Thomas Aquinas, *Commentary on the Metaphysics*, bk. 1, l. 3, no. 55.

[15] The οἱ πολλοί (*hoi polloi*, "the many") will be referred to often in this essay. Some take it to be a derogatory remark, which has a little merit, but, frankly, it is the most accurate classification of what I am speaking of—namely, those who are not real scientists/philosophers. The term *hoi polloi* is intentionally general, since it has nothing to do with social standing, education level, age, etc. For example, even in Plato's time, there were people of high social standing who were highly educated, and yet rightly classified among the *hoi polloi*, since they failed to attain the intellectual habit of wonder (let alone science/philosophy) and settled for common knowledge instead.

[16] Thomas Aquinas, *Commentary on the Metaphysics*, bk. 1, l. 3, no. 55.

The next section where Aquinas comments on wonder comes a couple of paragraphs later in Aristotle's text, where Aristotle notes the relationship between wonder and metaphysics (which, as the highest science in Aristotle's conception, is truly called "wisdom"). Aristotle begins:

> The acquisition of it [wisdom/metaphysical knowledge], however, must in a way leave us in a condition contrary to the one in which we started our search. For everyone, as we said, starts by wondering at something's being the way it is . . . when they do not have a theoretical grasp on their cause.[17]

Aquinas reiterates what he said above in commenting on this that the philosopher moves (almost naturally) from wondering about less important and obvious matters to more hidden matters. He goes on to argue that "the object of their wonder was whether the case was like that of strange chance occurrences," or whether they were "determined by some cause."[18] For something like a particular turnout of a roll of the dice is not—strictly speaking—caused, but is rather a matter of chance.

Aquinas then moves on to commenting on the somewhat cryptic first line of Aristotle, "The acquisition of it, however, must in a way leave us in a condition contrary to the one in which we started our search." Aquinas notes that "[s]ince philosophical investigation began with wonder, it must end in or arrive at the contrary of this, and this is to advance to the worthier view."[19] This "worthier view" is nothing more than knowing the causes of the effects which the philosopher is wondering about. For, "when men have already learned the causes of these things, they do not wonder."[20] Thus, wonder is not a perpetual

[17] Aristotle, *Metaphysics*, 983a11–14.

[18] Thomas Aquinas, *Commentary on the Metaphysics*, bk. 1, l. 3, no. 66.

[19] *Ibid.*, no. 67.

[20] *Ibid.*

disposition of the scientist/philosopher, but rather the beginning of all science/philosophy which *must be overcome*.

Garrigou-Lagrange on Wonder

Since Fr. Réginald Garrigou-Lagrange comes 700 years after St. Thomas Aquinas, it should be no surprise that Garrigou-Lagrange has a more developed notion of wonder. His conception of wonder is found principally in his work *The Sense of Mystery: Clarity and Obscurity in the Intellectual Life*.[21] While Garrigou-Lagrange does use the language of "wonder" (at least, according to Minerd's translation), he makes use of it in the context of what he calls "mystery."

Sometimes people (the *hoi polloi*) wrongly think that a mystery is something that simply cannot be known. This is not how Garrigou-Lagrange uses the term. For him, a mystery is something in which there is an intrinsic meeting between clarity and obscurity. It is worth going into some detail Garrigou-Lagrange's vocabulary.

The French term which often comes up in his work is *clair-obscur* which could be literally translated as "clear-obscure." In Minerd's translation, he uses the term "chiaroscuro," which is "the style of painting utilizing light and darkness in a self-aware manner, utilizing contrasts for artistic effect. A chiaroscuro, with its interplay of light and dark, gives a vision at once clear and obscure—like a mystery."[22] While it is easy enough to understand what he means by "clarity" (i.e., that which is grasped by the intellect without much effort), his use of "obscurity" requires some exposition.

Obscurity, for Garrigou-Lagrange, is not caused by something absurd or irrational (below reason), rather it is caused by something *supra*-rational (above reason; or, at least, above what a person's reason

[21] See note 2.

[22] Garrigou-Lagrange, *The Sense of Mystery*, 36.

currently grasps). Commenting on St. Teresa of Avila saying, "I especially have more devotion or love for the mysteries of the faith that are more obscure," Garrigou-Lagrange comments, "She knew that this obscurity differs absolutely from that of absurdity or incoherence—and that it comes from a light that is too strong for our weak eyes."[23] He is pulling a concept here from the Christian mystical tradition, which finds a prominent place among the Carmelite mystics, that the "darkness" or, here, "obscurity" on the way to God does not stem from a lack of light or clarity, but rather *too much* light and clarity. He says more directly later on that "it is necessary to distinguish *the inferior sort of obscurity*, which arises from incoherence and absurdity, from *the superior sort of obscurity*, which comes from a light that is too powerful for the weak eyes of our mind."[24] Thus, obscurity is the effect of something which has too much goodness or truth beyond what our intellects can grasp, rather than something bad or false (such as absurdity or incoherence).

By referring to obscurity as clarity that is "too strong" for our "weak" eyes, Garrigou-Lagrange is implicitly invoking the important concept of virtual quantity. Briefly, virtual quantity is a measure of intensity/degree of perfection of a particular quality, ultimately rooted in its degree of *esse*.[25] In the context of obscurity and clarity of intelligible things, our minds must have the particular virtual quantity of intelligence in order to comprehend a particular intelligible. If the intelligible considered is of a properly-proportionate virtual quantity to our intellectual capacity/power (neither too high nor too low for it), it can be clearly understood. If, however, the virtual quantity of the intelligible is higher than (e.g., *ipsum esse subsistens*) or disproportionately

[23] *Ibid.*, 74.

[24] *Ibid.*, 141.

[25] See especially Fran O'Rourke's *Pseudo-Dionysius and the Metaphysics of Aquinas* (Leiden: Brill, 1992), 156–187.

lower than (e.g., a void) our intellectual capacity, the result is obscurity. The lower virtual quantity has just as much ability to result in obscurity, than the higher virtual quantity, because, as noted above, virtual quantity is rooted ultimately in *esse*. As such, our intellects have a similar difficulty in conceiving being itself as it does pure non-being.

It is worth distinguishing further between the obscurity which can be overcome and that which cannot be overcome. Firstly, it must be noted that in *The Sense of Mystery*, "mystery" (particularly the obscure part of it) is both natural and supernatural. Both of these areas have sciences (habits of the intellect) which allow one to overcome *some* of the obscurity. That is, some obscurity is simply due to the fact that we have not studied wide/deep enough. There is, however, some obscurity which cannot be overcome by attaining the perfection of a particular intellectual habit, even within the natural order. When one comes up against obscurity in the proper sense, mystery in the proper sense (that which reason cannot overcome), the only option left to fulfill the sense of mystery is contemplation.

What separates those who live the intellectual (scientific/philosophical) life from those who do not is this sense of mystery which Garrigou-Lagrange equates with "the philosophical spirit." The philosophical spirit "seeks *to connect, in an explicit and distinct manner, all things to the most universal, simple, first principles*. That is, the philosophical spirit wishes to connect all things to the most general laws of being and of the real."[26] This spirit, however, is rare: "[I]t [the philosophical spirit] is quickly led to see the *mysteries* of the natural order where the common outlook sees no mystery."[27] Once again, the "common outlook" (i.e., that of the *hoi polloi*) fails to see the tension between what is clear and what is obscure, even in the natural, sensible

[26] Garrigou-Lagrange, *The Sense of Mystery*, 127.
[27] *Ibid.*

order; it fails to wonder. This could be due to a variety of factors, but Garrigou-Lagrange pins it down to the fact that "common knowledge . . . [does] not seek to link [concrete and complex facts] to first principles and the ultimate causes (except in a very vague manner that has nothing of a truly scientific character)."[28] That last point is worth emphasizing: it is not that common knowledge does not make any effort to make causal connections, it just does it "in a very vague manner" in which there is no emphasis on consistency and systemization which allows for a fully formed (habitual) sense of mystery (wonder) to take hold within a person. Thus, the *hoi polloi* "never see any mystery, any profundity, in the same place where the philosopher is astonished with that wonderment that is, as Aristotle has said, the very beginning of science."[29]

Given this conceptualization of the sense of mystery as the beginning of science, the more scientific sciences are those that search "not only for the constant laws or relations of phenomena but also, instead, for causes" and that do not stop until they arrive at the ultimate cause.[30] That is, the true scientist/philosopher is not satisfied merely with knowing *proximate* causes ("the constant laws or relations of phenomena") but also, and more importantly, knowing *ultimate* cause(s) (the first cause, the uncaused-cause, God). Thus, the true scientist/philosopher seeks to move beyond vague concepts of common sense to "*the distinct concept* of philosophical reason."[31] This distinct concept of philosophical reason is the overcoming/satisfaction of wonder, the sense of mystery. As noted above, this is done by study and contemplation. In fact, Garrigou-Lagrange argues that "*contemplation*

[28] *Ibid.*, 128.

[29] *Ibid.* Here, Garrigou-Lagrange references the section of Aristotle's *Metaphysics* which St. Thomas comments on above.

[30] *Ibid.*, 129.

[31] *Ibid.*, 138.

is the sense of mystery."[32] Thus, if the sense of mystery is the beginning of all genuine science worthy of the name, all science, ultimately, leads one to contemplation of the truth which cannot be fully grasped (comprehended) by the intellect.

A Synthesis of Aquinas and Garrigou-Lagrange on Wonder

As should be clear from the expositions above, wonder is not a simple, childish concept. On the contrary, philosophical wonder is a complex psychological act *and* habit in which fear, hope, profound study of causality (both proximate and final), and contemplation come together to produce, proximately, physical/metaphysical wisdom and, ultimately, human happiness.[33] I will go through these one by one as much as possible, though they all intertwine at some point or another.

Philosophical wonder is an act. One must freely choose to wonder about a discrepancy between sense experience and intellectual apprehension/judgment (between clarity and obscurity); it does not happen automatically. One must take the time and effort to use the intellectual faculties in such a way as to try to understand the reality of the thing wondered about and the cause of the opposition.

Philosophical wonder is a habit. Wonder (the sense of mystery) is the beginning of science/philosophy. Science/philosophy, according to Aquinas and Garrigou-Lagrange, is itself an intellectual *habit* (not merely a body of knowledge or a textbook or an experiment or an academic degree or a job title). As a habit, science/philosophy is a constant disposition toward truth. Thus, wonder must also be habitual (rather than one discrete act) in order to constantly propel the advancement of

[32] *Ibid.*, 140.

[33] The same fear, hope, profound study of causality, and contemplation are also necessary to produce *theological* wisdom (not to be confused with the infused gift of wisdom), granted that the object of wonder is divine revelation. Both Aquinas and Garrigou-Lagrange are in agreement on this point.

the sciences (of which there appears to be no end on this side of eternity).

Philosophical wonder consists in fear. The thing we are fearing when we wonder is ignorance, primarily ignorance of the cause of the mystery. That is, wonder contains within it a fear of being unable to fully answer the question, "Why am I unable to fully understand *this thing*?" Fear is that which impels to make a decision: either we choose to seek an answer to that question or we flee from it (either intentionally or in a mood of indifference).

Philosophical wonder consists in hope. As noted above, both Aquinas and Garrigou-Lagrange (following the ancients before them) take it as a fact that those who have a habit of philosophical wonder are always a rare breed, and it is precisely at this "step" at which one either becomes a true scientist/philosopher or one settles for the common knowledge of the *hoi polloi*. Hope "says" to the intellect that it is possible to overcome/settle this fear of ignorance. Without this hope, one is unable to progress to the "steps" of study and contemplation; one will simply back out in one form or another.

Philosophical wonder leads to a profound study of causality. What a scientist/philosopher primarily wonders about are causes, both proximate and ultimate. Proximate causes are those which have a direct causal relationship with the thing studied.[34] For example, a soul is the proximate cause of a body being alive. While proximate causes can satisfy a particular intellectual habit (the goal of a particular science), the fear contained in wonder cannot ultimately be overcome/settled without coming to know in some way the ultimate cause of the thing studied. The "ultimate cause" can be taken in many ways. For example, one could consider what is the "ultimate cause" within the bounds of a

[34] Close indirect causes can also be considered as proximate causes, though only secondarily to direct causes.

particular genus (e.g., the commanding general of a military is the "ultimate cause" of the military), but this is taking the term "ultimate cause" in an improper way. Strictly speaking, *the* ultimate cause of all that *is*, for both Aquinas and Garrigou-Lagrange, is God. As such, all sciences, ultimately, lead one to God, and this helps us to understand the last "step" of wonder.

Philosophical wonder ultimately leads to contemplation. Since all sciences ultimately lead to (point to) God as the ultimate cause of all that is, and since God, by definition, is above and beyond all human reason, God cannot be comprehended completely by the intellect but only contemplated (looked at, sitting in the presence of), and science (and the philosophical wonder which causes all science) ultimately leads to contemplation. Throughout this essay thus far, I have consistently referred to the fear of ignorance being overcome/*settled*. The reason "settled" is included is because, ultimately, the ignorance about God cannot be *overcome* (in the sense of complete comprehension) but only *settled* in contemplation.

Philosophical wonder proximately causes physical/metaphysical wisdom. Wisdom, for Aquinas and Garrigou-Lagrange, is chiefly knowing the causes (order) of things and, secondarily, is about ordering oneself and other people and things according to the objective order of reality. Whether or not philosophical wonder causes physical or metaphysical wisdom depends on the object being wondered about and whether one is wondering about the proximate or ultimate causes of the object. For example, if one is wondering about the proximate cause of a tree, one will be lead to the physical wisdom of knowing that the causes are sunlight, water, and soil. If one wonders about the ultimate cause (properly speaking) of the tree, one will be lead to the metaphysical wisdom of the prime mover (God). Though if we wonder about an intrinsically metaphysical object such as the soul or an angel, even won-

dering about the proximate cause would lead us to metaphysical wisdom since the proximate cause of metaphysical realities is God.

Philosophical wonder ultimately causes human happiness. This requires a little background. In the *Nicomachean Ethics*, Book 10, Chapters 7 and 8, Aristotle argues that θεωρία (*theoria*), theoretical/speculative contemplation, is the highest ("most divine") action a human being can undertake, and, thus, θεωρία is that which will make us happiest. At the natural level, these are the speculative sciences (most especially metaphysics) which give us an understanding (to varying degrees) of the object of θεωρία. As argued above, all speculative sciences ultimately lead one to consider God as the first cause of his multitudinous effects, and so philosophical wonder (the cause of all science) ultimately causes human happiness in the form of θεωρία of God as the first cause of all that is.

The Division of the Sciences

Given that wonder considers proximate and ultimate causality and, thus, the order of reality, and that it is the proximate cause of all science, science itself also has the order of reality as its primary object. Consequently, the branches of science can be singled out by the *end* for which the order is considered (e.g., contemplation, action, or art), by *which* the order is considered (e.g., quality, quantity, or being *qua* being), and by *how* the order is considered (e.g., *abstractio totius*, *abstractio formae*, *seperatio*).[35]

[35] It is also worth noting here that the division of the sciences expounded upon below will be primarily focused, though not exclusively, on the division of the *speculative* sciences—as opposed to practical sciences (e.g., ethics) and artistic sciences (e.g., painting). This is for two reasons. First, this is the area that St. Thomas Aquinas and Fr. Réginald Garrigou-Lagrange focus on in their writings, and second, the speculative sciences are "science" in the most proper sense, as argued above.

Aquinas on the Division of the Sciences

The two most notable places where Thomas Aquinas expounds on his notion of the division of the sciences are at the very beginning of his *Commentary on the Nicomachean Ethics* (of Aristotle) and the much more exhaustive exposition in his *Commentary on the* De Trinitate (of Boethius). First, I will present Aquinas's conception found in his *Commentary on Ethics*, and the *Commentary on the* De Trinitate will follow.

Aquinas starts his *Commentary on the Nicomachean Ethics* with a propaedeutic of sorts which, while not appearing to have much to do with the division of the sciences, is actually essential for understanding his conception of the division of the sciences. He begins by referencing back to one of the great maxims of Aristotle's *Metaphysics*: "It is the business of the wise man to order."[36] By fronting his brief exposition with this reference (which appears to be only tangentially relevant), Aquinas is actually revealing his hand, but this requires some explanation. First, the act of ordering (in this case, the sciences), Aquinas argues, is an act of wisdom. Second, "wisdom is the most powerful perfection of reason whose characteristic is to know order."[37] Third, the highest form of natural wisdom, for Aquinas, is metaphysics. Thus, it is primarily the task of metaphysics to divide the sciences. It therefore follows that this would place metaphysics at the top of the hierarchy of the sciences. In the midst of that little quote, Thomas Aquinas reveals the basic principles of the division of the sciences: metaphysics is on top and the rest are divided (measured) according to their relationship to metaphysics (the most intellectual/scientific science).

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[36] Thomas Aquinas, *Commentary on the Nicomachean Ethics*, bk. 1, l. 1, no. 1, trans. C. I. Litzinger, O.P. (Chicago: Henry Regnery Company, 1964). Available online—see the section *References* for details.

[37] *Ibid.*

Aquinas continues: "Now order is related to reason in a fourfold way." First, there is an order "that reason does not establish but only beholds," which is the order of nature.[38] This is the order that the intellectual habits (speculative sciences) are primarily concerned with. Second is the order "that reason establishes in its own act of consideration."[39] This order is also used by the intellectual habits in order to systematize and explain the knowledge attained by them (e.g., logic). Third is the order which reason "in deliberating establishes in the operations of the will."[40] This is the order that concerns the practical sciences such as ethics and politics. Finally, there is the order which can be caused by reason in external things. This is the order that the arts, such as carpentry and painting, are concerned with. These distinctions are among those of different human *acts* rather than among the sciences *per se*. This is so because Aquinas primarily sees science as something speculative, and so the artistic sciences and practical sciences are only properly called "science" insofar as they relate to the speculative sciences.[41]

The *Commentary on the* De Trinitate (of Boethius), in turn, contains within it what is by far the most robust exposition on the division of the sciences that Thomas Aquinas wrote. Unfortunately, it is outside of the scope of this essay to deal with every aspect of his exposition. Thus, the primary focus will be on question five, articles one and three. In order to get a better grasp of what Aquinas has to say, it is worth starting off with what Boethius has to say in his own words.

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[38] *Ibid.*

[39] *Ibid.*

[40] *Ibid.*

[41] This is not to say that this idea is particular to Thomas Aquinas. In fact, it will be shown below that Boethius also held this idea (which, it is argued, he took from Aristotle).

Boethius begins with the maxim, "It is the scholar's duty to try to formulate his opinion about each thing as it actually is."[42] By fronting his discourse with this maxim, Boethius is establishing that what he seeks to do is divide the sciences according to their *real* distinctions, instead of artificial and external impositions. He then immediately dives in: "There are three divisions of speculative science."[43] They are natural science, mathematics, and what he refers to as theology.[44] Boethius sees the division of these three sciences as having primarily to do with the *formal object* of the science. As Maurer summarizes:

> Natural science studies the forms of bodies along with the bodies themselves in which they exist. Mathematics studies, apart from matter, forms of bodies that must exist in matter (e.g., lines, circles, numbers). Theology studies forms that are entirely separate from matter (e.g., God).[45]

Thus, for Boethius, the division hinges upon the object being more or less separate from matter *per se* ("a distinction in forms ready-made in the world").[46] Aquinas, for his part, agrees with this threefold division, but emphasizes a different means to attaining this division.

Thomas Aquinas emphasizes the act of the knower over the object known when dividing the sciences. More specifically, Aquinas considers the particular intellectual acts necessary for one to know the various sciences as the primary principle for dividing the sciences, and

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[42] Thomas Aquinas, *The Division and Methods of the Sciences: Questions V and VI of His Commentary on the* De Trinitate *of Boethius*, trans. Armand Maurer (Toronto: Pontifical Institute of Mediaeval Studies, 1986), 3.

[43] *Ibid*.

[44] It is important to note that, here, "theology" is not referring to what would come to be called "sacred theology" (or theology derived from sacred scripture) but what is often termed today as "natural theology" or "philosophical theology." The term "theology" is used because the ultimate object of metaphysics is God. This line of thinking goes back at least to Aristotle (see especially his *Metaphysics*, bk. XII).

[45] Thomas Aquinas, *The Division and Methods of the Sciences*, xv–xvi.

[46] *Ibid*., xvi.

the object of the individual sciences as secondary. First, however, he considers the speculative sciences as a whole. In question five, article one (*Is Speculative Science Appropriately Divided into these Three Parts: Natural, Mathematical, and Divine?*), we get one of Aquinas's most direct statements on the notion of speculative science:

> The theoretical or speculative intellect is properly distinguished from the operative or practical intellect by the fact that the speculative intellect has for its end the truth that it contemplates, while the practical intellect directs the truth under consideration to the activity as to an end.[47]

While the notion of division of the various human acts was dealt with above (i.e., speculative, practical, artistic), what is noteworthy is that Aquinas begins this whole discussion not with the sciences themselves, but with the *intellect*. Thus, the human knower (scientist/philosopher) is, for Aquinas, the principle of the division of the sciences. This is not to say that this division will be purely subjective and arbitrary, but it does argue for the position that science/philosophy is primarily a *human act* and *habit*.

Aquinas does, however, recognize the importance of the object of the speculative sciences. He says, "The speculative sciences are differentiated according to their [object's] degree of separation from matter and motion."[48] In this regard, he makes three main distinctions.

Starting off, "there are some objects of speculation that depend on matter for their being, for they can exist only in matter."[49] This includes both natural science and mathematics.[50] Thus, he further distinguishes between those objects which "depend on matter *both* for their

[47] *Ibid.*, 12.

[48] *Ibid.*, 14.

[49] *Ibid.*

[50] For Aquinas, natural science, natural philosophy, and physics are all the same thing and are used interchangeably.

being *and* their being understood" and those objects which "depend upon matter for their being" *but not* "for their being understood."[51] The former concerns natural science while the latter concerns mathematics.

Natural science concerns objects which depend on matter both for their being and for their being understood because natural science primarily considers motion. Motion, here, is taken in the Aristotelian sense which means practically all change, though conspicuously excluding generation and destruction (coming into and going out of being). This is just a fancy way of saying that natural science concerns itself with *qualities* which manifest themselves in *natures*.[52] Qualities, of course, must inhere within a substance (usually physical, though not necessarily). Thus, qualities depend on matter for their being (e.g., there must be a green *something*) and for their being understood (e.g., green is understood only insofar as one has experienced green in physical objects).

The objects of mathematics depend upon matter for their being but not for their being understood because mathematics concerns itself with *quantity* (e.g., lines and numbers). For example, a seven inch line can be understood and defined without recourse to matter (matter is not essential for their definition), but a seven inch line has real existence only in a material object, not apart from the substance in which it inheres.

Finally, there are objects which do not require matter either for their being or for being understood. This is the area of theology/divine science/metaphysics.[53] He makes a further, though less significant, distinction here between those objects which can never exist in matter

[51] Thomas Aquinas, *The Division and Methods of the Sciences*, 14 (emphasis mine).

[52] *Ibid.*, 29.

[53] Once again, these terms generally refer to the same thing in this work. It is worth noting, however, that Aquinas specifically singles out "metaphysics" for a pedagogical reason, namely that it should be learned after (*meta*) physics.

(such as God and the angels) and objects which can exist in matter ("substance, quality, being, potency, act, one and many, and the like").[54] The above sums up well Aquinas's view on the objects of the sciences.

When one moves to article three of question five (*Does Mathematics Treat, Without Motion and Matter, of What Exists in Matter?*), one finds in Aquinas's reply that he is dealing with much more than mathematics *per se*. Beyond that, Aquinas deals with a much more fundamental concept which is essential to understanding his notion of the division of the sciences: abstraction.

He begins his reply by laying out the two operations of the intellect: "one called the 'understanding of indivisibles', by which it knows *what* a thing is, and another by which it joins and divides, that is to say, by forming affirmative and negative statements."[55] Or, more simply, there is *understanding* by which we know essences and *judgment* by which we unify or divide what we have grasped through understanding. For example, through our understanding we grasp what man, reason, and animal are, but it is only through judgment that we can say "man is a rational animal."

Aquinas argues that there are two sorts of abstraction which correspond with these two intellectual operations. The first, abstracting through simple apprehension (understanding), is the "absolute consideration of some intelligible essence or nature."[56] The second is abstracting through judgment, whereby we unite or divide based upon the real *existence* (*esse*) of things. This is referred to as "separation" rather than "abstraction" in this work.

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[54] Thomas Aquinas, *The Division and Methods of the Sciences*, 14.

[55] *Ibid.*, 34–35.

[56] *Ibid.*, xviii.

Aquinas makes a two-fold distinction within the first form of abstraction. First, there is the "abstraction of form from sensible matter."[57] An example of this would be when we abstract the soul from the human body. Second, there is the "abstraction of the universal from the particular."[58] An example of this form of abstraction would be when we abstract the general nature of "man" from a multitude of particular men.

Separation, however, is given a distinct term for the reason that it is a fundamentally different act. Separation, unlike abstraction, concerns "things that can exist separately"[59] or "that the one does not exist in the other."[60] Thus, separation takes existence into account. Because separation concerns things that can exists separately, it is primarily a *negative* judgment. That is, separating two things means that *this* thing is **not** *that* thing. For example, in separation we can say that "man is not a plant;" while these two things can and do have a real, separate existence, we cannot say that we abstracted man from a plant. In abstraction, however, we are usually considering the union of part and whole or the union of form and matter; for example, abstracting the vegetative soul from the matter of a plant. A vegetative soul, however, cannot have a separate existence from the vegetative matter, since they are really united. Thus, the act of separation cannot be done in this case.

Aquinas takes this act of separation as useful, above all, in supremely intelligible (immaterial) things. He gives the example of substance "which is the intelligible matter of quantity, [and] can exist without quantity. Consequently, the consideration of substance without quantity belongs to the order of separation rather than to that of abstraction."[61] Consideration of substance *qua* substance is, of course, a matter

[57] *Ibid.*, 40.
[58] *Ibid.*
[59] *Ibid.*
[60] *Ibid.*, 37.
[61] *Ibid.*, 40–41.

for metaphysics, and this leads into the significance of these different orders of abstraction/separation.

The point of laying out these different intellectual acts is that they are precisely, and primarily, how Aquinas divides the sciences. His conclusion is worth quoting in full:

> We conclude that there are three kinds of distinction in the operation of the intellect. There is one through the operation of the intellect joining and dividing which is properly called separation; and this belongs to divine science or metaphysics. There is another through the operation by which the quiddities of things are conceived which is the abstraction of form from sensible matter; and this belongs to mathematics. And there is a third through the same operation which is the abstraction of a universal from a particular; and this belongs to physics and to all the sciences in general, because science disregards accidental features and treats of necessary matters.[62]

This requires some fleshing out. We will start with the third operation: abstraction of a universal from a particular (also called *abstractio totius*). This is the intellectual act/habit which belongs to natural science because it primarily studies the natures of material things. Natures cannot be considered without recourse to both matter and form (i.e., the *whole* thing), but they can be considered without individuals *per se*. Interestingly, Aquinas also argues that this mode of abstraction, understood in a general way, belongs to all the sciences. This is so because all science, properly speaking, "leaves aside individual or accidental features of their object of study and concentrate on those that belong to it necessarily and universally."[63]

The second operation, that of abstraction of form from sensible matter (also called *abstractio formae*), is the proper abstraction of the

[62] *Ibid.*, 41.

[63] *Ibid.*, xx–xxi.

mathematician because the mathematician considers the form of quantity. Now, this form is not a substantial form, because substantial forms cannot be conceived of apart from matter, nor is this form an accidental form abstracted from the substantial form. Rather, it is an abstraction of accidental form of quantity "*from the sensible qualities and the activities and passivites of material substance*."[64] This particular clarification needs to be made because, in Aquinas's time, arithmetic and Euclidean geometry were the only types of mathematics known to him, and neither of these consider the form of quantity apart from the substance in which it inheres.[65]

The first operation, the intellectual act/habit of joining and dividing, belongs to metaphysics. This is "radically different" from the other two modes of abstraction because it is "effected through negative judgment."[66] But why must metaphysics study its subject through a negative judgment? This is so because the proper subjects of metaphysics (e.g., being, goodness, truth, substance *qua* substance, etc.) do not need to exist in matter, though some of them can. Thus, this truth is grasped by the *denial* that these things are "necessarily bound up with matter and material conditions."[67] Maurer concludes: "Through a judgment of this sort he [the metaphysician] grasps being in its pure intelligibility, and primarily in its value of existence, and forms the metaphysical conception of being as being."[68]

Garrigou-Lagrange on the Division of the Sciences

Unfortunately, Fr. Réginald Garrigou-Lagrange does not spend nearly as much time as Aquinas on the division of the sciences. He

[64] *Ibid.*, xxi–xxii.
[65] *Ibid.*, xxi.
[66] *Ibid.*, xxii.
[67] *Ibid.*, xxiii.
[68] *Ibid.*

does, however, have an interesting take on the matter due to the fact that he came of age during a time where the separation of science and philosophy was becoming more and more prevelant. Thus, he is able to shed some light on the issue of the modern split. It is worth noting on the onset that *The Sense of Mystery* is work primarily focused on metaphysics and theology, and so it looks at the question of the sciences from the perspective of wisdom.

Garrigou-Lagrange starts off a section with considering "what differentiates the philosophical spirit" (wonder; that which is the proximate cause of all philosophy) from "knowledge obtained by the cultivation of sciences that are inferior to philosophy (e.g., the experimental sciences and mathematical sciences)."[69] There is a lot packed in this consideration as it is worded. First, by distinguishing between the philosophical spirit and the knowledge of the rest of the sciences, Garrigou-Lagrange is implicitly stating that metaphysics is most properly philosophical/scientific. Thus, second, metaphysics is hierarchically above the rest of the sciences. Third, the other sciences, specified as the experimental sciences and mathematical sciences, are "inferior to philosophy." This is not an easy phrase to unpack, but it seems that Garrigou-Lagrange is saying that all science is ordered (finds its place) according to what is most fully philosophy (metaphysics). Fourth, if the experimental sciences include the natural sciences (and it would seem that they do), then we have the traditional trifold distinction between metaphysics, mathematics, and natural science.

He goes on: "In other words, in what does the acquired habitus of wisdom, of which Aristotle and St. Thomas speak, differ from the spirit of the positive sciences and the spirit of geometry?"[70] While this is basically restating the question, Garrigou-Lagrange adds something sig-

[69] Garrigou-Lagrange, *The Sense of Mystery*, 124.
[70] *Ibid.*

nificant by calling the various "spirits" of the sciences an "acquired habitus." Thus, following Aristotle and Aquinas, the sciences are intellectual habits.

He answers, "It is clear that it differs from them above all and essentially by its formal object and by the point of view under which it considers its object."[71] While this is specifically treating metaphysics versus all other sciences, could this not be taken as a summary statement of what Aquinas argued above? Both the formal object (quality, quantity, being) and the point of view under which it considers its object (*abstractio totius, abstractio formae, seperatio*) are necessary for a comprehensive understanding of the division of the sciences.

Garrigou-Lagrange proceeds to something which is genuinely new: the "positive" sciences (i.e., the modern notion of science). He argues that the positive sciences "establish the laws of phenomena" and "consider the *real* as *sensible* (i.e., as an object of external or internal experience)."[72] This he distinguishes from "the philosophy of nature" which has for its object "*ens mobile, ut mobile* . . . known not only according to its phenomenal laws but according to its first causes."[73] Unfortunately, he does not expand this point, but it appears that he is arguing that the distinction between what the modern world calls "science" and what the perennial tradition calls "natural science" is that modern science does not consider the first causes of the phenomena it studies.

Conclusion

St. Thomas Aquinas and Fr. Réginald Garrigou-Lagrange offer convincing portraits of science (philosophy). Their approaches to philosophical wonder and the division of the sciences are a perfect supple-

[71] *Ibid.*
[72] *Ibid.*, 124–125.
[73] *Ibid.*, 146, n. 4.

ment to contemporary discussions of what science is, how we do it, and what its purpose ultimately is.

For Aquinas and Garrigou-Lagrange, science is an intellectual habit whereby we can come to know the order of reality (necessary truths) and the One who orders it (God). Science should be so taught as to elicit wonder rather than cold facts and formulas, since it is wonder which urges us on to seek, more and more, the primary causes of things. The purpose of science is, ultimately, to contemplate the necessary truths about physical and metaphysical reality. Since this corresponds with the highest action of the highest power of the human being, the intellect, science is also the means to attaining one of the highest forms of human happiness.

St. Thomas Aquinas and Fr. Réginald Garrigou-Lagrange on Wonder and the Division of the Sciences

SUMMARY

The author makes a comparison between St. Thomas Aquinas's and Fr. Réginald Garrigou-Lagrange's conceptions of philosophical wonder and the division of the sciences. He claims that, for Aquinas and Garrigou-Lagrange, (1) science is an intellectual habit whereby we can come to know the order of reality (necessary truths) and the One who orders it (God), (2) science should be so taught as to elicit wonder rather than cold facts and formulas, since it is wonder which urges us on to seek the primary causes of things, (3) the purpose of science is, ultimately, to contemplate the necessary truths about physical and metaphysical reality, (4) science is the means to attaining one of the highest forms of human happiness.

KEYWORDS

Thomas Aquinas, Réginald Garrigou-Lagrange, wonder, science, philosophy, intellectual habit, reality, God, causes, contemplation, happiness.

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