

Piotr Lichacz, O.P.

DID ST. THOMAS AQUINAS JUSTIFY
THE TRANSITION FROM “IS” TO “OUGHT” ?

*Dissertation submitted to the
Faculty of Theology of the University of Fribourg (Switzerland)
for the Degree of Doctor in Theology*

*Directed by
Prof. Michael Sherwin, O.P.*

2008

This thesis has been approved by the Faculty of Theology
at the University of Fribourg, Switzerland
on 28 May 2008
on the recommendation of:

Prof. Michael S. Sherwin, O.P. (1st Reader)
Prof. Roger Pouivet (2nd Reader)
Prof. Max Küchler (Dean)

CONTENTS

Introduction	1
0. A Short History of the Problem	13
0.1. <i>David Hume</i>	13
0.2. <i>G. E. Moore</i>	23
Part One: Aquinas's Logic and Scientific Methodology	
1. Aquinas's General Approach to Cognition	31
1.1. <i>World, wonder, predecessors, and questions</i>	32
1.2. <i>The order of learning, intellectual skills, and liberal arts</i>	47
2. St. Thomas's Logic	57
2.1. <i>Divisions of logic</i>	60
2.2. <i>The subject of logic</i>	65
3. Theory of Signification and Predication	85
3.1. <i>Understanding and the infallibility of the first act of the intellect</i>	88
3.2. <i>The signification of concepts and words</i>	96
3.3. <i>The second act of intellect, the true and the false</i>	99
3.4. <i>Propositions and the inference theory of predication</i>	102
3.5. <i>Ways of predication</i>	109
4. Scientific Methodology or Ways of Explanation	112
4.1. <i>Reason, learning, inference</i>	113
4.2. <i>The role of material logic, conditions for demonstrative premises</i>	120
4.3. <i>Foreknowledge, indemonstrable principles, middle term, causes</i>	128
Part Two: Aquinas's Way of Constructing Human "Is"	
5. The Division of Theoretical Sciences	144
5.1. <i>Natural science</i>	147
5.2. <i>Mathematics</i>	148
5.3. <i>Metaphysics</i>	153
5.4. <i>Which science should consider human being?</i>	164
6. Explanation in Natural Science	173
6.1. <i>The principles of mobile being – basic hylomorphism</i>	176
6.2. <i>The principles of natural science</i>	184
6.3. <i>The method of natural science</i>	197
7. Some Lessons from Natural Science	203
7.1. <i>Motion, relations, and nature</i>	203
7.2. <i>The source of nature</i>	213
7.3. <i>Cogitative power (vis cogitativa)</i>	228
8. The Analyzability of Goodness	241
8.1. <i>"Good" as a transcendental term</i>	242
8.2. <i>Perfect and good according to mode, species, and order</i>	246
8.3. <i>Moral goodness and the practical character of moral science</i>	251
Conclusions	264
Bibliography	276
Abbreviations	288

INTRODUCTION

It is commonly known that the question: *Is it possible to infer an "ought" from an "is"?* which means: *Is it possible to make the transition from descriptive phrases to prescriptive ones or from fact to value?* is nowhere to be found in St. Thomas's writings. Neither do we find the question: *Is it possible to base ethics upon a non-value science or upon some definition of goodness?* It seems to some that Aquinas, as a pre-Enlightenment author, did not see these philosophical traps, which were "discovered" more than five centuries after his death, and thus he unwittingly committed a massive initial error which led to the elaboration of a complex, blundering moral theory. For indeed, if we were simply to ask whether Aquinas inferred moral rules from factual statements or moved from fact to value, many scholars would reply affirmatively, despite much recent interpretative acrobatics undertaken to deny this. For a fair number of people this is unfortunately a sufficient reason to cast such an author aside in order to prevent the loss of precious time in the study of theories which do not respect the basic rules of contemporary philosophy and theology. For them, to acknowledge this movement from fact to value is like acknowledging a pupil's mistake. It completely disqualifies the author in question. He is banished from the contemporary world of serious thinking because the thesis "no 'ought' from 'is'" is one of the dogmas of modern thinking and the "naturalistic fallacy" remains a serious objection in the evaluations of meta-ethical theories.

This disqualification and banishment may, however, be precipitate. One can rightly ask, for example, what it means for Aquinas to "infer." In particular, one can ask

what the character of “inference” is on the logical level and in what its relation or relations to things, signified by the words of descriptive and prescriptive phrases, consists. What is it we describe with our words and phrases? What makes an inference illicit? Whence do we obtain the principles that allow us to say that an inference is improper? Have we only one logic? What kind of logic makes untenable any derivation of practical judgments from theoretical ones? More profoundly, is there really an insurmountable chasm between fact and value, between “is” and “ought,” between factual and moral statements? Is “fact” really value-free? What kind of description devoids “facts” from their value-content and makes “is” a stranger to “ought”? These questions are asked because it is very probable that these modern problems do not apply to Aquinas’s worldview at all.

The interpretative acrobatics mentioned above, which aim to deny that Aquinas infers “ought” from “is,” are the work of certain Thomists who seem convinced that these problems are applicable to St. Thomas’s moral teaching on both the philosophical and theological level.¹ For example, the best known proponent of this interpretation of Aquinas insists:

Aquinas’s repeated affirmation that practical reason’s first principles are undeduced refutes the common accusation or assumption that his ethics invalidly attempts to deduce or infer *ought* from *is*, for his affirmation entails that the sources of all relevant *oughts* cannot be deduced from any *is*. There remain, however, a number of

¹ The expression “some Thomists” conceals especially such names as Germain Grisez, John Finnis, Joseph M. Boyle, Jr., who initiated the controversy around the “New Natural Law Theory” (the controversy began in 1965 with Grisez’s article “The First Principle of Practical Reason: A Commentary on the *Summa Theologiae*, 1-2, Question 94, Article 2” *Natural Law Forum* 10 [1965]: 168-201, but an extensive discussion followed the publication of Finnis’s book *Natural Law and Natural Rights* [Oxford: Clarendon Press, 1980]). Later, the same or a slightly modified thesis was repeated in many publications by these authors and other followers. From among those later defenders of this interpretation we can enumerate most notably Robert P. George and to some extent also Martin Rhonheimer (although Rhonheimer is influenced by it, he does not adopt fully Grisez-Finnis-Boyle’s approach). Each of these authors deserves a high esteem for his impressive work in the field of moral philosophy and theology. Many other Thomist scholars nonetheless have been struck by the affinity of arguments advanced by the proponents of the “New Natural Law Theory” with these of David Hume and G. E. Moore. This was one of the reasons why this innovation in reading Aquinas was criticized. Among early critics of this approach were such authors as Henry B. Veatch and Ralph McInerney. Later many others also objected against such interpretation, including Russel Hittinger, Lloyd Weinreb, Janice L. Smith, Brian V. Johnstone, Benedict M. Ashley, Alasdair MacIntyre, Fulvio Di Blasi, Anthony Lisska, Steven A. Long, John Rist, and Jean Porter. For a long list of publications on both sides of this controversy and an interesting discussion of the issue, see e.g. Fulvio Di Blasi, *God and the Natural Law: A Rereading of Thomas Aquinas*, transl. by D. Thunder (South Bend, Ind.: St. Augustine’s Press, 2006). For an earlier account see e.g. Janice L. Schultz, “Is-Ought: Prescribing and a Present Controversy,” *The Thomist* 49 (1985): 1-23; and a continuation article: idem, “Thomistic Metaethics and a Present Controversy,” *The Thomist* 52 (1988): 40-62; Russell Hittinger, *A Critique of the New Natural Law Theory* (Notre Dame, Ind.: University of Notre Dame Press, 1987). While I acknowledge that some presentations of their interpretation might be oversimplified and not entirely just, I do not intend to present the whole controversy once again.

contemporary Thomists who deny that such a deduction or inference need be fallacious, and regard Aquinas as postulating some such deduction or inference.²

A common feature of this type of interpretation is a quest for the experimental source of the moral “ought” based on the argument that we need not learn metaphysics in order to know what we ought to do. As an almost obvious conclusion we find that our “ethical knowledge” precedes our speculative knowledge of human nature,³ “ethical knowledge” being distinguished from “ethical reflection.”⁴ The latter may take advantage of speculative knowledge but not the former because this would destroy moral autonomy. Ethics or moral theology reposes on the first principle of moral knowledge and is subsequently developed through moral reflection. This is so because “there can be no valid deduction of a normative conclusion without a normative principle, and thus ... [the] first practical principles cannot be derived from metaphysical speculations.”⁵

It is argued that Aquinas is in agreement with these claims: he escapes this “logically illicit” transition from “is” to “ought” by an appeal to the principles of practical reason, which are autonomous regarding theoretical principles. What is often brought forth is a concern to guarantee the practical character of ethics. Morality seen as a theory of action in conformity with human nature would reduce ethics to a theoretical science. Ethics, in fact, is irreducibly practical. Hence, the Aristotelian attempt (present in Aquinas’s writings) to identify a “distinctive” or “peculiarly human function” is at least unnecessary for the whole of ethics.⁶ In the same vein, St. Thomas’s identification

² John Finnis, “Aquinas’ Moral, Political, and Legal Philosophy,” in *The Stanford Encyclopedia of Philosophy* (Spring 2006 Edition), edited by Edward N. Zalta (<http://plato.stanford.edu/archives/spr2006/entries/aquinas-moral-political/>). Elsewhere Finnis argues that Aquinas would allow no deduction of “ought” from “is,” nor would he sanction attempts to derive basic practical principles or practical (evaluative) judgments from facts.

³ Cf. John Finnis, “Natural Inclinations and Natural Rights: Deriving ‘Ought’ from ‘Is’ According to Aquinas,” in *Lex et Libertas: Freedom and Law According to St. Thomas Aquinas*, edited by Leo Elders and Klaus Hedwig, p. 43-55, Studi Tomistici 30 (Rome, 1987).

⁴ Martin Rhonheimer, “The Cognitive Structure of the Natural Law and the Truth of Subjectivity,” *The Thomist* 67 (2003), p. 23. In the words of another defender, it is the distinction between epistemology and ontology that plays the main role and critics of the New Natural Law Theory do not see it clearly; cf. Robert P. George, “Natural Law and Human Nature,” in *Natural Law Theory: Contemporary Essays*, edited by Robert P. George, p. 31-41 (Oxford: Clarendon Press, 1992).

⁵ John Finnis and Germain Grisez, “The Basic Principles of Natural Law: A Reply to Ralph McInerny,” *American Journal of Jurisprudence* 26 (1981), p. 24. “According to Grisez and others, natural law theory need not – and a credible natural law theory cannot – rely on this logically illicit inference from facts to norms” (George, “Natural Law and Human Nature,” p. 33).

⁶ “The ‘function’ argument is not the deep structure of Aristotle’s ethical method; it is an erratic boulder” (John Finnis, *Fundamentals of Ethics* [Washington, D.C.: Georgetown University Press, 1983], p. 17). Cf. seven arguments for this stance in Finnis, “Aquinas’ Moral, Political, and Legal Philosophy.”

of “man’s last end” is said not to be foundational for his ethics, “despite surface appearances.”⁷ It is thus possible, for example, to make an elaborate sketch of Aquinas’s theory of natural law “without needing to advert to the question of God’s existence or nature or will.”⁸ We are reminded as well by another author that the time of “naturalism” (equated often with “physicalism”) in ethics or moral theology is over: “To be sure, no moral theologian today would still derive moral normativity immediately from ‘nature’ as such (understood as the naturally ‘given’ and ‘presented’).”⁹

I will argue that Aquinas in a sense justified the transition from “is” to “ought” and I will attempt to exhibit some reasons why his ethics and moral theology are and should be naturalistic. The meta-ethical problems identified with David Hume and George Edward Moore, when compared with Aquinas’s teaching, will appear only as the consequences of mistakes made (or arbitrary decisions taken) on a more basic level, namely, the epistemological, semantic, and logical. These mistakes result as well in the elimination of the philosophy of nature and in the debilitation of metaphysics. I will argue that St. Thomas’s approach to human cognition, semantics and logic is to some degree immune to such perturbations.¹⁰ Thus, a defense of his ethics or moral theology against the accusation that he invalidly infers an “ought” from an “is” should not deny that he *infers* an “ought” from an “is,” but rather should explain in what sense he *validly* infers an “ought” from an “is.” I will clearly distinguish in the “Is/Ought Thesis” between the logical sub-thesis, the semantic sub-thesis, and the internalist assumption, which are distinct layers of the question. It is probable that the Thomistic is/ought controversy consists precisely in the blurring of these distinctions. A strong emphasis on the motivational character of moral discourse or necessarily practical character of ethics

Rhonheimer does not think “function” argument is an erratic boulder and criticizes Finnis on this point, see “The Cognitive Structure,” p. 24.

⁷ Finnis, “Aquinas’ Moral, Political, and Legal Philosophy.”

⁸ John Finnis, *Natural Law and Natural Rights* (Oxford: Oxford University Press, 1982), p. 49.

⁹ Martin Rhonheimer, *Natural Law and Practical Reason: A Thomist View of Moral Autonomy*, translated by G. Malsbary (New York: Fordham University Press, 2000), p. xvii. “Knowledge of human nature is not the point of departure for ethics, and even less for the practical reason of each acting subject: it is, rather, its result. We must already know the human good to interpret ‘nature’ rightly and thereby reach the concept of human nature, which is full of normative meaning. This human good we know, indeed, through the natural law, which therefore must be understood as a cognitive principle – as a form, that is to say, of moral knowledge” (Rhonheimer, “The Cognitive Structure,” p. 6).

¹⁰ Hence I inscribe myself into the Veatch-McInerny line of interpretation and develop more positively some of their brief remarks written in a polemical spirit.

seems to introduce the hegemony of the question: “*how* is it that we know we ought to do something?” (a kind of phenomenology of action) over the question: “*why* ought we do something?” (a causal explanation). I will however not verify this possibility here. In this dissertation I intend only to show, distinguishing these three layers of the question, in what way Aquinas justifies the transition from “is” to “ought.”

* * *

We could say, without exaggeration, that every reasonable philosophical and theological question of his time was of interest to Aquinas. Nearly all philosophical and theological teaching was the subject of his study. In this it is clearly demonstrated that he desired to gain an adequate and integral view of all things insofar as it was possible. This desire seems to follow upon plain experience: the understanding of one thing can illuminate the understanding of another thing or reveal an aspect of it yet unseen. We can perceive in St. Thomas’s writings that this experience is inscribed into a broader observation that there are different planes, aspects and orders in the world and that this significantly influences his methods for freeing himself from confusion or ignorance.

It is important for us to look at the topic of this dissertation from Aquinas’s perspective, taking into consideration his universality of interest and his methods of thinking. It is particularly important because we live today in a different world and in a different philosophical and theological spirit. Universality of interest is often perceived (sometimes correctly) as a sign of little scholarly skill. Moreover, the haste of our academic formation, and the pressure for publications (“publish or perish”) serve to deepen further the compartmentalization of our philosophy and theology. This fact contributes to the common notion that one can dispense oneself from studying issues which do not belong to one’s own field.¹¹

Such a dispensation is perhaps valid when studying modern or contemporary authors who write with the same “dismembered” spirit and from within the same (often unconsciously accepted) set of intuitively evident presuppositions. This does not apply,

¹¹ As Gyula Klima says: “For nowadays, I think, no serious scholar could deny that the scientist of our age would deserve for at least equal reasons Avicenna’s reprimand addressed to Galen, who, says Avicenna, ‘knows many branches of science, but does not know its roots’” (*Ars Artium. Essays in Philosophical Semantics, Mediaeval and Modern*, “Doxa Library” [Budapest: Institute of Philosophy, Hungarian Academy of Sciences, 1988], p. 2). Cf. also Benedict M. Ashley’s first two chapters of the book *The Way towards Wisdom. An Interdisciplinary and Intercultural Introduction to Metaphysics* (Notre Dame, Ind.: University of Notre Dame Press, 2006), p. 3-60.

however, when studying the major ancient and medieval authors. Reading their writings in this way is likely to lead to anachronism.¹² While the particular writings of these authors maintained methodological order and focus regarding their subjects, they nevertheless allude to other fields of philosophy and theology. Thus the ancients and medievals bear witness to the one integral teaching and learning they have experienced, wherein many parts, aspects and methods illuminate each other.

In the case of Aquinas, it is especially difficult to meet the demand of following his genius in its entirety, for he left a corpus of about nine to eleven million words (as a comparison, the Bible contains less than one million words). However, it seems necessary to study at least his general method of thinking and the scientific status of his moral theory with its implications for our topic in order to avoid the anachronistic error. For St. Thomas the very basic aim of the noblest kind of reasoning is to discover the due place of everything in the universe: *sapientis est ordinare*. If we take seriously into account his own indications concerning the proper order of learning and his teaching about the virtue of science, we cannot begin our study of Aquinas's moral theory with the texts where he treats issues that we recognize today as moral theory. We cannot do this unless we want to prove what we wanted to prove before committing ourselves to such study. This being the case it would be easier to claim that for Aquinas the thesis "no 'ought' from is" is true. Yet, it would force him to accept as a problem something that appeared as a philosophical problem for the first time only with Hume, who lived five centuries after Aquinas and had very different approach to logic, epistemology, metaphysics, and, finally, to theology.

¹² See for example how Klima distinguishes between something which is "intuitively clear" for us and something that used to be self-evident to our predecessors but is definitely no longer self-evident to us, when he denounces several anachronistic approaches to Aquinas even in the work of such a serious scholar as Anthony Kenny: Gyula Klima, "Review of A. Kenny: *Aquinas on Mind*, New York: Routledge, 1995," *Faith and Philosophy* 15 (1998): 113-117. Referring to another book by Kenny, Klima says that "in these criticisms [i.e. that Aquinas is 'thoroughly confused' on the notion of being and that his doctrine is 'one of the least admirable of his contributions to philosophy'] Kenny sometimes behaves like someone who, having less than perfect command of English, would express shock at the barbarity of British *mores* when he is asked by native speakers 'to keep his eyes peeled' or to allow them 'to pick his brain'. But in such a situation we should certainly not blame the native speakers for the misunderstanding. Rather, we should blame the foreigner for delivering judgment before understanding the native speakers' point, simply for failing to master their idiom. Likewise, if we can show that it is simply Kenny's failure to master Aquinas's conceptual idiom that accounts for the absurdities he claims to derive from Aquinas's theses, then we should immediately see where the blame lies" (a quotation from his paper "*Ens multipliciter dicitur*: The Semantics and Metaphysics of Being in St. Thomas Aquinas" delivered at the 4th *Annual Hawaii International Conference on Arts and Humanities*, Honolulu, HI, January 15, 2006, <http://www.fordham.edu/gsas/phil/klima/FILES/Ens-multipliciter-dicitur.doc>). (Cf. Klima, "On Kenny on Aquinas on Being: A critical review of *Aquinas on Being* by Anthony Kenny, Oxford: Oxford University Press, 2002," *International Philosophical Quarterly* 44 [2004]: 567-580.)

This does not mean that we should not ask how St. Thomas would have answered a question that he had not directly considered. Just the opposite is true. We can and should ask such questions because they reveal even more clearly the correctness of many of his basic solutions (solutions which may not be obvious or may seem inessential or even superfluous in themselves). What is not recommended is an attempt to save St. Thomas's claims from the threats of modern and contemporary theories without taking into consideration his worldview. After entering into his general worldview and with a proper understanding of the meaning of his statements, one can perhaps call into question some modern and contemporary theories.

* * *

Moral discourse of our times has been characterized by Alasdair MacIntyre as "fideistic."¹³ According to his interpretation of recent history of philosophy, an overwhelming majority of philosophers no longer believe that moral claims can be rationally justified. MacIntyre complains also that this fideist spirit has shaped our cultures as well.¹⁴ For some Thomist scholars the acceptance of Hume's Law as true and the claim that Aquinas did not infer an "ought" from an "is," is a sort of consent to this "fideistic" character of moral domain.¹⁵ One may wonder whether such a consent is not also concealed behind the claim that we can only find theology in Aquinas, not moral philosophy, and that his teaching on moral matters has little value for non-

¹³ This fideism takes the form of emotivism which is "the doctrine that all evaluative judgments and more specifically all moral judgments are nothing but expressions of preference, expressions of attitude or feeling, insofar as they are moral or evaluative in character" (MacIntyre, *After Virtue*, p. 11-12).

¹⁴ In MacIntyre's opinion there is "a general cynicism in our culture about the power or even the relevance of rational argument to matters sufficiently fundamental. Fideism has a large, not always articulate, body of adherents, and not only among the members of those Protestant churches and movements which openly proclaim it; there are plenty of secular fideists" (Alasdair MacIntyre, *Whose Justice? Which Rationality?* [London: Duckworth, 1988], p. 5).

¹⁵ Cf. e.g. Anthony J. Lisska, *Aquinas's Theory of Natural Law: An Analytic Reconstruction* (Oxford: Clarendon Press, 1996), p. 157-165. Yet I disagree with Lisska when he tries to avoid mentioning God in the reconstruction of Aquinas's theory of natural law. He claims that "the existence of God is, in a structural sense, neither a relevant concept nor a necessary condition for Aquinas's account of natural law ... Natural law depends upon natural kinds, which is a metaphysical issue resolved in terms of Aquinas's ontology, not his theology. Therefore, a consistent account of Aquinas's theory of natural law is independent conceptually of the proposition that God exists" (Lisska, p. 120-121).

believers.¹⁶ Perhaps the intention behind such an argument is to protect St. Thomas's thought from the attacks of "enlightened" thinking. If so, this defense seems to be misplaced and is harmful for the presentation of his moral theology itself.

The question may be asked: why is this dissertation, presented in order to obtain the degree of doctor in theology, so philosophical? There are no Biblical quotations to be found in it, nor are there any Catholic Councils, Fathers of the Church, popes, or documents of the Church cited. It may be easily conceded that this text is in some way the work of a historian. The thought of a theological giant of the thirteenth century is explored in these pages, and this may explain why certain references are not found here. Yet, even in this perspective it must be remarked that the *Summa theologiae* is not the principal source of this work and St. Thomas's commentaries to the Bible are not mentioned at all. Did the candidate for the degree of doctor in theology forget that Aquinas was above all a theologian? No, he did not forget. Moreover, he considers this work to be primarily the work of or for a theologian living today. The fideistic threat applies perhaps even more to moral theologians than to philosophers. Admittedly, a secondary intention of this work is that it be useful as well for the philosopher in search for an alternative solution for the "Is/Ought Thesis." Such an openness to dialogue on the philosophical level is dictated by a desire to know the truth (which is, in a way, "revealed" in Creation) as well as to protect the work of a theologian from being fideistic or sectarian. In banishing fideism, however, there is a danger of exaggeration and a fall into a sort of rationalism. Following St. Thomas, I hope to avoid this.

One of the great strengths of Aquinas's theology is the reconciliation brought about in it between theology and philosophy: he expresses the harmony of reason and faith. This harmony has been and is praised by papal encyclicals to our day. Aquinas's attention to the mystery of Creation did not allow him to discredit the power of human reason in an effort to exalt the mystery of Redemption; that is, to exalt the work of faith.¹⁷ Hence, for him, the defects of our cognition remain defects and are not

¹⁶ Ralph McInerny is afraid that some affinity with fideism can be found in the thought of such great Christian philosophers as Etienne Gilson and Jacques Maritain; see Ralph McInerny, *The Question of Christian Ethics* (Washington, D.C.: The Catholic University of America Press, 1993).

¹⁷ This is contrary to what happened in the Reformation. As one commentator remarks, "Aquinas offers us a theory of nature, including human nature, as founded and ordered by God. The universe, including man, is purposive, and human reason (aided by revelation) can determine God's purposes for man in that providential universe, which can be rationally approached through (Aristotelian and Platonic) metaphysics. One of the effects of the Reformation was to dethrone metaphysics, in the hope of replacing it by Biblical exegesis, Jerome being scheduled to replace Augustine as patron-saint-in-chief. Hence especially in lands where the effects of Protestantism were strong, we shall not be surprised to

constituents of our nature in the strict sense. When human defects are considered as human nature, “Hume’s Law” may stand firm.¹⁸

We can learn much from St. Thomas today regarding the role of philosophy in theology. It would take more pages than it is possible to allow here to explain the presence of philosophy in Aquinas’s theology.¹⁹ Let it suffice to say that for him one of the tasks of theology is to reflect on what is accessible to human reason in order better to understand the content of Revelation. Errors in our knowledge of creatures may directly result in errors in our knowledge of the Creator.²⁰ Since the problem with the transition from “is” to “ought” appeared in philosophy, it is appropriate to respond to it on this level. One of main interpretative keys I suggest for reading Aquinas’s writings against the threat of anachronism is to consider seriously his remarks about the order of learning. Hence, I present some elements of the background St. Thomas’s students are likely to have had when they began to learn ethics. These elements are philosophical and not theological because for Aquinas the study of theology is the last stage in a theological formation. Theology was to be approached only after instruction in several philosophical disciplines. From these philosophical lessons our reasons for stating that St. Thomas justified the transition from “is” to “ought” will be clear. This conclusion will be valid for both philosophy and theology. From the theological point of view this topic might be developed much further but since it deserves special attention, it would constitute a project for at least a comparable work.

find an attempt to restate human nature in non-metaphysical terms: if God is to be introduced, he is to be the God of the voluntarists and his nature beyond the reasoning of metaphysics. From an unknowable God we move fast to an irrelevant God, and eventually to his elimination as superfluous” (John Rist, *Real Ethics: Reconsidering the Foundations of Morality* [Cambridge: Cambridge University Press, 2002], p. 156-157).

¹⁸ See MacIntyre’s reconstruction of the religious (Calvinist) and philosophical background of “Hume’s Anglicizing Subversion”: *Whose Justice? Which Rationality?* p. 209-326. He notes, for example, that “in Calvinist versions of Augustine’s theology human beings are characterized in two ways. They are on the one hand viewed as having in some sense totally lost both their freedom to respond to God, to His commands, and to the offer of His grace, and any rational ability to discern the true nature of God and His law, so that all good is lost to them except by the operation of divine grace acting upon human beings, independently of their will. But on the other hand they are held to be guilty before God and accountable to Him in a way that presupposes both a knowledge of God’s law and responsibility for disobedience to it. And both of these stances are affirmed in the Westminster Confession and in the Catechisms” (ibid, p. 231).

¹⁹ I briefly did it elsewhere; see “Metafizyka i teologia u św. Tomasza z Akwinu,” forthcoming in *Metafizyka i teologia. Debata u podstaw*, edited by Robert J. Woźniak (Kraków: Wydawnictwo Apostolstwa Modlitwy, 2008).

²⁰ “Sic ergo patet falsam esse quorundam sententiam qui dicebant nihil interesse ad fidei veritatem quid de creaturis quisque sentiret, dummodo circa Deum recte sentiatur ... nam error circa creaturas redundat in falsam de Deo sententiam, et hominum mentes a Deo abducit” (CG, II, 3, n. 869).

In this study I would like to express opposition to an exaggerated emphasis on the autonomy of particular disciplines. Such emphasis shows concern for respecting scientific rules of thought. Yet an exaggeration begins when a sort of scientific puritanism develops against the influence of other sciences, and when a sapiential, uniting dimension vanishes. This fate may meet not only theology in relation to philosophical sciences but also practical sciences in relation to theoretical ones. Nonetheless, even when renouncing such influences in theology, one necessarily accepts some kind of philosophy, and the same necessary mechanism occurs also in practical sciences. As we shall see, an imbalance appears when the notion of discipline is not correlated with the notion of epistemic virtue.

* * *

I do not enter into open discussion with or critique of the Thomist scholars who accept “Hume’s Law” as true, nor do I want to explain why Hume preached no “ought” from “is.” Likewise, I do not want to explain why Moore, although criticizing Hume for his “naturalism,” confessed another version of “no ‘ought’ from ‘is.’” The opinions of experts on these two authors and my own reading of their texts suffice to construct a presentation of Aquinas’s position, a presentation that, I hope, will answer – at least partly – the main concerns of those for whom “Hume’s Law” holds and for whom the “Naturalistic Fallacy” is not a fallacy. Hence, my principal goal is to present only some elements of Aquinas’s thought which clarify and explain the topic of this dissertation. Therefore, in the body of the text of this work I limit myself to the treatment of St. Thomas’s teaching with some small exceptions. Other authors and problems are referred to in footnotes.

This dissertation is preceded by a short history of the problem to which Aquinas is, as it were, asked to respond. From these historical notes it will be clearer how to proceed in order to find solutions to subsequent difficulties. Further, this work is divided into two parts. Each part contains four chapters. Because I ask St. Thomas for an answer to the problem which originated in a later philosophical epoch, and because the representatives of this later philosophical epoch usually charged Aquinas’s epoch with an ossified dogmatism, baneful essentialism, sterile deductivism, passion for systems, etc., we shall briefly sketch in Chapter 1 Aquinas’s general approach to cognition, suggesting that either these accusations refer to other authors than Aquinas or

they simply commit the straw man fallacy. Today, these accusations are often an obstacle to reading or taking authors such as Aquinas seriously.

Given that there are disparate interpretations of Aquinas's texts, an appropriate interpretative key will also be sought, in order to protect our reading from at least some errors. Taking into account the historical context of Aquinas's writings and their character, as well as Aquinas's repeated statements, we will look to the order of learning to guide our research.

Since it is claimed that the transition from "is" to "ought" is "logically illicit" (or that the "Is/Ought Thesis" contains a logical sub-thesis), I will present in Chapter 2 some elements of the logic used by Aquinas, as well as examining the place of logic in the order of learning. This will reveal his specific understanding of logic and its role in the whole philosophical-scientific enterprise.

In Chapter 3, I will proceed in exploring some fundamental topics of Aquinas's logic, especially his semantics and the inherence theory of predication. This will enable us to see the direction of St. Thomas's possible answer to the semantic sub-thesis of the "Is/Ought Thesis" in Moore's reformulation.

Without drawing hasty conclusions, we will continue in Chapter 4 to manifest still another part of Aquinas's logic that is essential to our purposes. This part of his logic is a general methodology for every science, including moral science and theology. It consists in an extensive theory of demonstration and exhibits the rules for causal explanation. We will see how causal explanation, and especially the use of final cause in demonstrating purposeful facts or events, is made possible thanks to semantic presuppositions presented in Chapter 3. The question of first indemonstrable principles will also be briefly discussed.

Building upon what is addressed in the first part, on logic, the second part begins with Chapter 5 with the investigation of possibilities of constructing an "is." Specifically, I seek a science that constructs such a human "is" which might provide a basis for inferring an "ought." I point at natural science as this science in which we might, in the most proper and comprehensive way, present what the human being is.

Next, in Chapter 6, I delve into the question of the specificity of method in natural science conditioned by its object and principles. Principles of natural things are shown in terms of basic hylomorphism, the notion of nature itself is briefly explained, as also the principles of natural science are revealed in the analysis of formal, material, efficient and final causes. Already here the topic of goodness appears and is

provisionally analyzed so as to be seen as a rudimentary background for moral philosophy. In Aquinas's approach, this set of issues, dealt with from the scope of natural science, belonged to the ordinary formation that followed the course of liberal arts and were presupposed in the study of moral philosophy. When Aquinas was writing about ethics or theology, he could rightly expect his readers to have this background; he himself clearly states that earlier things are presupposed, treated as manifest, and not repeated.

In Chapter 7, I emphasize three topics from the vast domain of natural science. The first consists in pointing at some lines along with which the notion of nature could be analyzed in order to recover the richness of its signification in the teaching of St. Thomas. The second theme, the source of nature, is brought up in the prolongation, as it were, of the recovery of the notion of nature. I insist that for Aquinas's ethics as a discipline, a necessary context is theistic, and that it is not a postulate of practical reason but a consequence of the order of learning. The third topic, cogitative power, addresses mainly the third layer of the "Is/Ought Thesis," the internalist assumption.

Further, in Chapter 8, I evoke St. Thomas's teaching on goodness: how goodness is analyzable and how this analysis closes the "Open Question" in Moore's argument. It will be accompanied by some notes on the character of moral goodness and ethics as practical science.

These elements, I hope will sufficiently show in what sense Aquinas justified the transition from "is" to "ought," in what sense his ethics or moral theology should be naturalistic, and in what consists the practical character of practical disciplines.

0. A Short History of the Problem

The title of this dissertation refers to the problem formulated by David Hume. In order to identify the task I undertake in this study, as well as its importance, and in order to explain better why my presentation assumes this specific form, I will present the roots of this problem in Hume's philosophy, and G. E. Moore's contribution to the problem. This dissertation is not a comparative study of Hume (or other authors) and St. Thomas Aquinas. I shall merely introduce Hume's statement of the "Is/Ought Thesis" and its famous modification made by Moore, so as to trace back the origin of the problem constituting the topic of this dissertation and to insert my exposition of Aquinas in the context of contemporary discussion.

0.1. David Hume

David Hume (1711-1776) was a prominent figure of the Scottish Enlightenment. He is regarded even today as the most important philosopher ever to write in English¹ and is numbered as the third most influential "British empiricist" after John Locke and George Berkeley. Hume's best known works, including *A Treatise of Human Nature* (1739-1740), *Essays, Moral and Political* (1741-1742), *An Enquiry concerning Human Understanding* (1748), *An Enquiry concerning the Principles of Morals* (1751), and

¹ Cf. e.g. William Edward Morris, "David Hume", *The Stanford Encyclopedia of Philosophy* (Fall 2007 Edition), Edward N. Zalta (ed.), forthcoming: <http://plato.stanford.edu/archives/fall2007/entries/hume/>.

Dialogues concerning Natural Religion (1779), influenced many generations of philosophers² and have a significant influence today, especially in the English-speaking world.³

According to a common interpretation, Hume's philosophical project aimed at the total reform of philosophy, and in this vein a central part of his program was – for the sake of modesty – profoundly anti-metaphysical.⁴ More specifically, in his *Enquiry concerning the Principles of Morals*,⁵ Hume intends to bring about “a reformation in moral disquisitions” resembling what had recently been achieved in natural philosophy (on several occasions he reveals his admiration of these discoveries).⁶ Natural philosophy had been cured of “a common source of illusion and mistake” as well as from “passion for hypotheses and systems.” Hence, he would like to advance a similar progress in moral science. In order to do so he urges that we should “reject every system ... however subtle or ingenious, which is not founded on fact and observation,” and

² Morris notes that “his influence is evident in the moral philosophy and economic writings of his close friend Adam Smith. Hume also awakened Immanuel Kant from his ‘dogmatic slumbers’ and ‘caused the scales to fall’ from Jeremy Bentham’s eyes. Charles Darwin counted Hume as a central influence, as did ‘Darwin’s bulldog,’ Thomas Henry Huxley. The diverse directions in which these writers took what they gleaned from reading Hume reflect not only the richness of their sources but also the wide range of his empiricism. Today, philosophers recognize Hume as a precursor of contemporary cognitive science, as well as one of the most thoroughgoing exponents of philosophical naturalism” (ibid.).

³ Cf. e.g. James Fieser, “David Hume: Life and Writings,” *The Internet Encyclopedia of Philosophy*, <http://www.iep.utm.edu/h/humelife.htm> (accessed August 2007); and Don Garrett, “Hume, David,” in *Routledge Encyclopedia of Philosophy*, edited by E. Craig, London: Routledge, 2005, <http://www.rep.routledge.com.proxycu.wrlc.org/article/DB040SECT13> (accessed November 2006).

⁴ Cf. *EHU*, 26. A not yet thirty-year-old Hume in the Introduction to his *Treatise* declares that “any hypothesis, that pretends to discover the ultimate original qualities of human nature, ought at first to be rejected as presumptuous and chimerical” (*A Treatise of Human Nature*, David Fate Norton and Mary J. Norton [eds.] [Oxford University Press, 2007], p. 5 [further quoted as *T*]). Against too high expectations in philosophical research, Hume suggests an academic scepticism which “consists in a certain diffidence, modesty and lack of dogmatism in all one’s judgments plus a determination to refrain from all ‘high and distant enquiries’ beyond our faculties – such as cosmological speculation concerning ‘the origins of worlds’ – that have no connection to ‘common life.’ Hume in the *Enquiry* recommends and endorses this mitigated scepticism, which he judges to be socially useful, ... [and] call[s] for the elimination of scholastic metaphysics and theology not based on mathematical or experimental reasoning: ‘Commit it then to the flames: for it can contain nothing but sophistry and illusion’” (Garrett, SECT9).

⁵ *Enquiry concerning the Principles of Morals*, Tom L. Beauchamp (ed.), (Oxford: Oxford University Press, 1998) (quoted further as *EPM*).

⁶ “It is not for nothing that his work is entitled *A Treatise of Human Nature*, and subtitled, *An attempt to introduce the experimental method of reasoning into moral subjects*; it is an attempt to study and explain moral phenomena (as well as human knowledge and emotions) in the same sort of way in which Newton and his followers studied and explained the physical world” (John L. Mackie, *Hume’s Moral Theory* [London: Routledge and Kegan Paul Ltd, 1980], p. 6).

“hearken to no arguments but those which are derived from experience” (*EPM*, 7).⁷ In this climate Hume dispels any religious influence on ethics, denouncing religion as one of the sources of illusion and mistake and, as such, pernicious for humanity.⁸

Since, as he indicates, “the chief obstacle ... to our improvement in the moral or metaphysical sciences is the obscurity of the ideas, and ambiguity of the terms,”⁹ Hume intends to cure moral sciences through the most distinctive and innovative element of his system: his account of definition. He believes that this philosophical device will bring about an authentic renewal, and even calls his theory “a new microscope or species of optics” (*EHU*, 49) which will dramatically reshape moral sciences.¹⁰ Thus, he proposes to undertake a simple series of tests in order to determine precisely the cognitive content of words and ideas. Ideas, for Hume, “are naturally faint and obscure,” whereas “all impressions, that is, all sensations, either outward or inward, are strong and vivid.” Ideas are complex and simple. Complex ideas are composed of simple and simple ideas are fainter copies of the simple impressions from which they are ultimately derived, to which they correspond and exactly resemble.¹¹ This is his

⁷ From his fascination with the new natural philosophy and his remarks that in metaphysics we consider things that are not founded on experience and use unintelligible terms and principles, we may suspect that Hume was acquainted with metaphysicians who pounced on metaphysics without going through the course of natural philosophy. Such people are like boys, in Aquinas’s description, who repeat some formulas without knowing what they are talking about (“non attingunt mente, licet ea [i.e. metaphysicalia] dicunt ore” – *In Eth.*, VI, 7 [Leon. 47/2, p. 358, lin. 189-192]). Another suspicion is that Hume himself, fascinated with the new natural philosophy, did not bother to follow through the course of the old natural philosophy where one finds the experimental foundation of metaphysical terms and principles. These are only suppositions that I do not intend to verify here.

⁸ Hume is known for constructing a perfectly irreligious (atheistic) ethics, “the first in modern philosophy to be completely secular, without reference to God’s will, a divine creative plan, or an afterlife” (James Fieser, “David Hume: Moral Theory,” *The Internet Encyclopedia of Philosophy*, <http://www.iep.utm.edu/h/humemora.htm> (accessed June 2007)). He did not see any difference between religion and superstition. He claims that “religion began in the postulation, by primitive peoples, of ‘invisible intelligences’ to account for frightening, uncontrollable natural phenomena, such as disease and earthquakes. In its original forms, it was polytheistic, which Hume regards as relatively harmless because of its tolerance of diversity. But polytheism eventually gives way to monotheism, when the followers of one deity hold sway over the others. Monotheism is dogmatic and intolerant; worse, it gives rise to theological systems which spread absurdity and intolerance, but which use reason to corrupt philosophical thought. But since religion is not universal in the way that our nonrational beliefs in causation or physical objects are, perhaps it can eventually be dislodged from human thinking altogether” (Morris, *ibid.*). On Hume’s enterprise to free humanity from the yoke of religion, cf. Paul Russell, “Hume on Religion”, *The Stanford Encyclopedia of Philosophy (Winter 2005 Edition)*, Edward N. Zalta (ed.), <http://plato.stanford.edu/archives/win2005/entries/hume-religion/>.

⁹ *Enquiry concerning Human Understanding*, in *Enquiries concerning Human Understanding and concerning the Principles of Morals*, L. A. Selby-Bigge (ed.), 3rd edition revised by P. H. Nidditch (Oxford: Clarendon Press, 1975), p. 61 (further quoted as *EHU*).

¹⁰ Cf. Morris, *ibid.*

¹¹ Since impressions are not, strictly speaking, capable of truth and falsity, Hume suggests *coherence* as a means of accepting or rejecting impressions: “We may draw inferences from the coherence of our

“general position” presented as the “first principle ... in the science of human nature” (*T*, 10), and often referred to as the “Copy Principle.” According to Hume, we must always inquire “from what impression is that supposed idea derived?” The suspicion that a term is being employed without any meaning or idea justifies the performance of such a trial before the tribunal of reason. When we can associate no idea to a given term, this means that the term has no cognitive content, even in spite of its honorable presence in philosophy or theology.¹² Using this device “we may reasonably hope to remove all dispute” concerning ideas (*EHU*, 17).

The account of definition has its consequences in Hume’s manner of escaping from the “eidetic atomism” that results from our sense cognition. The aforementioned theory of the origin of ideas does not lead him to accept a set of disconnected, independent ideas, unified only in that they are the contents of a particular mind. He claims that “there is a secret tie or union among particular ideas, which causes the mind to conjoin them more frequently together, and makes the one, upon its appearance, introduce the other” (*T*, 416).¹³ This “secret tie or union” that is required for connecting our ideas is threefold: “resemblance, contiguity in time or place, and cause and effect” (*T*, 13). He calls them “principles of connexion or association.”¹⁴ It is important to note that they are not theoretical or rational. The principles accounting for the connection of our ideas are rather natural operations of the mind that we experience in “internal

perceptions, whether they be true or false; whether they represent nature justly, or be mere illusions of the senses” (*T*, 59). Elisabeth Anscombe says that “Hume defines ‘truth’ in such a way as to exclude ethical judgments from it, and professes that he has proved that they are so excluded” (“Modern Moral Philosophy” in *The Collected Philosophical Papers of G. E. M. Anscombe*, vol. III: *Ethics, Religion and Politics* [Basil Blackwell: Oxford, 1981], p. 27).

¹² It seems improbable that so great philosopher as Hume was would claim that the only tribunal is *my own reason* – as if it were impossible to learn from others what they mean by a term or by an idea. If I or even a group of people cannot assign an idea or impression to a term, it does not mean that this term has no meaning at all. It may have no meaning *for me* if I do not understand it, but from my lack of understanding, and without any stronger warrant, I cannot make a universal extrapolation. In some cases in his practice as philosopher, however, such an improbable interpretation imposes itself.

¹³ Hume confesses that he “does not find that any philosopher has attempted to enumerate or class all the principles of association” (*EHU*, 19), so advertises it as his most original contribution: “If any thing can intitle the author to so glorious a name as that of an inventor, ‘tis the use he makes of the principle of the association of ideas” (*T*, 416). He also compares this discovery for the science of human nature to Newton’s discovery of the Law of Gravitation for the physical world (cf. *T*, 14).

¹⁴ In the Appendix to the second edition of the *Treatise* Hume expresses his dissatisfaction with what he wrote about the principle of connexion: “I am sensible, that my account is very defective, and that nothing but the seeming evidence of the precedent reasonings cou’d have induc’d me to receive it. If perceptions are distinct existences, they form a whole only by being connected together. But no connexions among distinct existences are ever discoverable by human understanding. We only *feel* a connexion or a determination of the thought, to pass from one object to another. ... I cannot discover any theory, which gives me satisfaction on this head” (*T*, 635-636).

sensation.”¹⁵ This statement directly opposes any attempt to explain how ideas “bound together” by postulation of theoretical notions (as, in Hume’s opinion, Lock intended to do). Among the theoretical notions hitherto postulated, the most stigmatized are those of power and substance. In this way the need of substance, as traditionally conceived in philosophy, is obviated.¹⁶ On this point, experts in Hume’s philosophy say it is good to take into account his opposition against such rationalists who did not acknowledge the dependence of intellectual representations on sensory experience. Since he was writing in reaction against this kind of philosophy, we may have some serious difficulties in distinguishing in his writings the faculty of the intellect from the interior sense of imagination.¹⁷

¹⁵ I follow Morris in this interpretation of the “principles of association.” If this interpretation is right, it confines causation only to the sensory realm. For him, then, cause is necessarily something sensorily experienced.

¹⁶ “I wou’d fain ask those philosophers, who found so much of their reasonings on the distinction of substance and accident, and imagine we have clear ideas of each, whether the idea of *substance* be deriv’d from the impressions of sensation or of reflection? If it be convey’d to us by our senses, I ask, which of them; and after what manner? If it be perceiv’d by the eyes, it must be a colour; if by the ears, a sound; if by the palate, a taste; and so of the other senses. But I believe none will assert, that substance is either a colour, or sound, or a taste. The idea, of substance must therefore be deriv’d from an impression of reflection, if it really exist. But the impressions of reflection resolve themselves into our passions and emotions: none of which can possibly represent a substance. We have therefore no idea of substance, distinct from that of a collection of particular qualities, nor have we any other meaning when we either talk or reason concerning it. The idea of a substance as well as that of a mode, is nothing but a collection of simple ideas, that are united by the imagination, and have a particular name assign’d them, by which we are able to recall, either to ourselves or others, that collection” (*T*, 16).

¹⁷ “In the course of analyzing the operations of the human mind, Hume discusses a number of cognitive faculties. In addition to sensation and reflection, which are faculties for having impressions, Hume distinguishes two faculties for having ideas. Memory is a faculty for having ideas that retain not only the character but also the order and a large share of the original force and vivacity of the impressions from which they are copied. The imagination, in contrast, does not retain this large share of the force and vivacity of the original impressions and is not constrained to preserve their order; instead, the imagination can separate and recombine ideas freely. Because it is a faculty for having ideas, the imagination is, like memory, fundamentally a representational faculty. Such additional cognitive faculties as judgment and reason are nevertheless functions of the imagination in Hume’s view because they ultimately constitute particular ways of having ideas. This, in turn, is because belief, in which judgment consists and which constitutes the characteristic outcome of reasoning, is itself a lower degree of force and vivacity, or ‘liveliness’, below that of impressions and memory. Notably absent from Hume’s account of cognitive faculties is any further representational faculty of *intellect* ... Hume’s adoption of the Copy Principle constitutes a rejection of such a faculty, for it commits him to accounting for all human cognition exclusively in terms of representations that are images of sensory and inner impressions” (Garrett, SECT2). Aquinas notes that “Stoici moti sunt ad ponendum intellectum esse fantasiam” (*In De An.*, I, 2 [Leon. 45/1, p. 9, lin. 37-38]) and “Antiqui enim philosophi naturales ... posuerunt quod intellectus non differt a sensu ... Hinc etiam processit Stoicorum opinio, qui dicebant cognitionem intellectus causari ex hoc quod imagines corporum nostris mentibus imprimuntur, sicut speculum quoddam, vel sicut pagina recipit litteras impressas, absque hoc quod aliquid agat” (*CG*, III, 84, n. 2591-2592). He remarks also that “non esset necesse ponere intellectum agentem si uniuersalia, quae sunt intelligibilia actu, per se subsistunt extra animam, sicut posuit Plato” (*De spir. creat.*, 9 c.).

In accordance with Hume's forecast, this innovative account of definition, and the theory of association ensuing from it, did revolutionize metaphysical and moral inquiry. According to his classification of sciences, in the four categories of "Logic, Morals, Criticism, and Politics, is comprehended almost everything, which it can any way import us to be acquainted with, or which can tend either to the improvement or ornament of the human mind" (*T*, 4). As we can see, metaphysics, along with natural philosophy, disappears from the horizon of human interest or even capabilities, seemingly replaced by "criticism", the then-emerging discipline we now call "aesthetics." At the outset Hume also claims that morals regard (along with criticism) our tastes and sentiments. It is often indicated that this radical shift is a consequence of Hume's specific understanding of the intellect and its capabilities. His analysis of the human mind immediately affected his understanding of causality, going so far as to exclude the possibility of traditional causal explanation in sciences.¹⁸

One of the main innovations in moral inquiry, as Hume himself remarks, is the opposition against a longstanding position of philosophers from Plato to Spinoza recommending that actions should be motivated by reason rather than passion.

Every rational creature, 'tis said, is oblig'd to regulate his actions by reason; and if any other motive or principle challenge the direction of his conduct, he ought to oppose it, till it be entirely subdu'd, or at least brought to a conformity with that superior principle. On this method of thinking the greatest part of moral philosophy, ancient and modern, seems to be founded ... In order to shew the fallacy of all this philosophy, I shall endeavour to prove *first*, that reason alone can never be a motive to any action of the will; and *secondly*, that it can never oppose passion in the direction of the will (*T*, 265).

According to Hume's classification, all reasoning is either demonstrative or probable. We can learn from him that "abstract or demonstrative reasoning never influences any of our actions" (*T*, 266) because it concerns only relations of ideas and does not discover the actual existence or non-existence of things, "as its proper province is the world of ideas, and as the will always places us in that of realities" (*T*, 265). (This clearly Platonic opposition between the world of ideas as proper to reason and the world of reality, is worth noting.) Thus, Hume observes, "demonstration and volition seem, upon that account, to be totally remov'd, from each other" (*ibid.*). Yet, more precisely,

¹⁸ On Hume's account of causality see Helen Beebe, *Hume on Causation* (London-New York: Routledge, 2006) and William A. Wallace, *Causality and Scientific Explanation*, vol. 2: *Classical and Contemporary Science* (Ann Arbor: The University of Michigan Press, 1974). For a contemporary critique of Humean concept of causality as deeply ingrained in today's philosophy, see John C. Cahalan, *Causal Realism: An Essay on Philosophical Method & the Foundations of Knowledge* (Lanham-New York-London: University Press of America, 1985).

we learn that demonstrative reasoning *alone* is never the cause of any action. It can, however, affect action, but only by helping to formulate the process of reasoning scientifically (in his mind this means mathematically) and by helping to judge causes and effects. Nor can probable reasoning motivate action, because if there were no objects affecting our emotion of aversion or propensity (these emotions arise from the prospect of pain and pleasure), reasoning would affect no action. Probable reasoning, to which it is proper to discover the relation of cause and effect, can nonetheless serve to direct action by showing the means to a desired end. Yet we are reminded that “the impulse arises not from reason.” If the prospect of pain and pleasure alone is capable of motivating our actions, then in the presence of an object which is indifferent to us, no discovery of the cause-effect connection is able to motivate us. It follows for Hume that “reason alone can never produce any action, or give rise to volition” (*T*, 266).

From this conclusion Hume infers also that reason is “incapable of preventing volition, or of disputing the preference with any passion or emotion” (*ibid.*). We are informed that “this consequence is necessary.” Why? Because “nothing can oppose or retard the impulse of passion, but a contrary impulse.” It was established that reason has no original influence; therefore, it cannot exert an opposite influence either. This suffices for Hume to conclude that “we speak not strictly and philosophically when we talk of the combat of passion and of reason. Reason is, and ought only to be the slave of the passions, and can never pretend to any other office than to serve and obey them” (*ibid.*).¹⁹ Only when a false judgment accompanies a passion, can we speak about unreasonable passions, yet even then it is not passion but judgment that is unreasonable. The consequence is simple: “it is impossible, that reason and passion can ever oppose each other” (*T*, 267).

To this it should be added that for Hume reason alone cannot even discern between moral good and evil (*cf. T*, 294).²⁰ It follows for Hume from the simple fact that morals do influence human actions whereas, as established, reason alone “can never have any such influence.” Since “reason of itself is utterly impotent” in exciting passions or actions, it is impossible that the rules of morality be its conclusions. He believes that reason is inactive in itself and “it must remain so in all its shapes and appearances, whether it exerts itself in natural or moral subjects, whether it considers

¹⁹ Cf. Garrett, SECT10. Note how smoothly “is” is transformed into “ought” despite the prohibition.

²⁰ For a more ample account see e.g. Garrett, SECT11.

the powers of external bodies, or the actions of rational beings” (ibid.). We should note here a blunt negation of the existence of the active function of the intellect. Hume started by claiming that reason *alone* cannot incite an action and ends astonishingly with generalizing his conclusion, stating that reason in *all* its operations may have only a passive function. He now claims to have proven that “reason is perfectly inert” and that “reason is wholly inactive, and can never be the source of so active a principle as conscience, or a sense of morals” (*T*, 295).²¹

Hume exposes the traditional claim that morality consists in relations in a very particular way. In his former treatment of relations he had established that there are only four kinds of relations susceptible of certainty and demonstration: resemblance, contrariety, degrees in quality, and proportions in quantity and number. Although he notes the suspicion that he might have omitted something important, he maintains that no other relations can enter into scientific discourse. Until “some one be so good as to point out to me this new relation,” says Hume, he refuses to carry his suspicion any further for “‘tis impossible to refute a system, which has never yet been explain’d” (*T*, 299).²² Since we find these four relations not only in human beings but also in irrational or inanimate objects, Hume’s surprising conclusion is that such objects must also bear moral characteristics. This is plainly absurd; therefore, morality cannot consist in relations, moral rules cannot be demonstrated, and reason cannot discover virtue and vice.²³ Later Hume also “proves” that morality does not consist “in any matter of fact, which can be discover’d by the understanding” (*T*, 298).

Finally, as if sealing his explanation why moral distinctions are not derived from reason, Hume states his famous “Is/Ought Thesis”:

²¹ On Hutcheson’s influence on Hume, see Alasdair MacIntyre, *Whose Justice? Which Rationality?* (London: Duckworth, 1988), p. 260-290 (especially on this point that reason is practically inert, see p. 285).

²² Here, again, are we facing a similar policy as in his dealing with definitions? Who can claim: what I do not understand, nobody ever understood or explained? Even in writings of a great philosopher this seems to go too far.

²³ In footnote 69 Hume reveals his understanding of relations as something in sharp opposition to “matters of fact,” and that may help to explain why he infers otherwise unjustified conclusions. In *EHU* Hume formulates clearly this distinction (now called “Hume’s folk” or “Hume’s dictum”): “All the objects of human reason or enquiry may naturally be divided into two kinds, to wit, Relations of Ideas, and Matters of fact. Of the first kind are the sciences of Geometry, Algebra, and Arithmetic ... [which are] discoverable by the mere operation of thought ... Matters of fact, which are the second object of human reason, are not ascertained in the same manner; nor is our evidence of their truth, however great, of a like nature with the foregoing” (*EHU*, 20). Note also, that Hume’s rejection of the meaning of the distinction between substance and accident, leads him here to see no differences between human relations and relations of irrational or inanimate beings.

In every system of morality, which I have hitherto met with, I have always remark'd, that the author proceeds for some time in the ordinary way of reasoning, and establishes the being of a God, or makes observations concerning human affairs; when of a sudden I am surpriz'd to find, that instead of the usual copulations of propositions, *is*, and *is not*, I meet with no proposition that is not connected with an *ought*, or an *ought not*. This change is imperceptible; but is, however, of the last consequence. For as this *ought*, or *ought not*, expresses some new relation or affirmation, it is necessary that it should be observ'd and explain'd; and at the same time that a reason should be given, for what seems altogether inconceivable, how this new relation can be a deduction from others, which are entirely different from it. But as authors do not commonly use this precaution, I shall presume to recommend it to the readers; and am persuaded, that this small attention wou'd subvert all the vulgar systems of morality, and let us see, that the distinction of vice and virtue is not founded merely on the relations of objects, nor is perceiv'd by reason (*T*, 302).

This argument caused a furore in philosophy and is known to this day as “Hume’s Law.” It is still regarded as controversial and is usually understood as follows: it is impossible to infer an “ought” directly from an “is.” This is to say, that between “ought” and “is” there is so considerable a dichotomy that it is impossible to deduce imperative phrases from descriptive ones. There is thus an inferential gap between moral and nonmoral claims (the “Is/Ought Gap”) or between fact and value.²⁴ No moral conclusion can be derived from exclusively nonmoral premises. Hence, a moral conclusion can be derived only from premises containing at least one moral statement. Although Hume himself did not do so, we may specify the following on the basis of his writings: the inferential gap is accompanied by a logically independent belief about the inherently motivational character of moral considerations. This latter belief is called an “internalist assumption.” The “internalist assumption” is based on a commonsense view that “normal” people will not be indifferent to moral considerations. Within Hume’s system, this assumption is developed into the suggestion that we should derive moral rules from the “moral sense.” Moral sense for Hume is the natural capacity to feel a distinctive kind of approbation and disapprobation when considering features of character from “the general point of view” (that is, independently of one’s own self-interest). This feeling is activated primarily by natural sympathy with those who are affected by the character traits in question. He argues, therefore, that values are the projections of natural human desires or sentiments. Moral values are one kind of value and their main characteristic is that they are the projections of desires that aim at the common good of society. Through the observation and analysis of these desires or

²⁴ For an example of the diverse interpretations of this thesis see W. D. Hudson (ed.), *The Is/Ought Thesis*, (New York: Macmillan, 1969).

sentiments, we may, Hume holds, construct a true moral philosophy. Since feeling and sympathy are natural phenomena, they belong to the scope of that science which considers man. They are the object of this science even so far as to efface the difference between moral philosophy and the science of human nature (cf. *EHU*, 1). If we have “moral sense,” the analysis proper to the science of human nature is said to improve our moral evaluations. Such a science can, for example, enable one to perceive that “monkish virtues” (like fasting, celibacy or self-denial) are not truly virtues, or it may help to establish a new set of virtues that will persuade others. This manner of treating moral questions in the same way as natural phenomena was dubbed by posteriority as “naturalism in ethics.”²⁵

In the Appendix to the second edition of the *Treatise*, Hume includes an important note about some errors that touch upon the very foundations of his philosophical project. He admits with disarming candor that “there are two principles, which I cannot render consistent; nor is it in my power to renounce either of them, viz. *That all our distinct perceptions are distinct existences, and that the mind never perceives any real connexion among distinct existences*” (*T*, 636). Hume himself does not seem to be conscious whence these principles come or how to justify them.²⁶

There is no need to discuss here the historical content of Hume’s argument and its diverse interpretations. What is important to the purpose of this dissertation is that the origin of the problem as it is commonly understood become apparent. Although this dissertation is concerned with Aquinas’s thought and not with that of Hume, an outline of Hume’s thought has nonetheless been presented herein in consideration of an influential contemporary interpretation of St. Thomas’s moral philosophy and theology. This contemporary view seems to presuppose the legacy of “Hume’s Law” as it is

²⁵ Cf. Garrett, SECT11 and H. O. Mounce, *Hume’s Naturalism* (London-New York: Routledge, 1999), p. 77-98.

²⁶ “A central tenet of Hume’s nominalism is that whatever is distinguishable is separable. As far as I have been able to discover, Hume never supports this by any argument or evidence, and it is therefore a sheer dogma in his philosophy. On the other hand, the most effective representative of medieval nominalism, Ockham, has an elaborate argument to support this proposition” (Julius R. Weinberg, *Ockham, Descartes, and Hume: Self-Knowledge, Substance and Causality* [The University of Wisconsin Press, 1977], p. 129). Cf. similarly Weinberg, *Abstraction, Relation, and Induction. Three Essays in the History of Thought* (Madison and Milwaukee: University of Wisconsin Press, 1965). He says also that: “The nominalism of Berkeley and Hume and their critiques of abstraction are not only central features of British Empiricism but also pave the way for many contemporary philosophical issues” (p. 3). Berkeley fought against abstract general ideas; Hume followed Berkeley and “used his nominalistic views of language in his theories of space and time; his contention that repetition adds no new idea depends upon his nominalism; and his critiques of *cause*, *body*, and *personal identity* all presuppose his nominalism to some extent or other” (*ibid.*). See especially the chapter “Hume’s Nominalism,” p. 32-41.

commonly interpreted. Before we start exploring Aquinas's thought, however, we must briefly mention yet another author who, while criticizing Humean "naturalism," suggests a more refined version of the "Is/Ought Thesis." We are referring, of course, to George Edward Moore.

0.2. G. E. Moore

G. E. Moore (1873-1958) is another great figure in the philosophy of the English-speaking world.²⁷ He is regarded as the third of the trinity of philosophers from Trinity College Cambridge (after Bertrand Russell and Ludwig Wittgenstein²⁸) and thereby as one of the fathers of "analytical philosophy." After his youthful and brief fondness for British idealism (especially that of F. H. Bradley), he became its vigorous opponent. Another significant characteristic of his thought, which lasted throughout the span of his philosophical activity, consists in his opposition to empiricism. Already in his idealist dissertation on "The Metaphysical Basis of Ethics" (1897) he writes about "the fallacy involved in all empirical definitions of the good." This claim is identified as a precursor of his famous statement in *Principia Ethica* (1903)²⁹ on the "naturalistic fallacy" in all naturalistic definitions of goodness. *Principia Ethica* "is often considered a revolutionary work that set a new agenda for 20th-century ethics" and it "remains the best-known expression of a general approach to ethics."³⁰

²⁷ See e.g. Thomas Baldwin, *G. E. Moore* (London: Routledge, 1990).

²⁸ Russell was a great friend of Moore's, whereas Wittgenstein seemed to disrespect his colleague as he is related to have remarked of Moore that he showed how far one could get in philosophy without a great intellect (cf. Tom Regan, *Bloomsbury's Prophet* (Philadelphia: Temple University Press, 1986), p. 187]. Brian Hutchinson suggests that "Moore can be seen to anticipate Wittgenstein's diagnosis that the philosophical intellect suffers a kind of bewitchment that creates a deep and abiding sense of alienation. Like Wittgenstein, Moore suggests a program of therapy whose aim is to restore philosophers their sense of being at home in the world" (Brian Hutchinson, *G. E. Moore's Ethical Theory: Resistance and Reconciliation*, [Cambridge University Press, 2001], p. 6).

²⁹ *Principia Ethica*, Revised edition with 'Preface to the second edition' and other papers, T. Baldwin (ed.) (Cambridge: Cambridge University Press, 1993) [further quoted as *PE*].

³⁰ Thomas Hurka, "Moore's Moral Philosophy", *The Stanford Encyclopedia of Philosophy* (Spring 2005 Edition), Edward N. Zalta (ed.), <http://plato.stanford.edu/archives/spr2005/entries/moore-moral/>. "The influence of *Principia Ethica* is an extraordinary phenomenon in the history of English philosophy. Cambridge men of that generation really thought (I can remember my father continuing to think) that now for the first time in the history of philosophy ethics had been given a really rigorous foundation. This was Moore's own claim; the wonder is that men like Russell, McTaggart, and Maynard Keynes, accepted it" (Peter Geach, *Truth, Love, and Immortality* [London: Hutchinson, 1979], p. 174-175). "Twentieth-century British ethical theory is unintelligible without reference to *PE*" (Baldwin, p. 46). See also Alasdair MacIntyre's interpretation of this period and its lasting consequences for today's

Moore intended to bring about a revolution in ethics.³¹ According to him, the “Naturalistic Fallacy” is an error of those who either deny or neglect the fact that the property of goodness is simple, indefinable, and non-natural.³² It is simple in the basic sense that it has no parts. Yet to define a thing, in his philosophy, is to list its parts and their arrangements.³³ Thus, if good is simple, it is indefinable. He does not mean here a verbal definition, but a real one or, as he calls it, a definition which is “analytic.” To be analytically indefinable is for a thing to be an ultimate constituent of reality (cf. *PE*, 9-10). By non-natural property he means a property that cannot exist in time by itself. Natural properties exist in time: “they are in themselves substantial and give to the object all the substance that it has.”³⁴ Any confusion of good with some temporal, that is, natural property, results in fallacy (cf. *PE*, 13). If we want to avoid the fallacy, we cannot identify or confuse good with anything else.³⁵ Good is a *sui generis* property, something we are unable to pick up and move about with even “the most delicate scientific instruments” (*PE*, 124).

Moore introduced controversy by accusing previous moral philosophy of committing this fallacy: every author who had defined goodness in either naturalistic or metaphysical terms (hence every author until Sidgwick, cf. *PE*, 14), had constructed an erroneous ethics.³⁶ Against them Moore devised an argument known as “Open Question

moral reflection and the life of societies: *After Virtue. A study in moral theory* (Duckworth: London, 1981), p. 11-21 and 60-75. MacIntyre develops certain insights that G. E. M. Anscombe presented in her brilliant and very influential article “Modern Moral Philosophy.”

³¹ “It is an often-noted irony that much of Moore’s revolutionary impact was quite other than what he envisioned or hoped for. Besides the contribution his work has made to objectivist ethical theory, it has also given great sustenance to emotivists, prescriptivists, and other noncognitivists” (Hutchinson, p. 88). Hutchinson claims that emotivism is Moore’s bastard, not his rightful heir (*ibid.*, p. 90).

³² Cf. Panayot Butchvarov, “That Simple, Indefinable, Non-Natural Property *Good*,” *Review of Metaphysics* 36 (1982): 51-75.

³³ Hutchinson remarks that Moore’s insistence on this understanding of definitions comes from his fear of “the monistic strain in the thought of the British Hegelians. If the requirement that definitions be in terms of other things is taken to the farthest reaches, we will not be able to understand *anything* until we understand *everything*. Appearance and reality will then collide; instead of there being many discrete things, there will be only one thing. Although this is not the only place where we find Moore’s thought to be marred by a fear of views, which could, in certain hands, have such unpalatable ramifications, this might be the place where it is the most marred” (Hutchinson, p. 24).

³⁴ Cf. *PE*, 41. “Take the natural properties away and not even a bare substance remains” (Hutchinson, p. 23).

³⁵ Cf. G. E. Moore, Preface to *Principia Ethica, Revised Edition*, p. 17. Cf. Hutchinson, p. 39-60.

³⁶ Proximate targets of Moore were hedonists such as Jeremy Bentham, evolutionary ethicists such as Herbert Spencer, and metaphysical ethicists such as T. H. Green, but he also criticises Aristotle, the Stoics, Spinoza, Rousseau, Kant, and Mill. Moore criticizes Aristotle’s treatment of ethics for being “highly unsystematic and confused” in the most important points, “owing to his attempt to base it on the naturalistic fallacy” (*PE*, 106).

Argument.” In order to show that good is indefinable, Moore uses as an example “one of the more plausible definitions of good,” namely that,

to be good may mean to be what we desire to desire. Thus if we apply this definition to a particular instance and say ‘When we think that A is good, we are thinking that A is one of the things we desire to desire,’ our proposition may seem quite plausible. But if we carry the investigation further, and ask ourselves, ‘Is it good to desire to desire A?’ it is apparent, on a little reflection, that this question is itself as intelligible, as the original question, ‘Is A good?’ – that we are, in fact, now asking for exactly the same information about the desire to desire A, for which we formerly asked with regard to A itself. But it is also apparent that the meaning of this second question cannot be correctly analyzed into ‘Is the desire to desire A one of the things which we desire to desire?’: we have not before our minds anything so complicated as the question ‘Do we desire to desire to desire to desire A?’ Moreover any one can easily convince himself by inspection that the predicate of this proposition – ‘good’ – is positively different from the notion of ‘desiring to desire’ which enters into its subject: ‘That we should desire to desire A is good’ is *not* merely equivalent to ‘That A should be good is good.’ It may indeed be true that what we desire to desire is always also good; perhaps, even the converse may be true: but it is very doubtful whether this is the case, and the mere fact that we understand very well what is meant by doubting it, shews clearly that we have two different notions before our minds (PE, 13).³⁷

According to Moore, the same argument works against every other naturalist foundational proposal. Another example he gives is the identification of good with pleasure. If we accepted that “x is good” is equivalent to “x is pleasure,” we would be forced to accept a tautology, because saying “pleasure is good” we would say no more than “pleasure is pleasure.” Such a definition, says Moore, does not inform us whether this something that we desire to desire, is good, because we can still ask whether what we desire to desire is good. Thus, the question whether it is good remains “open.” Moore also considers definitions of goodness that hinge upon the notions of more evolved and more unified, and make the same conclusion: the question remains open.³⁸ If the question remains open no ethics can be constructed on this foundation.

³⁷ Hutchinson comments: “It is breaking no new ground to point out that Moore’s presentation of the OQA is quite muddled. In fact, it is shocking how slapdash he is with something he considers so important” (Hutchinson, p. 29). “Actually, *no* version of the OQA can establish the indefinability of good as something *certain*” (ibid., p. 33, note 41). “Because of all it requires, the OQA is hardly something we have a right to accept *at the beginning* of philosophical investigation. ... He seems to be saying that he proved to us that good is indefinable simply by getting us to see that it is!” (ibid., p. 34). “Finally then, Moore’s ‘argument’ is not an argument, but a means for the attainment of an epiphany. ... The recognition of a question’s significance sets the stage for the epiphany that finally comes without the obfuscating mediation of reflection. ... So Moore’s project becomes one more in a very long line of attempts to return us to, and keep us in, a state of innocence” (p. 35). See also Alexander Miller’s analysis of this argument and its relevance today: *An Introduction to Contemporary Metaethics* (Cambridge: Polity Press, 2003), p. 10-25.

³⁸ In an article which intends to sum up 20th century ethics, we can read that “it has been known for the last fifty years that Moore discovered no *fallacy* at all. Moreover, Moore’s accident-prone deployment of his famous ‘open question argument’ in defending his claims made appeal to a now defunct

One of the main concerns behind this argument is Moore's belief that if good were definable in either naturalistic or metaphysical terms, it would rob the science of morals of its right to exist: it would be completely taken over by experts in the defining science. His efforts, therefore, aim to save ethics from possessive aspirations of the "non-value sciences," that is, natural sciences.³⁹ Moore even denies that health be subject to a natural definition, that nature has fixed what health should be: "we have only to go to her and ask her what health is, and we shall know what is good: we shall have based an ethics upon science" (*PE*, 27). Such an enquiry is impossible, he says, because such an appeal to nature, according to him, annuls the logical autonomy of ethics. He confesses:

I myself am not prepared to dispute that health is good. What I contend is that this must not be taken to be obvious; that it must be regarded as an open question. To declare it to be obvious is to suggest the naturalistic fallacy (*ibid.*).

The "Open Question Argument" draws a clear line of demarcation between sciences that consider natural properties and ethics which considers non-natural properties. Later on, refining the claims he had made in *Principia*, Moore holds that *only* value properties are non-natural and it is precisely non-naturalness that is responsible for value's being an intrinsic feature of the world.⁴⁰ According to Moore, it is important to banish the "naturalistic fallacy" from ethics because such an error can be dangerous to society. Namely, "naturalistic fallacy" leads to the denial of a plurality of goods (*cf. PE*, 15). Here we have only to think of those who, too narrow in their perception, might perceive only one natural property as goodness. Moore ends his lectures on ethics as follows:

The pity is that some of the best minds are the most likely to be influenced by theories – to think a thing is right, because they can give reasons for it. It is something important to recognise that the best reasons can be given for *anything* whatever, if only we are clever enough: sophistry is easy, wisdom is impossible, the best that we can do is to trust to COMMON SENSE.⁴¹

intuitionistic Platonism, and involved assumptions about the transparency of concepts and obviousness of analytic truth that were seen (eventually, by Moore himself) to lead inescapably to the 'paradox of analysis.' ... However readily we now reject as antiquated his views in semantics and epistemology, it seems impossible to deny that Moore was on to something" (Stephen Darwall, Allan Gibbard, Peter Railton, "Toward *Fin de siècle* Ethics: Some Trends," *Philosophical Review* 101 [1992]: 115-116).

³⁹ He even defines "natural" by natural sciences: "By 'nature', then, I do mean and have meant that which is the subject matter of the natural sciences and also of psychology. It may be said to include all that has existed, does exist, or will exist in time" (*PE*, 92).

⁴⁰ Cf. G. E. Moore, "Conception of Intrinsic Value" in *Philosophical Studies*, (Totowa, New Jersey: Littlefield, Adams & Co., 1956), p. 253-76.

⁴¹ *The Elements of Ethics*, Tom Regan, ed. (Philadelphia: Temple University Press, 1991).

Moore believed that the “Open Question Argument” undermines ethical naturalism as well as ethical supernaturalism. We encounter this belief in his insistence that moral facts and properties are *sui generis*, that is, are neither reducible to nor derivable from non-moral (scientific or metaphysical) judgments. This is why, he claims, ethics should be autonomous. Moore denies that ethical issues could be a matter of empirical enquiry. He also denies that fundamental ethical truths are truths of reason. His solution consists in discerning a human capacity to grasp fundamental ethical truths intuitively. We cannot assign any reason that would justify these truths because they are fundamental and we grasp them intuitively; thus our knowledge of moral truths is not arrived at by inference from non-moral truths but is founded on the recognition of certain moral propositions as self-evident.⁴² Nonetheless, he holds that normative judgments are objectively true or false and that fundamental moral judgments ascribe the property of goodness to states of affairs (placing him in the camp of moral realists).

Moore bases his argument primarily on the semantic assumption that moral and nonmoral terms are not interdefinable. In this way “naturalistic fallacy” becomes a reformulation of the “Is/Ought Thesis.”⁴³ We spoke above about a hidden distinction in Hume’s formulation of the thesis into the “internalist assumption” and the inferential gap. Moore seems to offer an equivalent of the second part of the original formulation (the inferential gap). In David Brink’s analysis, this version of the “Is/Ought Thesis” might be presented as follows:

Because nonmoral statements consist of (i) synthetic statements expressed by sentences using no term in its moral sense, and (ii) analytic statements, the is/ought thesis claims that no moral statement can be deduced from a consistent set of premises made up entirely of statements of types (i) and (ii). This formulation allows us to distinguish two subtheses in the is/ought thesis. The *logical thesis* claims that no moral statement can be deduced from statements exclusively of type (i). The *semantic thesis* claims that there are no type (ii) statements which by themselves, or in conjunction with type (i) statements, would entail a moral statement. In particular, the semantic thesis claims that there are no statements asserting relations of implication between the possession of moral properties and the possession of nonmoral properties – moral *bridge premises* – that are analytic. (If we were to deny the existence of analytic statements, we could construe the is/ought thesis as the claim that no moral statement can be deduced from a consistent set of premises consisting entirely of

⁴² Naturalism is characterized by the claim that moral facts are nothing more than familiar facts about the natural, including social, world. Whereas the proper claim of supernaturalism is that moral facts and properties are supernatural facts and properties. Some of his philosophical posterity accepted rejection of ethical naturalism and supernaturalism but did not enter into nonnaturalism. Instead, they claim that there are no moral facts or properties and have therefore adopted some form of noncognitivism. Cf. David O. Brink, *Moral Realism and the Foundations of Ethics* (Cambridge University Press, 1989), p. 156.

⁴³ Cf. *ibid.*, p. 146-147.

statements of type (i), and the is/ought thesis would depend only on the truth of the logical thesis.)⁴⁴

This analysis is exceptionally helpful for us because it shows clearly that the “Is/Ought Thesis,” despite the fact that it concerns moral considerations, has its main roots in logic and semantics.

* * *

For a Thomist scholar who wants to remain faithful to the teaching of the Church on moral issues, to accept the thesis “no ‘ought’ from ‘is’,” or to take the “naturalistic fallacy” seriously, may be a means to avoid some contemporary dangers. If one is convinced that Aquinas’s metaphysics and natural science are compromised, one will certainly avoid references to nature, natural function and natural development in discussion with today’s academia. To do otherwise could mean running the risk of having to face some contemporary scientific data which are irreconcilable with Aquinas’s thought. Nobody can deny that there are, indeed, some serious challenges. Thomistic teaching might appear as being in a hopeless position and it might be safer to not enter into such a discussion. It might seem more reasonable to look for another way of defending certain truths concerning morality as objective, universal, and unchangeable.

To be sure, it is a good idea to present moral truths, not in a parochial manner, but rather in a manner acceptable to as many as possible. Aquinas’s teaching on natural law, as an integral part of his moral thought, is indeed a teaching worthy of wise popularization. If we today are in possession of philosophical devices enabling us to understand better what, perhaps, St. Thomas did not understand himself or what, perhaps, he did not emphasize enough because there was no need to do so, we certainly should take advantage of this. Some of these philosophical achievements, however, may be so incompatible with St. Thomas’s thought that, when incorporated into his teaching, they significantly modify it, even to the point of making it difficult to identify this thought with Aquinas. Moreover, some of these philosophical achievements may prove to be no achievements at all, but plain errors. Thus, our understanding, armed with these modern or contemporary theories may turn out to be, not a better understanding, but

⁴⁴ Ibid., p. 149.

a deficient one. If this is so, then there is a possibility that, in studying Aquinas's thought, we may learn something.

I hope it will be evident from this dissertation that the "Is/Ought Thesis" and "Naturalistic Fallacy," as meta-ethical claims, are incompatible with St. Thomas's thought because of different epistemological, semantical, logical and metaphysical presuppositions. It is also advisable to take into account that some renowned authors have recently attempted to show that these two philosophical devices are doubtful achievements.⁴⁵ We should be all the more cautioned not to defend important moral truths with faulty premises and not to interpret Aquinas by use of such distorting lenses.

⁴⁵ See for example G. E. M. Anscombe, "On Brute Facts," originally published in 1958, reprinted in *Ethics, Religion and Politics*, 22-25; idem, "Modern Moral Philosophy," 26-42; Philippa Foot, *Natural Goodness* (Oxford University Press, 2001) as well as her many essays reprinted in collections *Virtues and Vices and Other Essays in Moral Philosophy* and *Moral Dilemmas and Other Topics in Moral Philosophy* (both published in Oxford University Press, 2002); John R. Searle, "How to Derive 'Ought' From 'Is'," *The Philosophical Review* 73 (1964): 43-58 (reprinted in *Speech Acts: An Essay in the Philosophy of Language*, [Cambridge University Press, 1970], as Section 6.1: "The Naturalistic Fallacy Fallacy"); Julius Kovesi, *Moral Notions*, first published in 1967 and re-edited by R. E. Ewin and Alan Tapper in *Moral Notions (with Three Papers on Plato)* (Christchurch, New Zealand: Cybereditions, 2004); Alasdair MacIntyre, *After Virtue: A study in moral theory* (London: Duckworth 1981), especially 6-83; Jean-Louis Gardies, *L'erreur de Hume* (Paris: Presses Universitaires de France, 1987); Candace Vogler, *Reasonably Vicious* (Harvard University Press, 2002); Hilary Putnam, *The Collapse of the Fact/Value Dichotomy and other essays* (Harvard University Press, 2002).

PART ONE

Aquinas's Logic and Scientific Methodology

1. Aquinas's General Approach to Cognition

The claim that St. Thomas did not infer moral rules from metaphysics or natural science seems to be motivated by a desire to exculpate him from the charge of being an essentialist or deductivist. Indeed, in his most mature work, the *Summa theologiae* (further quoted as *STh*), one may be struck easily by the fact that everything seems to follow from the established truth of God's existence and other truths established in the first questions of this grand work. When read in this spirit, an impression may impose itself on the reader: that of an arbitrary juggling with abstract ideas that have no reference to reality. Moreover, this juggling may appear to be trickery, aimed to conceal the fact that arguments are proposed in order to increase the plausibility of accepted dogmatic claims.

This is perhaps why some interpretations emphasize that the second part of *STh* might be detached from the first without detriment to the whole of St. Thomas's moral project. Some authors are content to find, in this second part of *STh*, some first principles that have, at last, a relationship to human experience and hence, it is thought, one can begin to build an ethics which is both autonomous and plausible. This may especially appear to be the case because Aquinas refers to first, indemonstrable principles. If they are indemonstrable, no previous science is needed. This is in accordance with the merciless alternative that ethics should be autonomous or it will not be ethics at all.

It is apposite, in light of the above, that our presentation of Aquinas's logic be preceded with some general remarks about his approach to cognition and about his way

of thinking. These remarks will caution us to take into consideration the fact that, in order to understand *STh* properly, we should learn a great deal about something else before we begin to read it.

1.1. World, wonder, predecessors, and questions

Aquinas follows Aristotle in many respects (or follows what he understands to be Aristotle's thought),¹ especially in his methodology and general approach to human

¹ In this text I am not concerned with the historic Aristotle but rather with St. Thomas's Aristotle. The view that Aquinas's commentaries on Aristotle are a kind of *pia fraus* supporting the truth of Christianity has little textual foundation. St. Thomas's attitude toward Aristotle's writings, as epitomized for instance in his *De unitate intellectus*, is grounded in the conviction that Aristotle in many philosophical questions was basically right, but we should either bring out his true meaning contaminated by his commentators or help him to express what he wanted but for which he lacked the intellectual instruments. I agree with Ralph McInerny who says: "It is libelous to suggest that Thomas simply took words and phrases from Aristotle and turned them to purposes he knew they could not truly serve" (*Aquinas on Human Action: A Theory of Practice* [Washington, D.C.: The Catholic University of America Press, 1992], p. 177 [see Chapter 7: "Aristotle and Thomas: Père Gauthier"]). I follow also the opinion of Louis Marie Régis when he says "the philosophic method of St. Thomas is entirely borrowed from Aristotelianism ... It would be easy to give historical proof that St. Thomas completely accepted the Aristotelian philosophic method, simply by considering his continual quotations of the Stagiryte's methodological texts. An even more direct argument is to be found in his interest in Aristotle's purely logical works and in the precision of his commentaries upon those parts of logic that deal explicitly with scientific or philosophic knowledge. ... although Aquinas rejected some of Aristotle's doctrines, he never criticized his method but, rather, defended it on every occasion and brought it to its highest possible fruition by transporting it to regions that the Stagiryte would never have dreamed could be studied by means of the methodological instruments that he himself had perfected" (*Epistemology*, translated by I. C. Byrne [New York: Macmillan Co., 1959], p. 122 and 123). Along the same lines James A. Weisheipl says: "In my opinion Thomas commented on Aristotle because he felt an apostolic need to help young masters in arts to understand Aristotelian philosophy correctly in harmony with the actual text and the guideline of faith, where necessary. Similarly I consider these commentaries to have a great philosophical value, as well as great significance, in the development of Thomas's theology. The least one can say is that Thomas must have considered the valuable time and energy expended on their composition, at the very height of his maturity, worthy and necessary" (*Friar Thomas d'Aquino. His Life, Thought, and Works* [Oxford: Basil Blackwell, 1975], p. 281). James Doig in his two authoritative and exemplary studies: *Aquinas on Metaphysics. A Historico-Doctrinal Study of the Commentary on the Metaphysics* (The Hague: Martinus Nijhoff, 1972) and *Aquinas's Philosophical Commentary on the Ethics* (The New Synthese Historical Library, Texts and Studies in the History of Philosophy, vol. 50 [Dordrecht-Boston-London: Kluwer Academic Publishers, 2001]), reaches similar conclusions. Besides, searching "intenti* aristotelis" in Index Thomisticus (<http://www.corpusthomicum.org/it/index.age>) results in a list of 50 very interesting cases where St. Thomas is at pains to discern Aristotle's true intention. Some of them were recently analyzed by John Jenkins in his article "Expositions of the Text: Aquinas's Aristotelian Commentaries" (*Medieval Philosophy and Theology* 5 [1996]: 39-62) where he discusses different approaches to the question and concludes: "Aquinas's dialectical approach to authorities and his externalism led him to hermeneutical principles which required that in order to elucidate Aristotle's texts, he must both make clear Aristotle's individualistic understanding and construct, or at least suggest, the best account of the matter under discussion. ... in the commentaries Aquinas often sought to be true to Aristotle's text by presenting not only what Aristotle understood but also what his intellect 'tended toward,' as Aquinas understood this by his own best lights. And Aquinas's best lights included both what he took as the insights of his own metaphysics as well as what he knew by the light of Christian faith" (p. 61). Finally, Marie-Dominique Chenu in this way captures the difference between

knowledge. Both Aristotle and St. Thomas perceive the world in which we live as a complex multi-faceted reality that excites our wonder in such a way that we seek to know it better, to explain it or at least something of it. To wonder is to admit some ignorance and to desire to know the unknown, because wonder expresses itself in a question.² Today it is often repeated that philosophy in the ancient world began with wonder, whereas in the modern world it began with doubt. This, however, does not seem to hold for either Aristotle or Aquinas. Both doubt and wonder are for them signs of some ignorance that can produce philosophical questions. St. Thomas, commenting on Aristotle's text, writes:

for those who wish to investigate the truth it is fitting ... before the work "to doubt well," i.e. properly arrive at that which is doubtful. This is so because the subsequent investigation of truth is nothing else than the solution of earlier doubts. ... just as one who wishes to loosen a physical knot must first inspect the knot and the way in which it is tied, similarly one who wants to solve a doubt must first survey all the difficulties and their causes. ... those who wish to investigate the truth without first considering the doubt are like those who do not know where they are going. ... one who does not know where he is going cannot go there directly, except perhaps by chance. Therefore, neither can one seek the truth directly unless he first sees what is doubtful.³

Apart from obvious biblical inspiration, Aquinas learned also from Aristotle to revere his great predecessors and to remain in constant dialogue with them in his personal commitment to know the world or something of it.⁴ This reverence originates

modern and medieval commentators: "Thus, counter to the practice of the modern exegete who abstains from taking as his own the thought of his author and who does not have to say so if he does not accept it, the medieval commentator implicitly makes the contents of the text his own, and if he does not accept it, he says so explicitly whereas he is presumed to make it his own, if he says nothing" (*Towards Understanding St. Thomas*, translated by A. M. Laundry and D. Hughes [Chicago: Henry Regnery Co., 1964], 207-8).

² "Dubitatio et admiratio ex ignorantia provenit ... Et quia admiratio ex ignorantia provenit, patet quod ad hoc moti sunt ad philosophandum ut ignorantiam effugarent" (*In Meta.*, I, 3, n. 55). See Aquinas's analysis of wonder: *Super II Sent.*, 18, 1, 3 sol.; *De pot.*, 6, 2 c.; *CG*, III, 101; *STh*, I, 105, 7.

³ "Volentibus investigare veritatem contingit ... ante opus 'bene dubitare', idest bene attingere ad ea quae sunt dubitabilia. Et hoc ideo quia posterior investigatio veritatis, nihil aliud est quam solutio prius dubitatorum. ... sicut ille qui vult solvere vinculum corporale, oportet quod prius inspiciat vinculum et modum ligationis, ita ille qui vult solvere dubitationem, oportet quod prius speculetur omnes difficultates et earum causas" (*In Meta.*, III, 1, n. 339). English translations of St. Thomas's texts in this study are mine, although I always consulted existing standard translations. Aquinas continues: "Illi qui volunt inquirere veritatem non considerando prius dubitationem, assimilantur illis qui nesciunt quo vadant. ... ille qui nescit quo vadat, non potest directe ire, nisi forte a casu: ergo nec aliquis potest directe inquirere veritatem, nisi prius videat dubitationem" (*ibid.*, n. 340).

⁴ Aquinas recognizes that Aristotle learned this from his own teacher, Plato: "Post omnes praedictos philosophos supervenit negotium Platonis, qui immediate Aristotelem praecessit. Nam Aristoteles eius discipulus fuisse perhibetur. Plato siquidem in multis secutus est praedictos philosophos Naturales, scilicet Empedoclem, Anaxagoram et alios huiusmodi, sed alia quaedam habuit propria praeter illos praedictos philosophos, propter philosophiam Italicorum Pythagoricorum. Nam ipse ut studiosus erat ad veritatis inquisitionem, ubique terrarum philosophos quaesivit, ut eorum dogmata sciret. Unde in

from a profound consciousness that any serious search for truth has a social dimension.⁵ This social character of searching for the truth already begins in the process of learning a language or languages.⁶ Then it grows and develops with the aid of direct or indirect communication. The communication is direct when the truth discovered by our predecessors is transmitted as historical knowledge or as immediate instruction by a teacher. Indirect communication occurs when the errors of our predecessors provide opportunities for dialectical discussions that manifest the truth more clearly.⁷ Those engaged in the pursuit of truth, therefore, owe a debt of gratitude to these predecessors:

It pertains to justice to be grateful to those who have helped us attain so great a good as knowledge of the truth ... not merely to those whom one thinks have found the truth and with whose views one agrees by following them, but also to those who, in the search for truth, have made only superficial statements, even though we do not follow their views; for these men too have given us something because they have shown us instances of actual attempts to discover the truth. ... we accept from certain of our predecessors whatever views about the truth of things we think are true and disregard the rest. Again, those from whom we accept certain views had predecessors from whom they in turn accepted certain views and who were the source of their information.⁸

Italiam Tarentum venit, et ab Archita Tarentino Pythagorae discipulo de opinionibus Pythagoricis est instructus" (*In Meta.*, I, 10, n. 152).

⁵ "Licet id quod unus homo potest immittere vel apponere ad cognitionem veritatis suo studio et ingenio, sit aliquid parvum per comparisonem ad totam considerationem veritatis, tamen illud, quod aggregatur ex omnibus 'coarticulatis', idest exquisitis et collectis, fit aliquid magnum, ut potest apparere in singulis artibus, quae per diversorum studia et ingenia ad mirabile incrementum pervenerunt" (*In Meta.*, II, 1, n. 276). Cf. also *In Eth.*, I, 11 (Leon. 47/1, p. 39, lin. 36-61).

⁶ Cf. *In Peryerm.*, I, 2, (Leon. 1*/1, p. 22, lin. 167-184); *In Eth.*, I, 1 (Leon. 47/1, p. 4, lin. 55-78). See also John O'Callaghan, *Thomist Realism and the Linguistic Turn: Toward a More Perfect Form of Existence* (Notre Dame, Ind.: University of Notre Dame Press, 2003), p. 275-298.

⁷ "Adiuvatur enim unus ab altero ad considerationem veritatis dupliciter. Uno modo directe. Alio modo indirecte. Directe quidem iuvatur ab his qui veritatem invenerunt: quia ... dum unusquisque praecedentium aliquid de veritate invenit, simul in unum collectum, posteriores introducit ad magnam veritatis cognitionem. Indirecte vero, inquantum priores errantes circa veritatem, posterioribus exercitii occasionem dederunt, ut diligenti discussione habita, veritas limpidius appareret." (*In Meta.*, II, 1, n. 287).

⁸ "Est autem iustum ut his, quibus adiuti sumus in tanto bono, scilicet cognitione veritatis, gratias agamus ... non solum his, quos quis existimat veritatem invenisse, quorum opinionibus aliquis communicat sequendo eas; sed etiam illis, qui superficialiter locuti sunt ad veritatem investigandam, licet eorum opiniones non sequamur; quia isti etiam aliquid conferunt nobis. Praestiterunt enim nobis quoddam exercitium circa inquisitionem veritatis. ... A quibusdam enim praedecessorum nostrorum accepimus aliquas opiniones de veritate rerum, in quibus credimus eos bene dixisse, alias opiniones praetermittentes. Et iterum illi, a quibus nos accepimus, invenerunt aliquos praedecessores, a quibus acceperunt, quique fuerunt eis causa instructionis" (*In Meta.*, II, 1, n. 288).

This is why St. Thomas read so carefully, frequently, and reverently the writings of his great predecessors, and urged others to do so as well. For him it was a sign of laziness to neglect this reading, and a sign of arrogance to hold one's predecessors in contempt.⁹

From Aristotle, Aquinas also learned that the immediate motive to study the thought of others is the hope of finding knowledge about the truth of things (not the truth that somebody thought in this or that way) or of finding at least some useful hints to discover the truth about things that really exist.¹⁰ To arrive at certainty, a kind of radical openness that one might find in a court hearing is required. Otherwise, an important aspect or point of view may be missed, notwithstanding the fact that the same can cause some confusion and even add more doubts. In the end, however, this openness is worthwhile because it can reveal more of the truth we want to discover.¹¹ Therefore, such a reverential study is not guided by a mere fancy, but by a sincere desire for solid explanations, sound reasoning, and, finally, for the truth:

Since in choosing or rejecting opinions a person should not be influenced either by a liking or dislike for the one introducing the opinion, but rather by the certainty of truth, he therefore says that we must love both parties, namely, those whose opinion we follow, and those whose opinion we reject. For both have diligently sought the truth and have aided us in this matter. Yet we must "be persuaded by the more certain," i.e., we must follow the opinion of those who have attained the truth with greater certitude.¹²

The reverence shown to our predecessors does not mean an uncritical acceptance of their positions, but the whole idea of apprenticeship, so present in Aristotle and emphasized by Aquinas as an acknowledgment of dependence on others,¹³ as also

⁹ "Docilitas, sicut et alia quae ad prudentiam pertinent, secundum aptitudinem quidem est a natura: sed ad eius consummationem plurimum valet humanum studium, dum scilicet homo sollicite, frequenter et reverenter applicat animum suum documentis maiorum, non negligens ea propter ignaviam, nec contemnens propter superbiam." (*STh*, II-II, 49, 3 ad 2).

¹⁰ "Studium philosophiae non est ad hoc quod sciatur quid homines senserint, sed qualiter se habeat veritas rerum" (*In De caelo*, I, 22, n. 8).

¹¹ "Sicut autem in iudiciis nullus potest iudicare nisi audiat rationes utriusque partis, ita necesse est eum, qui debet audire philosophiam, melius se habere in iudicando si audierit omnes rationes quasi adversariorum dubitantium" (*In Meta.*, III, 1, n. 342).

¹² "Quia in eligendis opinionibus vel repudiandis, non debet duci homo amore vel odio introducentis opinionem, sed magis ex certitudine veritatis, ideo [Aristoteles] dicit quod oportet amare utrosque, scilicet eos quorum opinionem sequimur, et eos quorum opinionem repudiamus. Utrique enim studuerunt ad inquirendam veritatem, et nos in hoc adiuverunt. Sed tamen oportet nos 'persuaderi a certioribus', idest sequi opinionem eorum, qui certius ad veritatem pervenerunt" (*In Meta.*, XII, 9, n. 2566).

¹³ According to MacIntyre, this, among other things, distinguishes sharply Plato, Aristotle, and Aquinas's approach from the Enlightenment model of "plain person" anthropology and morality, which regarded a human being as knowing by himself and at once what the world is and what he is supposed to do, as stripped of any tradition, independent from any influence of others, and establishing his own world for

a spontaneous aversion from the arrogance, demands that serious reasons be present for not accepting them:

doubtful issues arise for two reasons, either because the ancient philosophers entertained a different opinion about these things than is the truth of reality, or because they completely omitted to consider them.¹⁴

St. Thomas approvingly remarks that it was Aristotle's custom in most of his works to preface his own solutions and synthesis with a historical survey and a serious discussion of the opinions of his predecessors.¹⁵ On the other hand, to avoid the charge of being naïve or credulous, Aquinas also stresses the importance of evidence to accept a proposition as true.¹⁶ Again, according to him there are degrees in our knowledge. There is a hierarchy of truths and there are different kinds of truths (e.g. necessary and contingent truths). These factors should also be taken into consideration while assenting to or dissenting from what is proposed to us.

himself: cf. Alasdair MacIntyre, *Three Rival Versions of Moral Enquiry: Encyclopaedia, Genealogy, and Tradition*, Gifford Lectures delivered in the University of Edinburgh in 1988 (Notre Dame, Ind.: University of Notre Dame Press, 1990), especially chapter VI, "Aquinas and the Rationality of Tradition" (p. 127-148), and chapter VIII, "Tradition against Encyclopaedia: Enlightened Morality as the Superstition of Modernity" (p. 170-195). See also his *Dependent Rational Animals. Why Human Beings Need the Virtues*, "The Paul Carus Lecture Series 20," (Chicago and La Salle, Illinois: Open Court, 1999). Régis also contrasts Aristotle and Aquinas on this score with Descartes and Kant, cf. *Epistemology*, p. 126-127. John Deely also writes that Descartes engendered the general prejudice against the importance of history for the philosopher, the prejudice that justifies the dismissal of predecessors: cf. John Deely, "What Happened to Philosophy Between Aquinas and Descartes?" *The Thomist* 58 (1994), p. 557-558. Descartes says for example: "when I cast a philosophical eye upon the various activities and undertakings of mankind, there are almost none which I do not consider vain and useless" (Descartes, *Discourse on Method*, translated by John Cottingham in *The Philosophical Writings of Descartes*, edited by John Cottingham, Robert Stoothoff, and Dugald Murdoch [Cambridge University Press, 1985], Vol. II, p. 112). Such a statement may be well taken as a summary of the history of ethics that G. E. Moore presented in his *Principia Ethica*. Deely complains that: "so ahistorical had philosophy become by the modern twilight that it was possible in the twentieth century for Bertrand Russell to market a best-selling history of philosophy in which the portraits even of such major figures as Aristotle and Aquinas bear almost no relation to historical actuality. In such a climate of historical obfuscation, his student Ludwig Wittgenstein succeeded in presenting the wholesale implementation of late Latin nominalism under the guise of a method without precedent for handling philosophical problems" (Deely, *Four Ages of Understanding: The First Postmodern Survey of Philosophy from Ancient Times to the Turn of the Twenty-first Century* [Toronto: University of Toronto Press, 2001], p. 581). Deely notes as well that Wittgenstein "took pride in having studied almost nothing of other philosophers" (ibid., p. 583).

¹⁴ "Sunt autem huiusmodi dubitabilia propter duas rationes. Vel quia antiqui philosophi aliter susceperunt opinionem de eis quam rei veritas habeat, vel quia omnino praetermiserunt de his considerare" (*In Meta.*, III, 1, n. 338).

¹⁵ "Est autem attendendum, quod propter has rationes consuetudo Aristotelis fuit fere in omnibus libris suis, ut inquisitioni veritatis vel determinationi praemitteret dubitationes emergentes. Sed in aliis libris singillatim ad singulas determinationes praemittit dubitationes: hic vero simul premitit omnes dubitationes, et postea secundum ordinem debitum determinat veritatem" (*In Meta.*, III, 1, n. 343). Cf. *In Meta.*, I, 11, n. 180.

¹⁶ "Esse credulum in vitium sonat quia designat superfluitatem in credendo, sicut esse bibulum superfluitatem in bibendo" (*De ver.*, 14, 10 ad 6). Cf. *In Meta.*, I, 1, n. 29.

Yet, over all accounts that we learn from our predecessors, the primacy in our cognition has the reality of things which we want to know, things which are the measure of our knowing, measure of truth that we discover or learn. The only immediate cognitive access to the reality of things is that through our senses. It is therefore the reality of material and changing being. A special attention paid to this fact is one of the most crucial characteristics of St. Thomas's thought. We should also have this awareness when we read his texts. It helps in avoiding two modern philosophical tendencies: an absolutization of a mathematical way of thinking on the one hand, and a whimsical poeticization on the other. For Aquinas, as for Aristotle, the gate to any human cognition is our sensory experience, which remains always the essential feature of every cognitive operation.

What Aquinas learned from Aristotle above all was his genuine technique of investigation and explanation. Aristotle identified and described patterns of question-asking and answer-giving, and then proposed a method of research, as well as a method of reliable philosophical explanation. Taken together, these two methods correspond to human cognitive capacities and the structure of the world, and lead one to true knowledge insofar as they help to search truth and avoid errors in reasoning. Aquinas adopted these methods from Aristotle and applied them to philosophical and theological issues in his work. The method of research has several names: "method of discovery" (*via inventionis*), "method of inquiring" (*via inquisitionis*) or "dialectical method" (*dialectica*). The second method, the general method of reliable philosophical explanation, is understood to be identical to scientific explanation and is called a "method of judgment" (*via iudicii*) or "method of instruction" (*via doctrinae*). Sometimes Aquinas also refers to these two methods more narrowly, referring to logical presentation (*ostendere logice*) or analytical presentation (*ostendere analytice*).¹⁷ These methods constitute two parts of logic: the first is presented mainly in Aristotelian *Topics* and the second in *Posterior Analytics*. The purpose of both methods is to provide reliable means of acquiring true knowledge about the world.

The use of the method of research develops one's capacity to challenge uncritically accepted principles and opinions. This method helps to identify the topic of research, classify what is known already, develop the argument, defend one's ideas

¹⁷ Cf. *In Poster.*, I, 33 (Leon. 1*/2, p. 122, lin. 3-8); 43 (p. 161, lin. 5-7); 44 (p. 168, lin. 101-102).

against opponents, and discover new truths.¹⁸ Using this method we may proceed from merely probable premises, such as commonly received opinions or some analogies (as in arguments *ex convenientiae*), or from general, that is, only logical considerations. Conclusions of such arguments are only more or less probable. This distinguishes dialectics from scientific method, to which it is proper to attain a certain knowledge through proper causes. Dialectical discourse may also concern things about which we cannot have strictly scientific knowledge, supplying tentative conclusions where certitude is impossible. It can play a preparatory function in gaining first indemonstrable principles or an exact scientific knowledge of something. Thanks to its discursive mode, a problem may be stated properly and unconvincing arguments may be undermined in order to find proper causes and make room for a strict demonstration. So, in Aristotle's and Aquinas's account, dialectics, understood as an inquiry led by the method of research, is significantly present along with demonstrations in scientific disciplines.¹⁹ St. Thomas indicates that dialectical discourse is to scientific discourse what an untermiated process is to a terminated one.²⁰

¹⁸ Cf. Louis-Marie Régis, *L'Opinion selon Aristote* (Paris-Ottawa: Vrin-Institute d'Etudes Médiévales, 1935), an authoritative study where the author with a great clarity utterly dispels absurd accusations against Aristotle's alleged dogmatism in philosophy: "Aristote n'est ni dogmatique, ni aprioriste, come on le lui a si souvent reproché, c'est nous qui le faisons dogmatique et aprioriste par nos interprétations textuelles et doctrinales" (p. 267-268). Although Aristotle is the main figure of this book, the author refers from time to time to Aquinas showing several serious errors and inaccuracies in some interpretations of Aquinas's writings. These spurious interpretations seem to result from ignorance or underestimation of Aristotle's logical books and Aquinas's commentaries upon them. See also his *Epistemology*, p. 127. By the end of the book Régis writes: "Everyone knows the profound contempt in which Descartes and modern thinkers hold Scholastic logic; to them, it is formal, vicious, and does violence to the mind without giving it evidence. And what is worse, it is absolutely sterile as an instrument for discovering truth. According to Descartes, the source of these capital sins of the Scholastic method is in its essentially synthetic character, which completely excludes analysis, by which fact the only method of discovering truth is excluded. These statements made by the putative father of philosophic method are owing to his total ignorance of the texts of ancient philosophers as well as to his identification of the method of discovery proper to mathematical truth with that of philosophical truth" (p. 442). Cf. following pages of this book for a plain justification of these claims.

¹⁹ Alasdair MacIntyre underlines the role of dialectics in the process of gaining first principles of demonstration in Aristotle's and Aquinas's theory of science, and notes that such science "had thus been an inseparable blend of demonstration and dialectic. But from late medieval Aristotelianism onward they were split apart in a way that first diminished the importance of Aristotle's discussions of the *Topics*, either by downgrading the importance of dialectical argument or else by assimilating the study of dialectic to the study of *consequentiae* (see Eleonore Stump 'Topics: their Development and Absorption into Consequences' chapter 14 *The Cambridge History of Later Medieval Philosophy*, edited by N. Kretzmann, A. Kenny, J. Pinborg, and E. Stump, Cambridge, 1982), and then during the Renaissance permitted the presentation of dialectic, or rather what then became represented as dialectic, as a rhetorical rival alternative to the Aristotelian logic of demonstration" (*Whose Justice?* p. 224).

²⁰ Cf. *STh*, I, 79, 8 c.; *In Boet. De Trin.*, 6, 1 ad 1am and ad 3am.

It is not enough simply to reject objections in answer to our wonder, problems or doubts, because after doing this another doubt can still arise. A doubt arises when the resolution of contradictory wonder-provoking accounts becomes too difficult. Doubt is, therefore, a state of mind avoiding decision through fear of error or falsity. Error or falsity, according to Aquinas, is feared more than ignorance itself; it is avoided naturally because it constitutes a “great part of misery.”²¹ Threatened with a failure to grasp what something really is and the prospect of remaining in doubt, the investigation should not halt before any artificial barrier; it should go as far as the nature of the thing to be known requires.²² We should not even refrain from doubting the truth universally in the domain that studies universal truth.²³ Asking questions open to both sides of the contradiction is the fundamental feature of the method of research in Aristotelian philosophy. It is not doubt that is problematic in modern philosophy but the way of coping with it. Especially the most problematic seems to be the identification of doubt, which is a fear of error, with error itself, and considering what is doubtful to me as what is doubtful in itself.²⁴ Whereas for Aquinas one of the most important and yet simple distinctions is that between what is more knowable to me and what is more knowable in itself. To attain a satisfying depth of knowledge, we should know thoroughly and perfectly the nature or essence of the thing that happens to be the object of our

²¹ “Deceptio autem et error magna pars miseriae est: hoc est enim quod omnes naturaliter fugiunt” (CG, III, 39, n. 2170). See also Aquinas’s sobering remark: “Videmus enim quod homines ex se ipsis decipi et errare possunt ... et iterum pluri tempore anima est in deceptione quam in cognitione ueritatis” (In De An., II, 28 [Leon. 45/1, p. 189, lin. 141-146]).

²² “[Aristoteles] dicit hoc accidisse, quod [quidam] tam defectivas solutiones assignauerunt, quia videntur quaerere circa dubitationes usque ad aliquem terminum, et non quousque possibile sit dubitari. Oportet autem eum qui vult recte solvere, ut perducatur solutionem usque ad id ubi non sit amplius dubitatio; quod isti non faciunt. Cuius rationem assignat, connumerans se aliis, causa vitandae iactantiae; dicens quod omnibus nobis dubitationes solventibus hoc videtur esse consuetum, ut inquisitio fiat *non ad rem, sed ad contraria dicentem*, idest non quousque natura rei requirit, sed quousque adversarius non habeat ulterius contradictionem: quia etiam hoc quilibet observat ad seipsum, ut cum ipse dubitat de aliquo, quaerat in seipso quousque ipse non habeat in promptu unde sibi contradicat. Sed illud non sufficit: quia cum aliquis vult veram solutionem invenire, oportet quod non sit contentus obiectionibus quas habet in promptu, sed diligenter inquiret eas. Et propter hoc, sicut ipse subdit, oportet eum qui vult bene inquirere veritatem, esse promptum ad hoc quod instet et sibi ipsi et aliis; non per instantias sophisticas, sed per instantias reales et rationabiles, *proprias*, idest convenientes, generi de quo inquiretur. Et hoc quidem contingit ex hoc quod homo considerat omnes differentias rerum, ex quarum similitudine quaestio solvitur” (In De caelo, II, 22, n. 10).

²³ “Sed ista scientia [i.e. philosophia prima] sicut habet universalem considerationem de veritate, ita etiam ad eam pertinet universalis dubitatio de veritate” (In Meta., III, 1, n. 343).

²⁴ Cf. Régis, *Epistemology*, p. 110.

knowledge.²⁵ The scientific method directs us to this perfect kind of knowledge attained from the nature or essence of the thing that is the object of science.

Following Aristotle, Aquinas says that in order to explain something accurately we should know how to ask questions. There are four kinds of philosophical or scientific questions that we ask about what we do not know: 1. does the subject of inquiry exist? (*si est* or *an sit*); 2. what is it? (*quid est* or how can it be defined?); 3. is it a fact? (*quia* or what are its properties?); 4. for what reason? (*propter quid* or why does it have these properties?). “To these four can be reduced whatever is inquirable or knowable.”²⁶ St. Thomas remarks that this array of scientific or philosophical questions is broader than in the method of research – in the latter all questions can be reduced and contained only in the range of the question *quia*.²⁷

These four questions have an order determined by what is to be known and by our cognitive capacities.²⁸ We do not ask questions about something that is obvious to us but about something unknown.²⁹ For example, Aristotle says that we would not ask the question why the moon is eclipsed if we could be elevated above the moon high enough so as to see that the moon entering into the shade of the earth loses the light that it used to reflect. This evidence would be enough. It would provide sufficient intellectual knowledge to appease the wonder that was the source of our question.³⁰

²⁵ John Deely reminds that Jacques Maritain called the distinction between objects and things “the crux of the problem of realism.” Deely briefly characterizes this distinction as follows: “Things are whatever exists in the physical surroundings independently of being detected or known by the cognitive channels of some organism. Objects, by contrast, exist in relation to an organism and as the terminus of an awareness or cognition. Nothing prevents an object from also being, in this or that respect, a thing, but nothing requires an object to be also a thing, except in the limit case of sensation analytically distinguished and precised within the whole of experience as consisting normally, in the case of human animals, of perceptions and understandings as well as (and as englobing and structuring) the sensations forming a limit case which demands examination in its own right” (John Deely, “Philosophy and Experience,” *American Catholic Philosophical Quarterly* 66 [1992], p. 306).

²⁶ “De hiis questionibus facimus que ignoramus; unde sequitur quod ea que queruntur sint equalia numero hiis que sciuntur. *Quatuor* autem sunt que queruntur, scilicet ‘*quia*’, ‘*propter quid*’, ‘*si est*’ et ‘*quid est*’, ad que quatuor reduci potest quicquid est queribile uel scibile” (*In Poster.*, II, 1 [Leon. 1*/2, p. 174, lin. 40-45]).

²⁷ “Diuidit autem in I Topicorum questiones siue problemata aliter in quatuor, que omnia comprehenduntur sub una harum questionum, que dicitur questio ‘*quia*’: non enim ibi intendit nisi de questionibus ad quas dyaletice disputatur” (ibid., lin. 45-50)).

²⁸ As Aquinas speaks about an *ordinata interrogatio* (*STh*, I, 84, 3 ad 3).

²⁹ “Non enim fit questio de immediatis, que, etsi uera sunt, non tamen habent medium, quia huiusmodi, cum sint manifesta, sub questione non cadunt” (*In Poster.*, II, 1 [Leon. 1*/2, p. 175, lin. 134-137]).

³⁰ “Quando medium per sensum innotescit, nullus relinquitur questioni locus: tunc enim *querimus* in rebus sensibilibus secundum aliquam predictarum questionum, quando medium non sentimus, sicut querimus *si est* defectus lunae uel *non*, quia non sentimus medium quod est causa faciens deficere lunam. Sed *si essemus* in loco qui est *super lunam*, uideremus quomodo luna subintrando umbram terre

Sometimes it happens that we do not know or are not certain whether something exists, when for example we have an idea of something but its existence is not obvious to our senses. In this case, we first ask if what we know confusedly (at least only by name)³¹ exists at all (*an sit*).³² For example: “does the Minotaur exist?” or “does God exist?” At first, a nominal definition suffices, i.e. what a given word signifies (*ratio nominis* or *quid nominis*).³³ Thus a question like “does biltrix exist?” does not make sense if we have no idea whether the word “biltrix” has any signification (to my knowledge, it has not, at least in English). To state a philosophical or scientific problem we should first know a language and the significations of words. Yet if anything is to be discovered, this nominal definition should only be a starting point toward the knowledge of real things, and to pass from what is known superficially to a deeper and better knowledge. To know the significations of words is a kind of pre-scientific knowledge. Knowledge of *things as they really are* is the main purpose of cognitive project for Aristotle and Aquinas. It is important to note here that the answer to this first question (as to every philosophical question) concerns our intellectual judgment and not sensation,³⁴ although according to Aristotle and Aquinas no intellectual judgment is possible without some reference to the sensory existential data.

Knowing that something exists (because it is obvious or because we answered the first question), we can pursue our questioning to know better what this something is

deficeret, et ideo circa hoc nichil *quereremus*, *nec si est nec propter quid est, set simul* utrumque nobis fieret *manifestum*” (ibid., p. 177, lin. 296-307)).

³¹ “Ante quam sciatur de aliquo an sit, non potest proprie sciri de eo quid est (non entium enim non sunt diffinitiones), unde questio ‘an est’ precedit questionem ‘quid est’; set non potest ostendi de aliquo an sit, nisi prius intelligatur quid significatur per nomen” (*In Poster.*, I, 2 [Leon. 1*/2, p. 11, lin. 63-69]). Cf. *STh*, I, 2, 2; 1, 7 ad 1; *In Boet. De Trin.*, 6, 4 ad 2.

³² “An res sit, tripliciter cognoscit. Uno modo quia cadit sub sensu. Alio modo ex causis et effectibus rerum cadentibus sub sensu, sicut ignem ex fumo perpendimus. Tertio modo cognoscit aliquid in seipso esse ex inclinatione quam habet ad aliquos actus: quam quidem inclinationem cognoscit ex hoc quod super actus suos reflectitur, dum cognoscit se operari” (*Super III Sent.*, 23, 1, 2 sol.).

³³ “De eo enim quod est nobis penitus ignotum, non possumus scire si est aut non. Inuenitur autem *aliqua* alia ratio rei preter diffinitionem, que quidem uel est *ratio* expositiua significationis nominis, uel est ratio ipsius rei nominatae, altera tamen a diffinitione, quia non significat ‘quid est’ sicut diffinitio, set forte aliquod accidens” (*In Poster.*, I, 8 [Leon. 1*/2, p. 203, lin. 97-104]).

³⁴ “Sciencia non consistit in cognitione quae est *per sensum*. Et hoc probat sic. Manifestum est enim quod sensus cognoscit aliquid tale, et non hoc: non enim obiectum per se sensus est substantia et quod quid est, set aliqua sensibilis qualitas, puta calidum frigidum album nigrum, et alia huiusmodi; huiusmodi autem qualitates afficiunt singulares quasdam substantias in determinato loco et tempore existentes; unde necesse est quod id quod sentitur, sit *hoc aliquid*, scilicet singularis substantia, et sit alicubi *et nunc*, idest in determinato loco et tempore. Ex quo patet quod id *quod* est *uniuersale*, non potest cadere sub sensu: *non enim* quod est uniuersale determinatur ad *hic et nunc*, quia iam *non esset uniuersale*. Illud enim *uniuersale dicimus quod est semper et ubique*” (*In Poster.*, I 42 [Leon. 1*/2, p. 158-159, lin. 83-99). Cf. ibid., lin. 121-215.

(*quid sit*), in order to attain a clearer and more distinct knowledge, knowledge of the nature or essence of this thing. For Aristotle and Aquinas there is no sense in asking the question *quid sit* without having the answer to the question *an sit*, because if something does not exist, it does not have any nature or essence, and thus it is unintelligible in itself.³⁵ We cannot know the essence of what is not first known to exist. If we use the nominal definition in the question *an sit*, we should be aware that the nominal definition has nothing to do with the nature of the thing, but only specifies in what sense the term is used, i.e. what it signifies or to what it actually refers.³⁶ In the Aristotelian approach we know something philosophically or scientifically only if it exists or in relation to existence.³⁷ Science and philosophy are about actual reality, not about fiction or merely possible being.

To answer the question *quid sit* means to construct a real or essential definition. This can be a laborious task because in our intellectual cognition, taken from sense experience,³⁸ in the beginning we know only generally, in an undifferentiated way, and gradually we are able to de-fine, de-termine, de-limit this particular species of things to

³⁵ That the substances properly have essences and accidents only in a derivative and relative sense see *In Meta.*, VII, 1-11.

³⁶ "Oratio significat *secundum placitum*, idest secundum institutionem humane rationis et uoluntatis" (*In Peryerm.*, I, 6 [Leon. 1*/1, p. 35, lin. 191-193]). "Nulla *scientia demonstrat* quod tale *nomen* significet talem rem: nomina enim significant ad placitum, unde oportet hoc supponere secundum uoluntatem instituentis" (*In Poster.*, II, 6 [Leon. 1*/2, p. 195-196, lin. 160-163]).

³⁷ Therefore charges of so-called "essentialism" (in its pejorative meaning) against Aristotelian philosophy seem to come from a simple misunderstanding of Aristotelian epistemology and philosophical method. Cf. critical review of Etienne Gilson's *Being and Some Philosophers* by Louis Marie Régis, *The Modern Schoolman* 28 (1951): 111-125; as well as idem, *Epistemology*, p. 315-327; Ralph McInerny, "A Note on Thomistic Existentialism" in: *Being and Predication. Thomistic Interpretations* (Washington, D.C.: The Catholic University of America Press, 1986), p. 165-172; Benedict Ashley, *The Way toward Wisdom*, (Notre Dame, Ind.: University of Notre Dame Press, 2006), p. 146-163. "The pretension that St Thomas discovered the difference between essence and existence is no older than the twentieth century, but over the course of the decades of that century it led to some pretty strange posturing. Aristotle made it the condition of a science which wanted to understand reality that it answer first respecting an object it sought to investigate the question *whether that object exists* apart from the mind's consideration. Yet Phelan would have us believe that 'in the world of Aristotle there was no *esse*.' The effort to maintain that Aquinas was the first to discover the difference between essence and existence leads those engaged in it to remarkable conclusions more reminiscent of the modern idealism they oppose than of the way Aquinas presents the distinction between essence and existence as an ancient heritage of philosophy and a common heritage of anyone who begins to think on the matter of the contrast between physical being objectified and purely objective being the point of origin of distinctively human awareness" (John Deely, *Four Ages*, p. 294-295). On a very positive meaning of Aristotelian essentialism as epitomized in Aquinas and its logical "incommensurability" with problematic contemporary versions of "essentialism" (as exemplified in Kripke), see Gyula Klima, "Contemporary 'Essentialism' vs. Aristotelian Essentialism" in: J. Haldane, (ed.), *Mind, Metaphysics, and Value in the Thomistic and Analytic Traditions* (Notre Dame, Ind.: University of Notre Dame Press, 2002), p. 175-194.

³⁸ Régis notes that Aquinas affirms the dependance of the intellect on the sensory phantasm in more than fifteen hundred places – *Epistemology*, p. 513.

which this singular object belongs. For example, when we see two birds, it can happen that we are unable to distinguish them from other kinds of birds or say whether the differences they have between them constitute two species (perhaps their differences are only as those between male and female). Obviously, we can describe sensory data that this bird is bigger, and has such and such colours, but to tell the exact nature of it, provided we do not learn it from somebody else, consists in a long process of defining. We know the nature of any material being only by means of its sensorily experienced accidents.³⁹

Another question that deals with the problem of existence (as in the first question) is the question *quia*, but in this case we ask about the existence of a feature belonging to something, or about a form or an accident inhering in a subject. Put differently, in this question we ask whether something is such and such (*an sit talis*).⁴⁰ Here we also ask about something that eludes our perception. This question is closely related to the second, because in establishing the answer to the question *quid sit in via inventionis* we must first do a survey of thing's properties in order to discern among them which ones are essential and which are only accidental. Indeed, if we do not know the answer to the question *an sit* and to the question *quia*, we cannot even ask the question *quid sit*.

When we know that something is such and such, i.e. knowing an accident as inhering in something, we can ask another question: "why something is such", that is: "why the accident inheres" (*propter quid*). This question arises when we know the existence of a subject and at least one of its properties.⁴¹ Basically, to know *quid sit* and

³⁹ "Set, quia forme essentiales non sunt nobis per se note, oportet quod manifestentur per aliqua accidentia, que sunt signa illius forme" (*In Poster.*, II, 13 [Leon. 1*/2, p. 222, lin. 118-121]). "In naturalibus, in quibus essencie et uirtutes rerum propter hoc quod in materia sunt, sunt occulte, set innotescunt nobis per ea, que exterius de ipsis apparent" (*In Poster.*, I, 4 [Leon. 1*/2, p. 22, lin. 305-308]). "Formae substantiales, quae secundum se sunt nobis ignotae, innotescunt per accidentia" (*STh*, I, 77, 1 ad 7). Cf. *STh*, I, 29, 1 ad 3; I-II, 49, 2 ad 3.

⁴⁰ "Tunc dicimur querere 'quia', non ita quod hoc quod dico 'quia' sit nota uel signum interrogationis, set quia ad hoc quaerimus ut sciamus 'quia' ita est. Cuius *signum* est quia, cum inuenerimus per demonstrationem, quiescimus a querendo; et si in principio hoc sciuissemus, non quaereremus utrum ita sit" (*In Poster.*, II, 1 [Leon. 1*/2, p. 175, lin. 77-84]).

⁴¹ "Cum quaeritur propter quid, oportet existere manifesta entia ista duo: scilicet ipsum quia et ipsum esse, quod pertinet ad quaestionem an est. Sicut cum quaeritur propter quid luna eclipsatur? Oportet esse manifestum quod luna patitur eclipsim: si enim non sit manifestum hoc, frustra quaeritur propter quid hoc sit" (*In Meta.*, VII, 17, n. 1651). "Quoniam vero in hac quaestione, qua quaeritur quid est homo, oportet habere notum existere verum hoc ipsum quod est esse hominem (aliter nihil quaeretur): ... palam est, quod ille qui quaerit quid est homo quaerit propter quid est. Nam esse est praesuppositum ad hoc quod quaeritur quid est, quia est praesuppositum ad propter quid" (*In Meta.*, VII, 17, n. 1666).

propter quid is the same thing: to know *quid est* refers to a knowledge through which we know about something what it simply is and not that something inheres in it, but *propter quid* refers to a knowledge of what inheres.⁴² Sometimes it is impossible to know exactly what something is and in those cases, having the *quia*, we can inquire *propter quid*, and in this way accept *quid est*.⁴³

Various findings that occur in philosophical or scientific investigation need to be verified. Without this we are left only with an opinion or belief, which perhaps is somehow justified, but there will be no scientific certainty in the Aristotelian sense. The *via inventionis* furnishes us more or less probable theories, which we can judge as true, but not with an absolute certitude. The inventive process, i.e. the realm of opinions, occupies a vast sphere of human experience, and both Aristotle and Aquinas give it an adequate place in philosophy. A great part of our actual knowledge is only provisional and in constant need of improvement. Especially in the realm of nature, we can know things only partially, because much always remains to be known.⁴⁴ The process of discovery is the first stage of knowing something; afterwards the stage of scientific judgment is needed. The fourth question (*propter quid*) provides the means through which this judgment is carried out.⁴⁵ In this question we ask: what are the explanatory

⁴² “*Idem est scire quod quid est et propter quid. ... quid est refertur ad scienciam qua scimus de aliquo quod simpliciter sit, non autem quod aliquid insit alicui; set ‘propter quid’ refertur ad cognitionem eorum quae insunt*” (In *Poster.*, II, 1 [Leon. 1*/2, p. 178, lin. 323-331]).

⁴³ Cf. *ibid.*, 8 (p. 203, lin. 91-114).

⁴⁴ John A. Oesterle in his article “The Significance of the Universal *ut nunc*” (in: James A. Weisheipl, (ed.), *The Dignity of Science: Studies in the Philosophy of Science presented to William Humbert Kane, O.P.* [The Thomist Press, 1961], p. 27-38) notes that a defect of much scholastic philosophy, especially in the manual form, consisted in treating too many things as subjects to rigorous demonstration. He adds: “The great scholastics, however, were never under such illusion” (p. 33). On the universal *ut nunc* in Aquinas, see e.g. In *Poster.*, I, 9, (Leon. 1*/2, p. 37, lin. 75-85). Oesterle gives the definition of ‘man’ as ‘rational animal’ as an example of a universal which is true but remains a universal *ut nunc*. He comments: “The definition of ‘man’ as ‘rational animal’ has often been criticized as inadequate and even ridiculed as being incomplete. But this definition, though an essential one and a good one in precisely this sense, was never intended to be a complete definition. From the standpoint of completion, much remains to be said about what man is, and much of what we know in seeking to determine more fully what man is will remain provisional” (p. 36-37). Today’s repeatedly raised charges that Aquinas was a “deductivist” usually simply misconceive his methods of thinking.

⁴⁵ See for example how St. Thomas applies this to different ways of theological discussions: “Dicendum quod quilibet actus exequendus est secundum quod conuenit ad suum finem. Disputatio autem ad duplicem finem potest ordinari. Quedam enim disputatio ordinatur ad remouendum dubitationem an ita sit, et in tali disputatione theologica maxime utendum est auctoritatibus quas recipiant illi cum quibus disputatur ... Quedam uero disputatio est magistralis in scolis, non ad remouendum errorem, set ad instruendum auditores ut inducantur ad intellectum veritatis quam credunt, et tunc oportet rationibus inniti inuestigantibus ueritatis radicem, et facientibus scire quomodo sit uerum quod dicitur. Alioquin, si nudis auctoritatibus magister questionem determinet, certificabitur quidem auditor quod ita est, set nichil scientie uel intellectus acquirat et uacuis abscedet” (*Quodl.*, IV, 9, 3 c.).

reasons, why different kinds of properties necessarily follow such and such substance?⁴⁶ The failure to distinguish clearly between the method of discovery and the method of scientific explanation may lead to erroneous interpretations of Aquinas's texts.⁴⁷ It may also be a reason why some interpretations of the status of St. Thomas's ethics as a discipline seem to be confused in seeking what is first in human experience when we engage in moral action, in order to prove that ethics is autonomous. I will say more about scientific explanation in Chapter 4.

Since we are concerned here with a general approach to cognition, it should be noted that on this topic St. Thomas also follows this fundamental method of questioning. The first question this method has us pose is whether knowledge as such exists at all. For Aristotle and Aquinas, philosophy begins with a question that aims to acquire knowledge about what is still unknown through or from what is already known.⁴⁸ If nothing were already known, even tentatively, of what we want to know, it would be impossible to ask a question. Hence, according to Aristotle and Aquinas, the first problem about human cognition is settled between knowledge and ignorance: whether there is some knowledge or there is no knowledge at all. Our ability to pose questions about something – and it cannot be denied that we have this ability⁴⁹ – assumes that there is also some kind of knowledge before the question is posed.

We acquire a kind of confused and undifferentiated knowledge already in the early period of our life. This occurs because we are human beings, living bodies that are born from other living bodies, growing among and depending upon other living bodies, communicating with others through a language or languages, sensing, experiencing this world. Our cognitive capacities, faculties for exercising cognitive acts, are our abilities

⁴⁶ “Ratiocinatio humana, secundum viam inquisitionis vel inventionis, procedit a quibusdam simpliciter intellectis, quae sunt prima principia; et rursus, in via iudicii, resolvendo redit ad prima principia, ad quae inventa examinat” (*STh*, I, 79, 8 c.). Cf. *De ver.*, 15, 1.

⁴⁷ Anthony Kenny remarks that “Bertrand Russell was one of those who accused Aquinas of not being a real philosopher because he was looking for reasons for what he already believed. It is extraordinary that that accusation should be made by Russell, who in the book *Principia Mathematica* takes hundreds of pages to prove that two and two make four, which is something he had believed all his life” (*Aquinas on Mind* [New York: Routledge, 1994], p. 10). Clearly, Bertrand Russell did not realize that there existed these two methods of questioning. Dialectical method aims in discovering or establishing the knowledge of a fact (when the fact is itself not evident). Then, the process of looking for reasons for this fact, which aims in attaining the knowledge of reasoned fact, pertains to the proprium of philosophical or scientific method in Aristotelian philosophy.

⁴⁸ Cf. *In Meta.*, I, 3, n. 55; *In Meta.*, VII, 17, n. 1669.

⁴⁹ “Nichil est adeo uerum quin uoce negari possit ... quedam autem adeo uera sunt quod eorum opposita intellectui capi non possunt” (*In Poster.*, I, 19 [Leon. 1*/2, p. 71, lin. 45-46. 48-50]).

and as such are experienced. Since they are abilities of a human being, the unity of a person, existing as a living body, guarantees the unity of experience and cognition through the senses and the intellect of the individual. On this basis very early in life we form worldviews which are, in fact, narrow, limited, confused, opaque, vague, and incoherent. Nevertheless, they are already worldviews which somehow allow us to live in the world, to react in a human way to what we experience, and to form some concepts or opinions. Based on the combination of our experience and our intellectual capacities, we can ask questions about perceived facts in order to know them better. Furthermore, we can ask what kind or, better yet, kinds of knowledge are obtained about these facts or things – such as their veracity or falsehood – and whether and how this knowledge is infallible.⁵⁰ This respectful attitude toward our experience led Aristotle and Aquinas to regard knowledge as something multiform and diversified, yet at the same time analogous, i.e. united under the same generic understanding of the reality named “knowledge.” To be sure, they are careful to distinguish and describe these many types of knowledge exactly, yet without separating one type from another altogether. It is worth stressing in our day that for them there is no *a priori* cognition independent of our senses.⁵¹ We are not so rational as to have our cognition without our animality. For Aristotle and Aquinas, logic also has its remote roots in sensory experience.

⁵⁰ Régis says that the sequence of questions about human cognition, to which I referred above, is a genuine request stemming from the very notion of cognition: “Every epistemological problem stated in terms of the opposition between truth and error is badly stated and therefore insoluble. Every epistemological problem must first be stated in terms of *knowledge* and *ignorance*; this is its first instance or moment. Once this question has been answered, we can ask what truth our knowledge gives us. With this question answered, we can go on to a third: Is this truth infallible? Because Descartes and Kant started with the third question before asking the second and first, whose solutions are presupposed, they were never able satisfactorily and objectively to solve their own problem. ... They asked: ‘Why is our reason the source of infallible truth and error?’ To state the problem in this way is to identify the nature of knowledge with the nature of truth, and the nature of truth with that of certitude or infallibility. But this identification is impossible, for knowledge is to truth as cause is to effect, truth is to certitude as cause is to effect, and a cause cannot be identified with its effect since, by definition, they are opposites. ... the inventors of the critique identified knowledge with one of its properties, *infallibility*, and were thus obliged to refuse the name of knowledge to everything that did not present this identification card to the intellect” (*Epistemology*, p. 60 and 139).

⁵¹ Benedict Ashley writes about “the radical semantic shift” in the meaning of “*a priori* knowledge”: “In Aristotelian and Thomistic thought ... knowledge always begins from the senses and proceeds to the intellect: hence a science proceeds from effect to cause (*a posteriori*). Once, however, the causes of the sensible effects have been demonstrated *a posteriori*, the science then proceeds to demonstrate the effects from the causes (*a priori*). By contrast, in the seventeenth-century origins of modern philosophy, with the turn to the subject, it comes generally to be supposed that we have *a priori* knowledge independent of and logically prior to sense experience” (*The Way toward Wisdom*, p. 33). Thus for Kant *a priori* meant not only a truth known prior to sense experience, but also a necessary condition for sense experience. “For Aristotle and Aquinas, the whole content of intellectual knowledge is derived from sense experience, and the *a priori* element reflects only the critically

1.2. The order of learning, intellectual skills, and liberal arts

Aquinas did not preface his theological analysis with elaborate logical or methodological treatises, taking for granted the material that his students had learned during their *trivium* studies.⁵² We can, nonetheless, glean from several places in his texts what kind of preparation he assumed his students of theology would have.⁵³ The *trivium* was the first stage of any university education of the era.⁵⁴ It consisted of grammar, logic and rhetoric. The second stage was called *quadrivium* and was comprised of arithmetic, geometry, music and astronomy. These seven domains, called “liberal arts,” were for St. Thomas the ordinary introduction to further studies in philosophy or theology.⁵⁵

organized deductive phase that knowledge sometimes achieves in philosophical and scientific reflection” (ibid., p. 472).

⁵² Recently John I. Jenkins took this observation as one of the fundamental interpretative keys for the *Summa Theologiae* (cf. his *Knowledge and Faith in Thomas Aquinas* [Cambridge University Press, 1997], especially p. 79-98). In fact, the correctness of this assertion imposes itself after a careful reading of Aquinas's commentary upon the *Posterior Analytics* when we take the commentary as a sign of St. Thomas's personal approach to science.

⁵³ Especially the whole of *In Peryerm.* and *In Poster.* as commentaries to logical texts which concern what is to be learned first. Further we can find more helpful general remarks in: *In Boet. De Trin.*, 5-6; in many places of *In Meta.*; *In Eth.*, I, 3 (Leon. 47/1, p. 12, lin. 94-165); VI (p. 332-377); *In De causis*, prooem.

⁵⁴ Chenu notes that “St. Thomas himself, then the young regent of Saint James College, together with St. Albert, regent at Cologne ... , was a member of the commission of studies that in 1259 at the General Chapter of Valenciennes made up a vigorous code of the Order's academic regime and decreed that each province would henceforth have a school of liberal arts, with philosophy heading the list of subjects to be taught” (*Toward Understanding*, p. 205). Let us remark that Aquinas started to write his *Summa* in 1266, seven years after this chapter. See also a very interesting article “El estudio de las artes liberales en la primitiva legislación dominicana. Antecedentes históricos” by Laureano Robles, (in: *Arts libéraux et philosophie au Moyen Age*, Actes du IVe Congrès International de Philosophie Médiévale [Montréal, Canada, 27.08–2.09.1967], edited by Henri Irénée Marrou et al. [Montréal-Paris: Institut d'Etudes Médiévales-Vrin, 1969], p. 599-616), where the author analyses the transition of the Order of Preachers from a negative stance about the learning of liberal arts by clerics (very common stance of Church's institutions at the time of the beginning of the Order) to a very affirmative one by the time of St. Thomas and later. See also a more recent and general approach “The *Trivium* and the Three Philosophies” by Gordon Leff (in: *A History of the University in Europe*, edited by W. Rüegg, vol. I, *Universities in the Middle Ages*, edited by H. de Ridder-Syons, p. 307-336 [Cambridge University Press, 1992]).

⁵⁵ The tradition of education through liberal arts has its partial roots prior to Aristotle and Plato. But this exact list of arts probably originated in the schools of Athens and Alexandria under mixed Platonic and Aristotelian influences which reigned throughout the Hellenistic period. By the time of St. Thomas the canon of liberal arts was nearly sacrosanct. See Pierre Conway and Benedict Ashley, “The Liberal Arts in St. Thomas Aquinas,” *The Thomist* 22 (1959): 460-532. The authors trace briefly the origin of the general tradition of liberal arts, then the immediate roots of Thomistic theory of the liberal arts, and discuss at length the character of these arts in the relation to other arts and sciences. One of the theses

Aquinas identifies the *trivium* and *quadrivium* with logic and mathematics respectively in the Aristotelian scheme of a man's progressive learning.⁵⁶ In this scheme, often referred to by St. Thomas,⁵⁷ the first thing to be learned is the general method of thinking properly, that is logic, which he also called "a rational science" or "rational philosophy."⁵⁸ After this, mathematics is to be learned (divided into arithmetic and geometry), even more fittingly numbered among speculative sciences. The *trivium* and *quadrivium* form a sufficient introduction to the study of natural philosophy, which treats changing natural beings. Only after these three stages (logic, mathematics, and natural philosophy) could one properly begin the study of the threefold moral science: *monastica*, *oeconomica*, and *politica*. Finally, after these one could embark on the study of first philosophy, also called metaphysics or theology.⁵⁹

of this article is that Aquinas presented the Aristotelian sequence of education as adequate to the very nature of reason and so as a natural procedure, which would impose itself upon those who were studying Aristotle, even if there were not such a well established canon of liberal arts in times of Aquinas. Cf. also Eugenio T. Toccafondi, "Il pensiero di San Tomaso sulle arti liberali," in *Arts libéraux et philosophie au Moyen Age*, p. 639-651; Gérard Verbeke, "Arts libéraux et morale d'après Saint Thomas," *ibid.*, 653-661; and especially an outstanding article "Divine Art in Saint Thomas Aquinas" by Francis J. Kovach, *ibid.*, p. 663-671. Kovach refers to many ancient and medieval authors and states that Aquinas treats some traditional questions concerning liberal arts but in his answer to the question of the essence of the liberal arts "he ceases to be traditional; instead, he creates a Platonic and Aristotelian synthesis of unprecedented simplicity and lucidity" (p. 665). For a more recent and general view, see Ralph McNerny, "Beyond the Liberal Arts," in *The Seven Liberal Arts in the Middle Ages*, ed. David L. Wagner (Indiana University Press, 1983), p. 248-72.

⁵⁶ It is "Aristotelian" and not exactly "of Aristotle" because some elements are rather inferred than found in his texts. See Conway and Ashley, "The Liberal Arts," p. 467.

⁵⁷ For example: "Septem connumerantur quia hiis primum erudiebantur qui philosophiam discere uolebant; et ideo distinguuntur in triuium et quadriuium, 'eo quod his quasi quibusdam uis uiuax animus ad secreta philosophiae introeat'. Et hoc etiam consonat uerbis Philosophi, qui dicit in II Metaphisice quod modus scientie debet queri ante scientias; et Commentator ibidem dicit quod logicam, que docet modum omnium scientiarum, debet quis addiscere ante omnes alias scientias, ad quam pertinet triuium; dicit etiam in VI Ethicorum quod mathematica potest sciri a pueris, non autem physica, que experimentum requirit; et sic datur intelligi quod post logicam consequenter debet mathematica addisci, ad quam pertinet quadriuium. Et ita his quasi quibusdam uis preparatur animus ad alias philosophicas disciplinas" (*In Boet. De Trin.*, 5, 1 ad 3).

⁵⁸ Cf. *In Poster.*, I, 1 [Leon. 1*/2, p. 4, lin. 25]; *In Peryerm.*, I, 1 (Leon. 1*/1, p. 5, lin. 15); *In Eth.*, I, 1 (Leon. 47/1, p. 4, lin. 25-54). See also a very helpful and comprehensive study *The Domain of Logic According to Saint Thomas Aquinas* by Robert W. Schmidt (The Hague: Martinus Nijhoff, 1966), especially p. 10 and 16-31.

⁵⁹ "Erit ergo hic congruus ordo addiscendi, ut primo quidem pueri logicalibus instruantur, quia logica docet modum totius philosophiae; secundo autem instruendi sunt in mathematicis, quae nec experientia indigent nec imaginationem transcendunt; tertio autem in naturalibus, quae, etsi non excedant sensum et imaginationem, requirunt tamen experientiam; quarto autem in moralibus, quae requirunt et experientiam et animum a passionibus liberum, ut in I habitum est; quinto autem in sapientialibus et diuinis, quae transcendunt imaginationem et requirunt validum intellectum" (*In Eth.*, VI, 7 [Leon. 47/2, p. 358-359, lin. 202-213]). "Primo quidem incipientes a logica quae modum scientiarum tradit, secundo procedentes ad mathematicam cuius etiam pueri possunt esse capaces, tertio ad naturalem philosophiam quae propter experientiam tempore indiget, quarto autem ad moralem philosophiam cuius iuuenis esse conueniens auditor non potest, ultimo autem scientiae diuinae insistebant quae

Theology is twofold, encompassing both a discipline based on natural capacities of human reason (*theologia philosophica*) and a discipline based on supernatural light given to believers through revelation (*theologia sacrae Scripturae* or *sacra doctrina*).⁶⁰ The teaching of theology in the second sense goes at the end of theological formation because *sacra doctrina* uses many premises from other disciplines. Revelation comes to man through material signs. To understand signs in a proper way and to construct a discipline of *sacra doctrina*, a solid knowledge of the natural world is required. You can receive grace without philosophy, even without understanding a word (as in the case of infants during baptism), but you cannot have theology as a discipline without philosophy. Philosophy is as omnipresent in theology as water in wine. This is why learning many things should precede our learning of theology. This whole order of learning is dictated by the nature of human cognitive capacities and the nature of the things to be known in specific sciences.⁶¹

We should note here that since the *Summa theologiae* is a theological work in the sense of *sacra doctrina*, in order that it be properly understood, it must be read in the light of what was taught before learning theology. This directly concerns the character of the work: it is not a diary of an inventor, where he sets forth the steps of his inquiry beginning with things that are better known to us and finishing with things that are invented. This is a work of a teacher who presents the whole body of theology in an organized way for those who learned enough already to understand why this material is put in such an order and not in another.⁶² When Aquinas only mentions some difficult arguments and goes further without discussion, it is not because he dogmatically imposes something on the reader, but he hints at something that he may rightly expect his readers to know from their previous studies.

considerat primas entium causas" (*In De causis*, proem.). "Ad cognitionem enim eorum quae de Deo ratio investigare potest, multa praecognoscere oportet: cum fere totius philosophiae consideratio ad Dei cognitionem ordinetur; propter quod metaphysica, quae circa divina versatur, inter philosophiae partes ultima remanet addiscenda" (*CG*, I, 4, n. 23).

⁶⁰ Cf. *In Boet. De Trin.*, 5, 4 c.

⁶¹ James A. Weisheipl notes that the same order we find in writings of Albert the Great, and he also considered this to be the natural order of learning. The same conviction about "naturalness" of this order of learning was shared by Robert Kilwardby, although he, interestingly, places moral philosophy after metaphysics (as does also Roger Bacon). Cf. idem, "Classification of the Sciences in Medieval Thought," in idem, *Nature and Motion in the Middle Ages*, ed. by William E. Carroll, (Washington, D.C.: The Catholic University of America Press, 1985), p. 203-237.

⁶² I follow here Jenkins's interpretation of the general character of the *STh*, and on its intended audience; cf. his *Knowledge and Faith*, p. 78-98.

It is widely known that Aquinas's attitude toward philosophy distinguished him from many of his great contemporaries. By employing Aristotelian tools for thinking, he was able to distinguish levels and methods of reflection and to give to specific sciences their due autonomy. He taught constantly that the confusion of methods or the use of arguments which are not proper to a particular science result in erroneous reasoning.⁶³ This is why he would never permit the reduction of all sciences to theology⁶⁴ although he sought to unify all human knowledge under one general science that explains everything through ultimate causes. The explanation through the highest causes was for him the highest human activity called "wisdom." This sapiential character of all intellectual activity is one of the salient features of his approach to philosophy.

As we have seen, St. Thomas teaches that the "liberal arts" can introduce us to the science called wisdom. The notion of art is somewhat different from our common contemporary use of this term and it is worthwhile to elucidate it briefly in the context of other intellectual skills. In the first words of the commentary upon the *Posterior Analytics*, Aquinas refers the reader to the beginning of the *Metaphysics*, where Aristotle claims that "the human race lives by art and reasoning (*hominum genus arte et rationibus uiuit*)."⁶⁵ St. Thomas adds that the faculty of directing one's actions by a judgment of reason is regarded by Aristotle as that which differentiates humans from other animals.⁶⁵ In the introductory remarks to his commentary on the *Ethics*, Aquinas expresses more clearly the difference between humans and other animals when he says

⁶³ Notice how St. Thomas defends the right of philosophical research to keep a due autonomy from theology: "Nec uideo quid pertinent ad doctrinam fidei qualiter Philosophi uerba exponantur" (*De 43 articulis*, 34 ad arg.). Before answering all the questions in this letter he directly warns the Master of his Order against confusing these two disciplines because it harms theology itself: "plures illorum articulorum ad fidei doctrinam non pertinent sed magis ad philosophorum dogmata. Multum autem nocet talia quae ad pietatis doctrinam non pertinent vel asserere vel negare quasi pertinentia ad sacram doctrinam. ... Vnde mihi uidetur tutius esse ut huiusmodi que philosophi communiter senserunt et nostre fidei non repugnant neque sic esse asserenda ut dogmata fidei, etsi aliquando sub nomine philosophorum introducuntur, neque sic esse neganda tamquam fidei contraria; ne sapientibus huius mundi contempnendi doctrinam fidei occasio prebeatur" (ibid., prooem).

⁶⁴ "But the ancillary character of philosophy differs very greatly in Thomism and Augustinianism. Within the framework of Augustinian thought, which Bonaventure most faithfully and perfectly represents, philosophy is a *servant-slave* and theology a matriarch and despot; philosophy is allowed neither liberty nor autonomy; philosophy must *believe* in order truly to be philosophy, that is in order to be true knowledge. In Thomism, philosophy is queen in the realm of natural truth; it dons a servant's uniform only when undertaking a task beyond its capacities, when it attempts to study the intimate mysteries of God and of deified man, for then it is blinded by that surpassing light and must be guided by faith" (Régis, *Epistemology*, p. 125).

⁶⁵ "Alia enim animalia quodam naturali instinctu ad suos actus aguntur, homo autem rationis iudicio in suis actionibus dirigitur" (*In Poster.*, I, 1 [Leon. 1*/2, p. 4, lin. 4-7]).

that only the former can recognize different *orders* of things.⁶⁶ Possessing such rational judgment allows one to acquire certain abilities which help one to accomplish acts more easily and in an orderly fashion. These abilities, called “arts,” are fixed procedures established by reason whereby human acts reach their due end through appropriate means.⁶⁷ In other words, this is a habitual (i.e., well assimilated, and ready to be applied to operation) intellectual knowledge of how to do or make something. Thanks to reason, humans use the experience they acquire through the senses and preserve in the memory to create effective and reasonable methods for acting, and to maintain these methods according to a fixed, steady disposition. Thus, art constitutes for Aquinas a kind of practical intellectual virtue.

There is another practical intellectual virtue apart from art: prudence. Both these virtues are intellectual and concern such contingent things as our actions (‘contingent’ means here: such that happens, but can be otherwise). In both there is a judgment of reason, concerning something which has some kind of universality first found in particulars and is ultimately ordered to particulars. Again, both art and prudence as intellectual virtues are always concerned with the truth because they imply the rectitude of reason.⁶⁸ They are distinguished by their subjects. Prudence refers to immanent human acts (acts that remain in the human being, as for example to love, hate, choose). Art, however, refers to transitive human acts (acts like building, cutting, and sculpting that have an external material effect). Aquinas sometimes distinguishes under the common heading of ‘operations’ between ‘action’ (*actio*) and ‘making’ (*factio*).⁶⁹ This

⁶⁶ Cf. *In Eth.*, I, 1 (Leon. 47/1, p. 3-4, lin. 1-14).

⁶⁷ “Nichil enim aliud ars esse uidetur quam certa ordinatio rationis, quomodo per determinata media ad debitum finem actus humani perueniant” (*In Poster.*, I, 1 [Leon. 1*/2, p. 4, lin. 9-12]). In fact, art refers to many things: “Omnis ars est circa generationem, id est circa constitutionem et complementum operis, quod primo ponit tamquam finem artis, et est etiam circa artificiare, id est circa operationem artis qua disponit materiam, et est etiam circa speculari qualiter aliquid fiat per artem” (*In Eth.*, VI, 3 [Leon. 47/2, p. 342, lin. 185-191]).

⁶⁸ Cf., *In Poster.*, I, 44 (Leon. 1*/2, p. 170, lin. 283-286, 295-304).

⁶⁹ “Differunt enim agere et facere: nam agere est secundum operationem manentem in ipso agente, sicut est eligere, intelligere et huiusmodi ... Facere autem est secundum operationem, quae transit exterius ad materiae transmutationem, sicut secare, urere et huiusmodi” (*In Meta.*, VI, 1, n. 1152). Cf. *In Meta.*, VII, 7, n. 2253. “Nam actio manens in ipso agente operatio dicitur, ut videre, intelligere et velle. Sed factio est operatio transiens in exteriori materia ad aliquid formandum ex ea, sicut aedificare et secare” (*In Eth.*, VI, 3, [Leon. 47/2, p. 342, lin. 133-136]). Cf. *De ver.*, 5, 1 c. But the terms can be taken not so strictly, cf. e.g.: “Facere autem dupliciter potest accipi: uno modo proprie; alio modo communiter. Proprie autem facere dicitur operari aliquid in exteriori materia, sicut facere domum vel aliquid aliud huiusmodi. Communiter autem dicitur facere pro quacumque actione, sive transeat in exteriori materia, sicut urere et secare; sive maneat in ipso agente, sicut intelligere et velle” (*STh*, II-II, 134, 2 c.).

allows him to use in Latin two short and neat definitions: prudence is *recta ratio agibilium*, the rectitude of reason in things to be done (that is, in regard to acts which remain within the one acting),⁷⁰ and art is *recta ratio factibilium*, the rectitude of reason in things to be made (that is, things that are done to external matter).⁷¹ Thus something external, some useful product of human operation, is the essential feature of art.⁷² The manner according to which the products of the arts are used also distinguishes them into two groups: those that provide the necessities of life, and those giving pleasure.⁷³

There are also some speculative intellectual virtues that deserve mention here for two reasons: they serve to accent further the status of the liberal arts, and they draw attention by their contrast to the future consideration of the status of ethics. The speculative intellectual virtues, we are told, are distinguished from the practical virtues in that the latter are ordered to some extrinsic operation, product or work, while the former are concerned simply with the truth and without regard for anything extrinsic.⁷⁴ Science is one of the speculative intellectual virtues, along with understanding and wisdom.⁷⁵

⁷⁰ “Prudentia vero et ars est circa animae partem practicam, quae est ratiocinativa de contingentibus operabilibus a nobis. Et differunt: Nam prudentia dirigit in actionibus quae non transeunt ad exteriorem materiam, sed sunt perfectiones agentis: unde dicitur quod prudentia est recta ratio agibilium. Ars vero dirigit in factionibus, quae in materiam exteriorem transeunt, sicut aedificare et secare: unde dicitur quod ars est recta ratio factibilium” (*In Meta.*, I, 1, n. 34).

⁷¹ St. Thomas defines art diversely: “habitus ad faciendum aliquid cum ratione” (*In Eth.*, VI, 3 [Leon. 47/2, p. 342, lin. 167-168]); “habitus factivus cum vera ratione” (ibid. [lin. 172]); “ratio recta aliquorum operum faciendorum” (*STh*, I-II, 57, 3 c); “recta ratio factibilium” (*In Meta.*, I, 1, n. 34).

⁷² “Omnis faciens, puta faber aut aedificator, facit suum opus gratia huius, idest propter finem, et non propter finem universalem; sed ad aliquod particulare quod est factum, id est constitutum in exteriori materia, puta cultellus aut domus; et non est finis aliquid actum, idest aliquid agibile in agente existens, puta recte concupiscere aut irasci; facit enim omnis faciens propter aliquid, quod est alicuius, idest quod habet aliquem usum, sicut usus domus est habitatio; et talis quidem est finis facientis, scilicet factum et non actum” (*In Eth.*, VI, 2 [Leon. 47/2, p. 338, lin. 187-197]).

⁷³ “Artes repertae [sunt] quantum ad utilitatem, quarum quaedam sunt ad vitae necessitatem, sicut mechanicae, ... vel ad voluptatem, sicut artes quae sunt ordinatae ad hominum delectationem” (*In Meta.*, I, 1, n. 32-33).

⁷⁴ “Illi artifices dicendi sunt sapientiores quorum scientiae non sunt ad utilitatem inventae, sed propter ipsum scire, cuiusmodi sunt scientiae speculativae” (*In Meta.*, I, 1, n. 32). “Theoricus siue speculativus intellectus in hoc proprie ab operatuo siue practico distinguitur, quod speculativus habet pro fine veritatem quam considerat, practicus autem veritatem consideratam ordinat in operationem tamquam in finem” (*In Boet. De Trin.*, 5, 1 c.). Cf. *De ver.*, 3, 3; *CG*, III, 75, n. 2511; *In Poster.*, I, 41 (Leon. 1*/2, p. 153, lin. 135-145). In the *In Boet. De Trin.*, 5, 1 ad 4 Aquinas says that there are speculative and practical *arts*: “dicuntur artium quedam esse speculativae, quedam practice”, but this is a broad use of the term; “speculative” strictly speaking refers to science not to art. About the special position of logic see below.

⁷⁵ Recently some philosophers have discovered anew the role of virtues in the process of cognition, and much attention is payed to increasingly popular “virtue epistemologies” which more or less avowedly acknowledge their debts to Aquinas. Whether he is properly understood in particular authors is another

There are thus, according to Aquinas, five virtues of cognition: art, prudence, science, understanding and wisdom. Acts that come from any of these are necessarily true. If some act is not true, it is not strictly an act of any of these virtues. Science, as far as it is a speculative intellectual virtue, does not concern contingent things in themselves, but only necessary things or that which is of necessity in contingent things ('necessary' means here: such that cannot be otherwise). The application of science to practical things belongs to prudence or art.⁷⁶ Practical or operative sciences are about acts of arts (factive sciences) and prudence (moral science).⁷⁷ These actions are considered on a general level as some natures, forms, types, orders or relations, and in such a way that practical science concerns necessary things.⁷⁸ It considers what is of necessity in contingent practical things. In both speculative and practical sciences we seek scientific knowledge. The subject matter of the practical sciences is what we can make by ourselves. For the speculative sciences it is not what we make but what we discover.⁷⁹ And so there are three speculative sciences: natural science (called also natural philosophy or physics), mathematics, and metaphysics (with its philosophical and theological parts).⁸⁰

Liberal arts differ from the other arts. Aquinas says that some arts are ordered to an external utility, a useful exterior product to be had through a bodily action. These are the arts in the strict sense and are called "mechanical" or "servile."⁸¹ Others are ordered

question. For a good discussion see for example Thomas Hibbs, "Aquinas, Virtue, and Recent Epistemology," *The Review of Metaphysics* 52 (1999): 573-594.

⁷⁶ "Scientia uero moralis quamuis sit propter operationem, tamen illa operatio non est actus scientie set magis uirtutis, ut patet in libro Ethicorum, unde non potest dici ars, set magis in illis operationibus se habet uirtus loco artis" (*In Boet. De Trin.*, 5, 1 ad 3).

⁷⁷ "Est ergo scientia activa, ex qua instruimur ad recte exercendum operationes, quae actiones dicuntur; sicut est scientia moralis. Factiva autem scientia est, per quam recte aliquid facimus; sicut ars fabrilis, et alia huiusmodi" (*In Meta.*, XI, 7, n. 2253). "Scientiae activae dicuntur scientiae morales ... scientiae factivae dicuntur artes mechanicae" (*In Meta.*, VI, 1, n. 1152).

⁷⁸ We shall discuss later (in Chapter 4) how to understand 'necessity' in this context.

⁷⁹ "Oportet practicarum scientiarum materiam esse res illas que a nostro opere fieri possunt, ut sic earum cognitio in operationem quasi in finem ordinari possit; speculatiuarum uero scientiarum materiam oportet esse res que a nostro opere non fiunt, unde earum consideratio in operationem ordinari non potest sicut in finem. Et secundum harum rerum distinctionem oportet scientias speculatiuas distinguere" (*Super Boet. De Trin.*, 5, 1 c.). Cf. *In Meta.*, XI, 7, n. 2253.

⁸⁰ For the fullest discussion of this classification see: *In Boet. De Trin.*, 5, 1-4. Cf. also *In Meta.*, VI, 1, n. 1166; *ibid.*, XI, 7, n. 2264 and 2267.

⁸¹ Cf. e.g. *In Meta.*, I, 1, n. 34; *ibid.*, 3, n. 59; *In Eth.*, I, 1 (Leon. 47/1, p. 4, lin. 39); *STh*, I-II, 57, 3 ad 3; II-II, 104, 5.

to science – these arts are called “liberal arts.”⁸² Liberal arts are not ordered to an external product, but nonetheless they are ordered to some internal “product” or “work” of reason (*opus rationis*). We notice in them a kind of “useful product”: a “product” that is only internal in regard to the intellect. Some examples are the construction of a syllogism or a fitting sermon, or the work of counting or measuring. We refer to these things sufficiently by the name of “art” according to a certain likeness.⁸³ They are, therefore, arts by extension of the meaning of the word “art,” and they are liberal, as Aquinas explains briefly, distinguishing them from arts ordered to works executed by our body in servile subjection to the soul. Liberal arts pertain to acts that are in the soul and remain in it. And a human being is free (*liber*) thanks to his soul.⁸⁴

We do not acquire knowledge in liberal arts for their own sake but for the sake of something else: they are related to other speculative sciences and insofar as they serve the latter as an introductory stage. Therefore, to the extent that they are learned as arts and used in life, liberal arts are not speculative sciences. Yet this does not mean that these arts cannot be speculative sciences. As liberal arts, logic and mathematics belong to the speculative sciences because they can be known and presented in a scientific way. But they are speculative sciences only reductively because of the mentioned “product” or “work” and because of their subjection. There is a difference between logic and mathematics in their status as arts subordinated to speculative sciences. Logic remains always subordinated, even if it can be known and presented in a way of speculative science.⁸⁵ After the introductory stage, however, mathematics can become a fully-fledged speculative science without this “artisan” subordination.

⁸² “Illae solae artes liberales dicuntur, quae ad sciendum ordinantur: illae vero quae ordinantur ad aliquam utilitatem per actionem habendam, dicuntur mechanicae sive serviles” (*In Meta.*, I, 3, n. 59). Cf. *ibid.*, I, 1, n. 32-34. A slightly different explanation of the name ‘liberal arts’ is found in *In Polit.*, I, 5 (Leon. 48 A, p. 95, lin. 69-96) and yet another in *STh*, I-II, 57, 3 ad 3.

⁸³ “Per quamdam similitudinem” (*STh*, I-II, 57, 3 ad 3).

⁸⁴ “Etiam in ipsis speculabilibus est aliquid per modum cuiusdam operis, puta constructio syllogismi aut orationis congruae aut opus numerandi vel mensurandi. Et ideo quicumque ad huiusmodi opera rationis habitus speculativi ordinantur, dicuntur per quamdam similitudinem artes, sed liberales; ad differentiam illarum artium quae ordinantur ad opera per corpus exercita, quae sunt quodammodo serviles, inquantum corpus serviliter subditur animae, et homo secundum animam est liber. Illae vero scientiae quae ad nullum huiusmodi opus ordinantur, simpliciter scientiae dicuntur, non autem artes. Nec oportet, si liberales artes sunt nobiliores, quod magis eis conveniat ratio artis” (*STh*, I-II, 57, 3 ad 3). “Hee [i.e. logica et mathematica] inter ceteras scientias artes dicuntur, quia non solum habent cognitionem, set opus aliquod, quod est immediate ipsius rationis, ut constructionem syllogismi uel orationem formare, numerare, mensurare, melodias formare et cursus siderum computare” (*In Boet. De Trin.*, 5, 1 ad 3). Cf. also *STh*, I-II, 90, 1 ad 2; II-II, 47, 2 ad 3; *De ver.*, 3, 2 c.

⁸⁵ “Omnis applicatio rationis rectae ad aliquid factibile pertinet ad artem. ... Quia igitur ratio speculativa quaedam facit, puta syllogismum, propositionem et alia huiusmodi, in quibus proceditur secundum

* * *

It should be apparent now that the charge of dogmatism or deductivism raised against the philosophy of Aristotle and Aquinas is probably founded on lack of familiarity with the basic methodological presuppositions of these thinkers. From this basic methodology we learned about the importance and role of dialectics as the way of research in philosophical sciences as well as about the relevance of the sequence of questions asked in philosophy. This methodological element also indicates that in Aquinas's interpretation it would be impossible to dismiss Aristotle's philosophy under the pretext of baneful essentialism. In addition, already on the level of their methodology or logic we are able to perceive a conscious acknowledgement of the multiform dependence of human being, cognition, and language – a component which has recently been more often emphasized in philosophy, in opposition to a modern forgetfulness of this aspect of our existence.

One of the main forms of this acknowledgement is the conception of learning as an acquisition of theoretical and practical virtues. In our reading of St. Thomas's texts on this topic we picked out one of the interpretative keys to his teaching, namely, that we should respect the order of learning when we study his writings, taking into consideration what is rightly presupposed as already known. Taking seriously what has been brought to light by former examination, that is, what was treated in perhaps other disciplines than the field of our interest, protects us, on one hand, from anachronistic interpretations (for example we see the explanation why some statements are taken for granted in later disciplines and not dogmatically postulated), and, on the other hand, we have an opportunity to free ourselves from some of the presuppositions that are seemingly evident to the contemporary mind, and which may turn out to be at least unnecessary or even misleading. For ethicists or moral theologians, in particular, this exercise may prove to be highly beneficial, given the need to examine the roots of ethical knowledge as well as the place of ethics in a sapientially ordered organism of philosophy.

certas et determinatas vias; inde est quod respectu horum potest salvari ratio artis" (*STh*, II-II, 47, 2 ad 3). This is why Aquinas quotes Boethius who says that logic "non tam est scientia quam scientie instrumentum" (*In Boet. De Trin.*, 5, 1, ad 2).

We should now focus on what St. Thomas says regarding the nature and status of logic. This will lead us to grasp his notion of understanding, the character of logical inference, and the nature of science in the strict sense. Then we will be able to discuss more competently the place and essential features of moral science.

2. St. Thomas's Logic

For our topic it is especially important to see the status of logic as an art and as a rational science. The importance and necessity of logic is clear from the place it occupies in the order of learning and from the fact that it is simply called “the introduction to other sciences.”¹ Since it is believed that moral claims cannot be inferred from descriptions because it is “logically illicit,” we need to see what in Aquinas’s writings could possibly establish such a prohibition. We shall consider some particular questions, because many assumptions held by St. Thomas in his personal works (which are not obvious to contemporary readers) are grounded precisely in the logic he assimilated.² Intellectual formation today often significantly diverges from that of Aquinas’s contemporaries, so that many statements he makes while treating moral questions can remain obscure and susceptible to misunderstanding by the modern reader.³

¹ E.g. *In Meta.*, I, 1, n. 32; *ibid.*, II, 5, n. 335.

² Over the last few decades there has been a considerable revival of the interest in the history of medieval logic. This interest bore fruit in many helpful studies which clarified radical differences within the field at the turn of the 13th and 14th centuries, i.e. differences between *via antiqua* and *via moderna*. I largely benefited from studies of one of the most outstanding in this field of today’s “younger generation” scholars, Gyula Klima, who combines a remarkable erudition in medieval logic with an amazing clarity in his translation of complex medieval theories into accessible contemporary categories of philosophy.

³ Half a century ago, Innocentius M. Bocheński, in his monumental *A History of Formal Logic* (translated by Ivo Thomas [Notre Dame, Ind.: University of Notre Dame Press, 1961], original German edition: *Formale Logik*, Freiburg/München: Verlag Karl Alber, 1956) opposed himself to the interpretation of development of logic as a steady growth: “Logic shows no linear continuity of evolution. Its history resembles rather a broken line. From modest beginnings it usually raises itself to

First, we should note that Aquinas basically adapted Aristotelian logic.⁴ Aristotle created the discipline for the western world and in the times of Aquinas, scholars were engaged in a great rediscovery of this kind of logic.⁵ After ages of oblivion Europe of the twelfth and thirteenth centuries enjoyed new Latin translations of the *logica nova*. Some of Aristotle's logical works had already been known. The *logica vetus* contained *Categories* and *On Interpretation*, Latinized long before by Boethius. Other books by Aristotle also became available, especially the *Prior* and *Posterior Analytics*, *Topics*, *Sophistical Refutations*. St. Albert the Great, St. Thomas's principal teacher and confrère in the young and dynamic Order of Preachers, had a lifelong project of rendering Aristotle intelligible to the Latin world and commented on many of Aristotle's books. Before studying under Albert's guidance, Thomas, as a boy at the abbey of Monte Cassino, took "under a private tutor, his first and promising steps in logic and natural science."⁶ Later, when he arrived in Naples in 1239 (he was then about

a notable height very quickly – within about a century – but then the decline follows as fast. Former gains are forgotten, the problems are no longer found interesting, or the very possibility of carrying on the study is destroyed by political and cultural events. Then, after centuries, the search begins anew. Nothing of the old wealth remains but a few fragments; building on those, logic rises again" (p. 12). This is why today's treatment of ancient and medieval logical issues is vulnerable to simplistic presentations distorted by ideas coming from other epochs, especially from the period of so-called "classical" logic (i.e. logic from 16th to 19th centuries). Bocheński continues: "The 'new' logic which follows on a period of barbarism is not a simple expansion of the old; it has for the most part different presuppositions and points of view, uses a different technique and evolves aspects of the problematic that previously received little notice. It takes on a different shape from the logic of the past" (ibid.). Further regarding the "classical" logic: "the content of this logic is so poor, it is loaded with so many utter misunderstandings, and its creative power is so extremely weak, that one can hardly risk calling something so decadent a distinct variety of logic and so setting it on a level with ancient, scholastic, mathematical and Indian logic" (p. 14). Interestingly, MacIntyre's introductory narration about the history of ethics in his *After Virtue* (London: Duckworth, 1981, p. 1-5) considerably resembles Bocheński's description of the history of logic.

⁴ William A. Wallace writes that although there have been some disputes concerning the extent to which Aquinas accepted and "baptized" Aristotle in the field of metaphysics and ethics, however "no one has ever questioned the fact that St. Thomas subscribed completely to the logical system of the Stagiryte" (*The Role of Demonstration in Moral Theology. A Study of Methodology in St. Thomas Aquinas* [Washington, D.C.: The Thomist Press, 1962], p. 8). In the footnote he quotes also Etienne Gilson: "The traditional syncretism upon which (or within which) Thomas had to do his critical work was made up of many different elements. The logic that it used was entirely Aristotelian" (*Elements of Christian Philosophy* [New York: Doubleday, 1960], p. 16).

⁵ Anthony Kenny finds some similarity between this period and what has recently occurred in philosophy: "At the end of the medieval period scholars lost interest in the development of formal logic, and less attention was paid to the philosophical study of logic. It was only in the nineteenth century that formal logic was reborn, and the enormous renaissance in the subject led to the rediscovery, before and after the Second World War, of branches of logic which had been totally lost since the Middle Ages. In the last few decades scholars have come to realize that some of the most modern ideas of logic were things that were well known in the Middle Ages" (Kenny, *Aquinas on Mind*, p. 8).

⁶ Michael Bertram Crowe, "Peter of Ireland: Aquinas's Teacher of the *Artes Liberales*," in *Arts libéraux et philosophie au Moyen Age*, Actes du IV^e Congrès International de Philosophie Médiévale

fifteen), he studied the *trivium* and natural science under another Aristotelian scholar, Peter of Ireland.⁷ St. Thomas, who even in the beginning of the fourteenth century was esteemed as an “illustrious doctor of the sacred page, master in theology, ... who, next to Albert, is considered the greatest philosopher among all clerics in this world,”⁸ commented in full only on one logical work of Aristotle, the *Posterior Analytics*.⁹ Apart from that, because it was asked of him, he began but did not finish a commentary on the *On Interpretation*. The question why Aquinas decided to comment on the *Posterior Analytics* in the heat of his very intensive academic activity (the end of 1271-1272), is still to be resolved.¹⁰ We may surmise that the quality of this commentary was highly valued by the Parisian professors of the faculty of arts, from their official request of the Master of the Order of Preachers, after the death of St. Thomas, to send from Naples copies of this commentary together with his unfinished commentary on the *On Interpretation*.¹¹

As I have already mentioned, the first words of Aquinas's commentary on the *Posterior Analytics* refer the reader to Aristotle's claim in the *Metaphysics* that “the human race lives by art and reasoning.” I have also said that these “arts” are fixed procedures established by reason, whereby human acts reach their due end through

(Montréal, Canada, 27.08 – 2.09.1967), edited by Henri Irénée Marrou et al. (Montréal-Paris: Institut d'Etudes Médiévales-Vrin, 1969), p. 618.

⁷ Ibid.

⁸ Words from *Chronicle of the King of Aragon, James II* by Peter Marsilio; quotation taken from Weisheipl, *Friar Thomas d'Aquino*, p. 130.

⁹ St. Albert said that this book is the apex, the most perfect and only absolutely desirable study among the logical works: St. Albert, *In Poster.*, I. tr. I, cap. 1, ed. Borgnet, II, 2b.

¹⁰ The popular hypothesis that it was his academic exercise to prepare himself to the further work has little probability because by that time he was finishing the II-II of *STh*; from the very beginning of this complex work he used the method presented in the *In Poster*. Besides, we can observe his methodological maturity very early, already in his *In Boet. De Trin.*, where he goes far beyond the Boethian text to exhibit many issues contained in *Poster*. We could suspect that a serious historical research would give similar results to those documented by James Doig in his works on Aquinas's *In Meta.* and *In Eth.* A common point of these two convincing studies is that, comparing St. Thomas's work to already existing commentaries on Aristotle, we can perceive his efforts to correct the essential questions of his commenting predecessors (including Albert), in order to give to the philosophy students a coherent interpretation with the whole available Aristotelian corpus, as well as a clarification of what is unclear in Aristotle's text. See Doig, *Aquinas on Metaphysics* (The Hague: Martinus Nijhoff, 1972); and idem, *Aquinas's Philosophical Commentary on the Ethics* (The New Synthese Historical Library, Texts and Studies in the History of Philosophy, vol. 50 [Dordrecht-Boston-London: Kluwer Academic Publishers, 2001]).

¹¹ Jean-Pierre Torrell notes that these two works enjoyed quite considerable diffusion (*Initiation à Saint Thomas d'Aquin : sa personne et son œuvre* [Fribourg: Editions Universitaires, 1993], p. 227). The professors asked not only for Aquinas's last writings but above all for the honor of transmitting to Paris the corpus of this Master: “tanti clerici, tanti patris, tanti doctoris,” see Chenu, *Toward Understanding St. Thomas*, p. 22.

appropriate means. As such, arts can concern every human act, even acts of reason themselves. Thus, this quotation from *Metaphysics* serves to justify the need for a special general art directing acts of reason. This is the art of logic.¹² Aquinas defines logic as an art “directive of the acts of reason themselves so that man may proceed orderly, easily and without error in the very act of reason itself.”¹³ Later we shall ask what ensures that there is no error in the act of reason, i.e. what verifies the process of reasoning. However, before that we will consider more closely the general character of St. Thomas's logic.

2.1. Divisions of logic

Since logic is concerned with the acts of human reason, in the introductions of both his commentaries, to *On Interpretation* and to *Posterior Analytics*, Aquinas offers a psychologically based overview of the kinds of acts that are exercised by human reason. This overview only indicates the order of specific logical books in the scope of logic. Thus Aquinas here sketches only what he treats in greater detail elsewhere.¹⁴ For our purposes, it will be helpful to follow this analysis in order to situate our perspective in the context of Aquinas's philosophical plan as well as to outline our further considerations (contained in Chapters 3 and 4).

St. Thomas distinguishes three kinds of acts of human reason. One is the understanding of indivisible and simple things, an intellectual grasping or conceiving of essence, the understanding of *what* something is.¹⁵ In this simple grasping of what something is, there is no question of truth or falsehood. An intellectual concept is

¹² Cf. Edward Simmons, “The Nature and Limits of Logic,” *The Thomist* 24 (1961): 47-71.

¹³ “Si igitur ex hoc quod ratio de actu manus ratiocinatur adinuenta est ars edificatiua uel fabrilis per quas homo faciliter et ordinate huiusmodi actus exercere potest, eadem ratione ars quedam necessaria est que sit directiua ipsius actus rationis, per quam scilicet homo in ipso actu rationis ordinate, faciliter et sine errore procedat” (*In Poster.*, I, 1 [Leon. 1*/2, p. 4, lin. 17-24]).

¹⁴ In *In Peryerm.*, I, 2 (Leon. 1*/1, p. 11, lin. 113-125 and p. 12, lin. 220-224) Aquinas refers to the Philosopher's *De Anima*, III, and indeed in his commentary he discusses this topic at length. Cf. also the final remark of the second lesson: Aristotle “excusat se a diligentiori horum consideratione, quia quales sint anime passionis et quomodo sint rerum similitudines, dictum est in libro De anima; non enim hoc pertinet ad logicum negocium, set ad naturalem” (p. 13, lin. 250-255). Other places cf. for example: *STh*, I, 79 and 84-89; *In Boet. De Trin.*, 5, 3 c.

¹⁵ “Una quidem actio intellectus est intelligentia indiuisibilium, siue incomplexorum, secundum quam concipit quid est res” (*In Poster.*, I, 1 [Leon. 1*/2, p. 5, lin. 35-38]). “Una quidem, que dicitur indiuisibilium intelligentia, per quam scilicet intellectus apprehendit essenciam uniuscuiusque rei in se ipsa” (*In Peryerm.*, I, 1 [Leon. 1*/1, p. 5, lin. 2-5]).

neither true nor false: we merely grasp what a simple object is without comparing it to anything, without forming any judgment, and without inferring anything. Aquinas says that some people call it the informing of the intellect, or representing by means of the intellect. He adds that Aristotle hands down the logical doctrine concerning this act in the book of *Categories*.

The second act of the human mind consists in putting together and taking apart what has been grasped by the first kind of intellectual act. It happens in affirming and denying something; that is, predicating something about something. This second kind of act of the intellect is called “composing and dividing” or “combining and dividing” (*compositio vel divisio intellectus*). Aquinas notes that in this act “the true or the false are for the first time present.”¹⁶ Aristotle treats this act of reason logically in the *On Interpretation*.

The third act is distinguished according to what is characteristic of reason, properly speaking, i.e. “advancing from one thing to another in such a way that through that which is known one comes to a knowledge of the unknown.”¹⁷ This is the act in which inference plays an essential role. This is the subject of the remaining logical books by Aristotle.

Aquinas arranges these remaining books according to the degree of necessity of the types of reasoning they describe. He compares the reasoning processes to commonly noticed acts of nature. In the acts of nature there is something that occurs always of necessity and cannot fail. In some acts nature succeeds in the majority of cases – it sometimes fails due to a defect of some principle, as for example when from animals of some species something monstrous is generated instead of a perfect animal of the same species. Yet this happens rarely, otherwise we could not say that nature fails or that something went wrong. Respectively, some reasoning can be necessary and cannot fail in attaining the truth – to this Aquinas adds: “by such a process of reasoning the certainty of science is acquired.”¹⁸ Apart from that, it can succeed in attaining the truth

¹⁶ “Secunda uero operatio intellectus est compositio uel diuisio intellectuum, in qua est iam uerum et falsum” (*In Poster.*, I, 1 [Leon. 1*/2, p. 4, lin. 42-44]). In *In Peryerm.*, I, 1 he only mentions: “Alia est operatio intellectus scilicet componentis et diidentis” (Leon. 1*/1, p. 5, lin. 5-6).

¹⁷ “Discurrere ab uno in aliud, ut per id quod est notum deueniat in cognitionem ignoti” (*In Poster.*, I, 1 [Leon. 1*/2, p. 4-5, lin. 47-49]).

¹⁸ “Per huiusmodi rationis processum sciencie certitudo acquiritur” (*In Poster.*, I, 1 [Leon. 1*/2, p. 5, lin. 68-69]).

for the most part without producing necessity. There are also processes of reasoning which are defective on the side of their principles and always fail in attaining the truth.

According to this division, Aquinas indicates three sub-parts of this part of logic (which is related to the third act of the intellect): judicative, investigative, and sophistry. Aristotle presents the latter in the book *On Sophistical Refutations*. The investigative part of logic, as the name suggests, concerns the whole field of human investigation or research, where even if there is not complete certitude there is nevertheless some level of certitude depending on the probability of the reasoning principles. Since there is a gradation in the power with which nature acts, there is also a gradation of certitude in this kind of reasoning. Aquinas again identifies three steps in this gradation and notes the works of Aristotle to which they correspond. First, when reason leans completely to one side of a contradiction but with fear concerning the other side, we do not achieve science strictly speaking but only belief or opinion. This domain is called by Aquinas topics or dialectics (*topica sive dialectica*). Aristotle considers this type of reasoning in the *Topics*. Within the scope of human experience, however, there is also a large sphere of reasoning that achieves even less than an opinion or belief but only a suspicion. Here, reason does not lean completely to either side of the contradiction, yet is still more inclined to one than to the other. Aristotle treats this second kind of reasoning in the *Rhetoric*. Finally, sometimes a mere fancy averts from one part of a contradiction or the other on the basis of some representation. Aquinas gives an example: “much as when a man turns in disgust from a certain food because it is described to him in terms of something disgusting.” Aristotle considers this field in the *Poetics*.

The judicative part of logic, which is one of the three sub-parts of logic and is concerned with the third act of the intellect, deals with those processes of reason which bear certain and sure judgments about effects. Such judgments are obtained by resolving to the first principles (*resolvendo in prima principia*); that is why this part is called analytical, i.e., resolvent.¹⁹ The certainty of the judgment comes either only from the form of the syllogism – which is the subject of the book of the *Prior Analytics* – or “from the matter along with the form, because propositions employed are *per se* and

¹⁹ Cf. Eileen C. Sweeney, “Three Notions of *resolutio* and the Structure of Reasoning in Aquinas,” *The Thomist* (1994): 197-243.

necessary – and to this the *Posterior Analytics* is dedicated.”²⁰ This book treats those issues toward which all previous logical considerations are directed.²¹

St. Thomas says that all these books belong to “rational philosophy” (*ad rationalis philosophia pertinent*), which is another name for logic.²² The scope of logic in this plan is, therefore, considerable and somewhat startling for those formed in the spirit of contemporary logic. The division and distribution of Aristotle’s logical books is Aquinas’s invention,²³ and is in line with his constant search for the *intentio Aristotelis* and for the proper order of everything he ponders.

We saw that logic has the status of a liberal art but also, in some sense, of a speculative science. At this point I should introduce an important distinction which clarifies the notion of art and science in reference to logic. Logic has the status of an art when it is first learned and used in life or in the sciences (*logica utens*). It has the status of a speculative science when it is known in a scientific way and fulfills scientific conditions (*logica docens*).²⁴ This distinction makes a difference when the word ‘logic’

²⁰ “Certitudo autem iudicii que per resolutionem habetur est uel ex ipsa forma sillogismi tantum, et ad hoc ordinatur liber Priorum analeticorum, qui est de sillogismo simpliciter, uel etiam cum hoc ex materia, quia sumuntur propositiones epr se et necessarie, et ad hoc ordinatur liber Posteriorum analeticorum, qui est de sillogismo demonstratiuo” (*In Poster.*, I 1 [Leon. 1*/2, p. 6, lin. 80-87]).

²¹ “Harum autem operationum [intellectus] prima ordinatur ad secundam: quia non potest esse compositio et diuisio, nisi simplicium apprehensorum; secunda uero ordinatur ad terciam, quia uidelicet oportet quod ex aliquo uero cognito, cui intellectus assenciat procedatur ad certitudinem accipiendam de aliquibus ignotis. ... et ideo secundum praedictum ordinem trium operationum, liber Predicamentorum ad librum Peryermeneias ordinatur, qui ordinatur ad librum Priorum et consequentes” (*In Peryerm.*, I, 1 [Leon. 1*/1, p. 5, lin. 8-14 and 29-32]). “Consideratio huius libri directe ordinatur ad scienciam demonstratiuam” (*ibid.*, 7 [Leon. 1*/1, p. 38, lin. 109-110]).

²² E.g.: “Logica dicitur rationalis philosophia” (*In Phys.*, III, 8, n. 2).

²³ In *In Peryerm.*, Aquinas divides logic in a shorter manner: first operation of the intellect – *Praedicamenta*; second – *Peryermeneias*; third – *Analyticorum*.

²⁴ “Dicetur aliquis processus esse rationabilis quando aliquis utitur in aliqua scientia propositionibus que traduntur in logica, prout scilicet utimur logica, prout est docens, in aliis scientiis. ... Et hic est alius modus quo logica utimur in scientiis demonstratiuis, non quidem ut est docens, set ut est utens. Et his duobus modis denominatur processus rationalis a scientia rationali: his enim modis usitatur logica, que rationalis scientia dicitur, in scientiis demonatratiuis” (*In Boet. De Trin.*, 6, 1 ad 1am). “Licet autem dicatur, quod Philosophia est scientia, non autem dialectica et sophistica, non tamen per hoc removetur quin dialectica et sophistica sint scientiae. Dialectica enim potest considerari secundum quod est docens, et secundum quod est utens. Secundum quidem quod est docens, habet considerationem de istis intentionibus, instituens modum, quo per eas procedi possit ad conclusiones in singulis scientiis probabiliter ostendendas; et hoc demonstrative facit, et secundum hoc est scientia. Utens uero est secundum quod modo adinvento utitur ad concludendum aliquid probabiliter in singulis scientiis; et sic recedit a modo scientiae. Et similiter dicendum est de sophistica; quia prout est docens tradit per necessarias et demonstrativas rationes modum arguendi apparenter. Secundum uero quod est utens, deficit a processu verae argumentationis” (*In Meta.*, IV, 4, n. 576). “Sed in parte logicae quae dicitur demonstrativa, solum doctrina pertinet ad logicam, usus uero ad philosophiam et ad alias particulares scientias quae sunt de rebus naturae. Et hoc ideo, quia usus demonstrativae consistit in utendo principiis rerum, de quibus fit demonstratio, quae ad scientias reales pertinet, non utendo intentionibus logicis. Et sic apparet, quod quaedam partes logicae habent ipsam scientiam et doctrinam et usum,

is used without qualification. For art, as was said above, is a fixed intellectual skill which concerns individual and contingent operations, acts of reason, and its end consists in some “product” or “work” – even if only interior in the case of logic. The subject matter of logic as an art, therefore, are acts of reason as ordered according to the principles of theoretical logic.²⁵ A human being proceeds logically, that is, according to the art of logic, when his reason applies the rules of logic. These rules are either discovered on the basis of experience and particular judgments (true and false) or learned from someone else who discovered them earlier. They can be mastered only on an “artisanal” level (i.e., to know something of the rules and *how* to apply them), or can be known in a scientific way (i.e., to know perfectly their nature, and apart from the knowledge *how* to apply them, to know *why* they are such and so and cannot be otherwise).

We do not need distinct knowledge of things to learn logic as a liberal art; it suffices to have a common confused knowledge. In other words, it is sufficient to know how things are commonly named and nominally defined.²⁶ This confused knowledge suffices to start learning logic, because logic understood in this way is treated as a means of removing confusion in our knowledge, and of introducing us to the other sciences.²⁷ The introduction to other sciences thus has the character of a general method that enables one to create particular methods of other sciences, to “proceed orderly, easily and without error.”²⁸ Logic as an art is, in a sense, part of the art of living as human beings in this real world, an art of thinking and talking properly about all that

sicut dialectica tentativa et sophistica; quaedam autem doctrinam et non usum, sicut demonstrativa” (ibid., n. 577). Cf. *STh*, I-II, 57, 6 ad 3. What “science” and “scientific” mean for Aquinas will be treated in Chapter 4.

²⁵ Cf. Robert W. Schmidt, *The Domain of Logic According to Saint Thomas Aquinas* (The Hague: Martinus Nijhoff, 1966), p. 57. He translates *logica utens* as “applied logic” and *logica docens* as “pure logic” (p. 36).

²⁶ Nominal definitions tell us only what words mean; as such it is distinguished from real definitions, which tell us what a substance is.

²⁷ “Plures artes sint repertae quantum ad utilitatem, quarum quaedam sunt ad vitae necessitatem, sicut mechanicae; quaedam vero ad introductionem in aliis scientiis, sicut scientiae logicae” (*In Meta.*, I, 1, n. 32). “Sunt etiam ad eruditionem necessaria, sicut scientiae logicae, quae non propter se quaeruntur, sed ut introductoriae ad alias artes” (ibid., 3, n. 57).

²⁸ “Quia diversi secundum diversos modos veritatem inquirunt; ideo oportet quod homo instruat per quem modum in singulis scientiis sint recipienda ea quae dicuntur. Et quia non est facile quod homo simul duo capiat, sed dum ad duo attendit, neutrum capere potest; absurdum est, quod homo simul quaerat scientiam et modum qui convenit scientiae. Et propter hoc debet prius addiscere logicam quam alias scientias, quia logica tradit communem modum procedendi in omnibus aliis scientiis. Modus autem proprius singularum scientiarum, in scientiis singulis circa principium tradi debet” (*In Meta.*, II, 5, n. 335).

constitutes this world, about the whole reality accessible to our knowledge. It is also an art of inferring proper conclusions from what is experienced and thought.²⁹ This is why logic should be taught first. At this point, we should turn to a more specific characterization of Aquinas's logic.

2.2. The subject of logic

According to St. Thomas, logic should be taught first, despite its difficulty. As he writes:

In learning we start from what is easier, unless necessity requires otherwise. For sometimes, in learning, it is necessary to begin, not with what is easier, but with the knowledge upon which further knowledge depends. This is the reason in learning that we must begin with logic, not because it is easier than the other sciences, for it has the greatest difficulty seeing that it is about what is secondarily understood, but rather because the other sciences depend upon it inasmuch as logic teaches the method of procedure in all the other sciences. Hence we must first know the method of a science before the science itself, as is said in the second book of *Metaphysics*.³⁰

When logic is taught in a disciplined way, it is treated as a theoretical science. The difficulty of logic as a science comes from its subject. The subject of logic as a subordinated speculative science are not individual acts of reason ordered according to logical principles (this is the case for the subject of logic as an art), but rather something that results from the activity of reason:³¹ beings of reason (*entia rationis*)³² or, more specifically, relations of reason. In the text quoted above, Thomas says that logic

²⁹ This approach to logic differs significantly from what happens to be proposed today to students as logic. One of the features of today's deliberations in formal or symbolic logic is that it does not seem to have significant impact on the procedures of other sciences. On this topic see an interesting book by H. B. Veatch, *Two Logics. The Conflict between Classical and Neo-Analytic Philosophy* (Evanston: Northwestern University Press, 1969). Cf. also a discussion article by Otto Bird, "Veatch on the Humanities," *The New Scholasticism* 44 (1970): 125-132.

³⁰ "In addiscendo incipimus ab eo quod est magis facile nisi necessitas aliud requirat: quandoque enim necessarium est in addiscendo incipere non ab eo quod est facilius, set ab eo a cuius cognitione sequentium cognitio dependet. Et hac ratione oportet in addiscendo a logica incipere, non quia ipsa sit facilius ceteris scientiis, – habet enim maximam difficultatem, cum sit de secundo intellectis, – set quia alie scientie ab ipsa dependent in quantum ipsa docet modum procedendi in omnibus scientiis; oportet autem primo scire modum scientie quam scientiam ipsam, ut dicitur in II Metaphisice" (*In Boet. De Trin.*, 6, 1 ad 2am, ad 3).

³¹ "Cum autem logica dicatur rationalis scientia, necesse est quod eius consideratio uersetur circa ea quae pertinent ad tres ... operationes rationis" (*In Peryerm.*, I, 1 [Leon. 1*/1, p. 5, lin. 15-17]).

³² Cf. *In Meta.*, IV, 4, n. 574; 17, n. 736. Schmidt suggests that *ens rationis* should be translated into English as "rationate being", see *Domain of Logic*, p. 52-53. Cf. Robert W. Schmidt, "The Translation of Terms like *Ens Rationis*," *The Modern Schoolman* 41 (1963-64): 73-75. But since not many authors accept this suggestion, I follow more common translation.

concerns what is secondarily understood, which renders it very difficult. Yet, what is secondarily understood? What are the beings and relations of reason? More importantly, why should we consider them in the work about the transition from the description of human nature to moral claims? From the text cited above we know that all further knowledge is dependent on that which is taught in logic. Thus, we can surmise that the issue introduced at this point has some relevance for moral science. In fact, it has great relevance for the very possibility and character of logical inference, as we will see later. The question of being and relation pertains in some way to metaphysics, but there is also a considerable place in logic to treat this question.³³ In what follows, there will appear metaphysical issues which are necessary if we want to delimit the very subject of logic, but they will be mentioned only as useful clarifications to determine properly what is secondarily understood and what is the meaning of the phrases “being of reason” and “relation of reason.”

In order to know what are beings of reason we should first learn that “being is said in many ways.”³⁴ In other words, “being” is not a univocal term.³⁵ Most often Aquinas proposes two fundamental meanings: first, when it signifies being in the sense of a real thing (real being); second, when it signifies the truth of a proposition (being of reason). The latter is said to be the subject of logic. Let us look more closely at what Thomas means by real being in order better to understand what he means by being of reason. It is important to see what beings of reason are not, because, as we know from

³³ See very illuminating article by Hermann Weidemann, “Logic of Being in Thomas Aquinas,” in *Thomas Aquinas: Contemporary Philosophical Perspectives*, Brian Davies ed., (New York: Oxford University Press, 2002), p. 77-95. Also Ralph McInerny’s “Being and Predication” and his critical “Note on Thomistic Existentialism” – both in the collection of his essays *Being and Predication. Thomistic Interpretations*, (Washington, D.C.: The Catholic University of America Press, 1986), p. 173-228 and 165-172 respectively.

³⁴ “Philosophus, in V *Metaphys.*, text. 14, ostendit quod ens multipliciter dicitur. Uno enim modo dicitur ens quod per decem genera dividitur: et sic ens significat aliquid in natura existens, sive sit substantia, ut homo, sive accidens, ut color. Alio modo dicitur ens, quod significat veritatem propositionis” (*Super II Sent.*, 34, 1, 1 sol.). Cf. *STh*, I, 48, 2 ad 2; *De malo*, 1, 1 ad 19. “Esse dicitur tripliciter. Uno modo dicitur esse ipsa quidditas vel natura rei ... Alio modo dicitur esse ipse actus essentiae ... Tertio modo dicitur esse quod significat veritatem compositionis in propositionibus, secundum quod ‘est’ dicitur copula” (*Super I Sent.*, 33, 1, 1 ad 1).

³⁵ I accept McInerny’s reading of Aquinas on the doctrine of analogy (Ralph McInerny, *The Logic of Analogy: An Interpretation of St. Thomas* [The Hague: Martinus Nijhoff, 1961] and idem, *Aquinas and Analogy* [Washington, D.C.: The Catholic University of America Press, 1996]. Stephen Brock briefly summarizes this approach in this way: “analogy is a logical matter, a matter of definitions. Analogy bears on things, not as they are ‘in themselves’, but as falling under our knowledge of them. ... What is analogical, in this doctrine, is a term, not a thing” (Stephen L. Brock, *Action and Conduct: Thomas Aquinas and the Theory of Action* [Edinburgh: T&T Clark, 1997], p. 11).

the history of philosophy, some people, taking beings of reason for what they are not, have rejected or “shaved” them as an absurd multiplication of entities.

Aquinas teaches that the word “being” (*ens*) is taken from the act of being or existing,³⁶ and signifies “what exists” (*habens esse*)³⁷ or “the act of existence” (*actus essendi*).³⁸ As such it is the first object of the intellect (*ens primum cognitum*): “what is first apprehended by the intellect is being.”³⁹ In fact, everything is perceived under the aspect of being: “whatever is known, is known as being.”⁴⁰ And so “being is the proper object of the intellect, and is primarily intelligible.”⁴¹ In the first place “being” signifies for us an extramental material thing, which, as such, is first grasped by the mind and is that to which what is understood is primarily referred.⁴² In other words, what is first understood is a sensible being under its most universal predicate. Why is this so? Because we are human beings. St. Thomas explains that if we were God, our very act of cognition would itself be the first object of our intellect and so it would be being properly speaking. If we were angels, our very essence would be the first object of our intellect and so it would be being properly speaking.⁴³ Since, however, we are neither God nor angels – because of our bodily condition and the sensory beginning of our cognition – we must content ourselves with knowing primarily something extrinsic, which is the nature of material things, as something which is first grasped and primarily referred to.⁴⁴ Things outside of our minds are called “real beings” or “beings of nature.”

³⁶ Cf. *In Peryerm.*, I, 5 (Leon. 1*/1, p. 30-31, lin. 355-391).

³⁷ Cf. *De ver.*, 1, 1 c.

³⁸ “Hoc vero nomen Ens, imponitur ab actu essendi” (*In Meta.*, IV, 2, n. 553). Cf. *De pot.*, 7, 2 ad 1; *Super I Sent.*, 8, 1, 1 sol.

³⁹ “Illud quod primo cadit in apprehensione intellectus est ens” (*De ver.*, 21, 4 ad 4). Cf. *ibid.*, 1 c; *Super I Sent.*, 8, 1, 3; 19, 5, 1 ad 2; 24, 1, 3 ad 2; *STh*, I, 11, 2 ad 4.

⁴⁰ “Quidquid cognoscitur, cognoscitur ut ens” (*Super I Sent.*, 38, 1, 4 ad 4). “Unde unicuique apprehenso attribuimus quod est ens” (*STh*, I-II, 55, 4 ad 1). “Illud autem quod primo intellectus concipit quasi notissimum et in quo omnes conceptiones resolvit est ens” (*De ver.*, 1, 1 c.). “Intellectus autem respicit suum obiectum secundum communem rationem entis” (*STh*, I, 79, 7 c.). “Intellectus [entis] includitur in omnibus quaecumque quis apprehendit” (*STh*, I-II, 94, 2 c.).

⁴¹ “Ens est proprium obiectum intellectus; et sic est primum intelligibile” (*STh*, I, 5, 2 c.). Cf. *STh*, I-II, 9, 1 c.; *CG*, II, 98, n. 1835.

⁴² “Prima enim intellecta sunt res extra animam, in quae primo intellectus intelligenda fertur” (*De pot.*, 7, 9 c.).

⁴³ Some seem to feel comfortable placing themselves in either of these two possibilities; cf. *In Boet. De Trin.*, 1, 3.

⁴⁴ “Est autem alius intellectus, scilicet humanus, qui nec est suum intelligere, nec sui intelligere est obiectum primum ipsa eius essentia, sed aliquid extrinsecum, scilicet natura materialis rei. Et ideo id quod primo cognoscitur ab intellectu humano, est huiusmodi obiectum; et secundario cognoscitur ipse actus quo cognoscitur obiectum” (*STh*, I, 87, 3 c.). “Obiectum intellectus est commune quoddam,

Therefore, real beings are beings properly speaking⁴⁵ or perfected (completed) beings⁴⁶ and they exist apart from our thought.

Real being is divided into ten categories called “predicaments” because they are the highest genera which we predicate of real beings.⁴⁷ It will be helpful to consider how Aquinas treats the categories in order to see the range of what he calls “real being.”⁴⁸ He did not write a commentary on Aristotle's *Categories*, but in his commentary on the *Physics* and on the *Metaphysics* he gives two systematized enumerations of Aristotelian categories.⁴⁹ The shorter one reads:

A predicate can be referred to a subject in three ways. This occurs in one way when the predicate states what the subject is, as when I say that Socrates is an animal; for Socrates is the thing which is an animal. And this predicate is said to signify *first substance*, i.e., a particular substance, of which all attributes are predicated. A predicate is referred to a subject in a second way when the predicate is taken as being in the subject, and this predicate is in the subject either essentially and absolutely and as something flowing from its matter, and then it is *quantity*; or as something flowing from its form, and then it is *quality*; or it is not present in the subject absolutely but with reference to something else, and then it is *relation*. A predicate is referred to a subject in a third way when the predicate is taken from something extrinsic to the subject, and this occurs in two ways. In one way, that from which the predicate is taken is totally extrinsic to the subject; and if this is not a measure of the subject, it is predicated after the manner of *environment*, as when it is said that Socrates is shod or clothed. But if it is a measure of the subject, then, since an extrinsic measure is either time or place, the predicament is taken either in

scilicet ens et verum, sub quo comprehenditur etiam ipse actus intelligendi. Unde intellectus potest suum actum intelligere. Sed non primo, quia nec primum obiectum intellectus nostri, secundum praesentem statum, est quodlibet ens et verum; sed ens et verum consideratum in rebus materialibus, ut dictum est; ex quibus in cognitionem omnium aliorum devenit” (*STh*, I, 87, 3 ad 1). Cf. *In Meta.*, II, 1, n. 285. As we know from the history, this fundamental differentiation between the proper object of human intellect and objects of God and angels, was obviated by Scotus who postulated that the proper object of human intellect be *ens commune*, the univocal core of the term “being” that could be somehow directly attainable by us in our present condition.

⁴⁵ “Ens non dicitur pure aequivoce, set secundum prius et posterius, unde simpliciter dictum intelligitur de eo, quod per prius dicitur” (*In Peryerm.*, I, 5 [Leon. 1*/1, p. 5, lin. 323-325]).

⁴⁶ “[Philosophus] *distinguit ens quod es extra animam per decem praedicamenta*, quod est ens perfectum” (*In Meta.*, V, 9, n. 889).

⁴⁷ “Sciendum est igitur quod, sicut in V Metaphisice Philosophus dicit, ens per se dupliciter dicitur: uno modo quod diuiditur per decem genera, alio modo quod significat propositionum ueritatem. Horum autem differentia est quia secundo modo potest dici ens omne illud de quo affirmatiua propositio formari potest, etiam si illud in re nichil ponat; per quem modum priuationes et negationes entia dicuntur: dicimus enim quod affirmatio est opposita negationi, et quod cecitas est in oculo. Sed primo modo non potest dici ens nisi quod aliquid in re ponit” (*De ente*, 1 [Leon. 43, p. 369, lin. 1-12]).

⁴⁸ Cf. Benedict M. Ashley, *The Way toward Wisdom* (Notre Dame, Ind.: University of Notre Dame Press, 2006), p. 76-85; M. Marina Scheu, *The Categories of Being in Aristotle and St. Thomas* (Washington, D.C.: The Catholic University of America Press, 1944), p. 46-63.

⁴⁹ Categories can be considered on these three levels: logical, physical, and metaphysical, “But Aristotle treats them primarily as part of natural science, not of metaphysics or logic, and demonstrates empirically that these categories are required for any adequate description of physical phenomena” (Ashley, *The Way toward Wisdom*, p. 78).

reference to time, and so it will be *when*; or if it is taken in reference to place and the order of parts in place is not considered, it will be *where*; but if this order is considered, it will be *position*. In another way, that from which the predicate is taken, though outside the subject, is nevertheless from a certain point of view in the subject of which it is predicated. And if it is from the viewpoint of the principle, then it is predicated as an *action*; for the principle of action is in the subject. But if it is from the viewpoint of its terminus, then it will be predicated as a *passion*; for a passion is terminated in the subject which is being acted upon.⁵⁰

This account lists the general possibilities or ways in which a predication concerning real being can happen. Most basically we see that the categories concern entities as conceived by simple concepts. Obviously, the list of categories does not contain being itself or the other terms which transcend categories, such as thing, one, something, true, or good – these are called by Aquinas *transcendentia*,⁵¹ later labeled as transcendentals, because they transcend categories in the sense that they belong to all of them. The division into categories follows the various modes of real thing existing in the world:⁵² things that we know from experience and try to describe. Although the categories follow the various modes of existence of things of this world, modes of existence of things do not necessarily follow our categories.⁵³ St. Thomas assures us that in the cases of these categories which are enumerated above “nothing is placed in a category unless it is something existing outside the soul.”⁵⁴ We might somewhat playfully call this rule

⁵⁰ “Praedicatum ad subiectum *tripliciter* se potest habere. *Uno modo* cum est id quod est subiectum, ut cum dico, Socrates est animal. Nam Socrates est id quod est animal. Et hoc praedicatum dicitur significare *substantiam primam*, quae est substantia particularis, de qua omnia praedicantur. *Secundo modo* ut praedicatum sumatur secundum quod inest subiecto: quod quidem praedicatum, vel inest ei per se et absolute, ut consequens materiam, et sic est quantitas: vel ut consequens formam, et sic est qualitas: vel inest ei non absolute, sed in respectu ad aliud, et sic est ad aliquid. *Tertio modo* ut praedicatum sumatur ab eo quod est extra subiectum: et hoc *dupliciter*. *Uno modo* ut sit omnino extra subiectum: quod quidem si non sit mensura subiecti, praedicatur per modum habitus, ut cum dicitur, Socrates est calceatus vel vestitus. Si autem sit mensura eius, cum mensura extrinseca sit vel tempus vel locus, sumitur praedicamentum vel ex parte temporis, et sic erit quando: vel ex loco, et sic erit ubi, non considerato ordine partium in loco, quo considerato erit situs. *Alio modo* ut id a quo sumitur praedicamentum, secundum aliquid sit in subiecto, de quo praedicatur. Et si quidem secundum principium, sic praedicatur ut agere. Nam actionis principium in subiecto est. Si vero secundum terminum, sic praedicabitur ut in pati. Nam passio in subiectum patiens terminatur” (*In Meta.*, V, 9, n. 891-892). Slightly different sequence with an ampler description is found in *In Phys.*, III, 5, n. 15.

⁵¹ Cf. *De ver.*, 21, 3; *Super I Sent.*, 2, 1, 5 ad 2; *Super II Sent.*, 34, 1, 2 ad 1; *STh*, I, 30, 3 ad 1; 39, 3 ad 3; 93, 9. For a discussion of Aquinas’s use of this term, see Jan A. Aertsen, *Medieval Philosophy & the Transcendentals: The Case of Thomas Aquinas* (Leiden etc.: Brill, 1996), p. 91-93.

⁵² Cf. *In Meta.*, V, 9, n. 890.

⁵³ “We cannot automatically assume that every distinction introduced by the intellect in its thinking and expressed by us in speech follows from and points to a corresponding real diversity in the order of being. In fact, Thomas often criticizes the Platonists for making this mistake (see *In VII Met.*, 1, n. 1254; *In De Trinitate*, 5, 3)” (John F. Wippel, “Thomas Aquinas’s Derivation of the Aristotelian Categories [Predicaments],” *Journal of the History of Philosophy* 35 [1987], p. 18).

⁵⁴ “In nullo enim praedicamento ponitur aliquid nisi res extra animam existens” (*De pot.*, 7, 9 c.).

“Aquinas’s version of the Razor,” because what he says amounts to something like *non sunt praedicamenta multiplicanda praeter necessitatem*.⁵⁵ Instead, however, of saying that some categories are spurious or are used only by the unlettered and not by serious philosophers who know logic, Aquinas attempts to explain how the categories can be validly used.⁵⁶ He seeks to understand how what is usually grasped in specific categories actually exists. For him, it would make no sense to talk scientifically about something if it did not somehow exist; all categories that do not refer to something real or are not based on reality are spurious and are unfit for science. Before “shaving” anything, in his non-eliminative method, he first examines carefully the reality of things and asks how to describe adequately what there is. He asks whether there is a mode of existence that can be ascribed to what is grasped in each category. Whenever the human mind endeavors to know real things thoroughly, to explain them, it is the reality of things itself that calls for these categories.⁵⁷

⁵⁵ John Deely remarks that: “Well before Ockham got the credit for inventing shaving, so to speak, Aquinas in his work used the so-called ‘Ockham’s razor’ – the idea that theoretical entities should be posited as seldom as possible” (*Four Ages of Understanding. The First Postmodern Survey of Philosophy from Ancient Times to the Turn of the Twenty-First Century* [Toronto: University of Toronto Press, 2001], p. 345).

⁵⁶ William McMahon in his article “The Medieval SuffICIENTIAE: Attempts at a Definitive Division of the Categories” (*Proceedings of the Society for Medieval Logic and Metaphysics* 2 [2002]: 12-25) traces back the tradition of arguing that there should be ten and only ten categories and mentions those who debunked such “sufficientiae” as something unimportant in philosophy (e.g. Scotus or Buridan). He writes: “The belief that the categories were essentially frivolous became amplified more and more so that by the time of Kant ... they were commonly regarded as completely arbitrary. Today, however, it is arguable that the advocates of the categories were really on the right track, as recent work in lexical semantics has resurrected the categorial distinctions and restored their honorific status” (p. 17). He gives William Frawley’s *Linguistic Semantics* (Hillsdale, NJ: Lawrence Erlbaum, 1992) and Ray Jackendoff’s *Semantic Structures* (Cambridge, MA: MIT Press, 1990) as examples for such recent works.

⁵⁷ Paul Vincent Spade writes: “Ockham’s ‘nominalism’ ... is often viewed as derived from a common source: an underlying concern for ontological parsimony. This is summed up in the famous slogan known as ‘Ockham’s Razor’, often expressed as ‘Don’t multiply entities beyond necessity.’ Although the sentiment is certainly Ockham’s, that particular formulation is nowhere to be found in Ockham’s texts. Moreover, as usually stated, it is a sentiment that virtually *all* philosophers, medieval or otherwise, would accept; no one wants a needlessly bloated ontology. The question, of course, is which entities are needed and which are not. Ockham’s Razor, in the senses in which it can be found in Ockham himself, never allows us to *deny* putative entities; at best it allows us to refrain from positing them in the absence of known compelling reasons for doing so. In part, this is because human beings can never be sure they know what is and what is not ‘beyond necessity’; the necessities are not always clear to us. But even if we did know them, Ockham would still not allow that his Razor allows us to *deny* entities that are unnecessary. For Ockham, the only truly necessary entity is God; everything else, the whole of creation, is radically contingent through and through. In short, Ockham does not accept the Principle of Sufficient Reason” (“William of Ockham,” in *The Stanford Encyclopedia of Philosophy* [Fall 2006 Edition], edited by Edward N. Zalta, forthcoming: <http://plato.stanford.edu/archives/fall2006/entries/ockham/>).

Among the categories, substance is primarily called being because the main feature of substance is that it is not in something else, but plays the function of a subject for other realities described by the remaining nine categories of being. Those nine categories are called accidents because their common characteristic is to be in another: their existence is always an existence-in-something, they inhere in or belong to a substance.⁵⁸ Being, however, is predicated of all these categories. As St. Thomas says: "Being is predicated of all the categories, not however in the same way, but primarily of substance, and posteriorly of the other categories."⁵⁹ In another place he says plainly that being is predicated analogically of the ten categories.⁶⁰ The ability to distinguish when a predication concerns substance (predication *simpliciter* or *per se*) and when it is about accidents (predication *secundum quid* or *per accidens*) is crucial because the correctness of our reasoning results from this.⁶¹

⁵⁸ "Accidentis esse est inesse" (*In Meta.*, V, 9, n. 894). "In ipsa ratione entis prioritatem habet substantia, que est ens per se, respectu accidentis, quod est ens per aliud et in alio" (*In Peryerm.*, I, 8 (Leon. 1*/1, p. 40, lin. 66-68)).

⁵⁹ "Ens praedicatur de omnibus praedicamentis, non autem similiter, sed primum de substantia, et per posterius de aliis praedicamentis" (*In Meta.*, VII, 4, n. 1331). Cf. *ibid.* IV, 1, n. 535-536; V, 13, n. 951; XI, 3, n. 2197; *De Malo*, 7, 1, ad 1.

⁶⁰ "Ens praedicatur analogice de decem generibus" (*Super I Sent.*, 22, 1, 3 ad 2). Cf. *STh*, II-II, 120, 2 c. After Aquinas there were severe criticisms of this doctrine and tendencies to discard analogous character of "being" in favour of univocity of "being". One of the first opponents was Duns Scotus. But "it has often been pointed out that the adversaries Scotus had in mind when he insisted on the univocity of 'being' as common to substance and accident, or on the univocity of terms common to God and creature, did not include Thomas Aquinas" (Ralph McInerny, *A History of Western Philosophy*, vol. 2 [available at <http://www2.nd.edu/Departments/Maritain/etext/hwp223.htm>]). Nonetheless there was a significant difference between them: "Scotus wants 'being' to be common to substance and accident in such a way that it has exactly the same meaning as predicated of both. This Aquinas emphatically denies. Scotus and Aquinas are unalterably opposed on the matter of the univocity of 'being'" (*ibid.*). Scotus's direction was cultivated in a special way by William Ockham: "There is no surprise nor indeed novelty in Ockham's reminder that being as being is not some individual entity apart from other beings, but what is distinctive of him is his contention that being is univocal in such a way that it applies in a wholly undifferentiated way to whatever is and, of course, whatever is an individual. ... for Ockham the meaning of 'being' is all actual existents, and no doubt this is at the basis of his rejection of the distinction between essence and existence. ... Once the univocity of being is understood in terms of a universe of things wholly undifferentiated in terms of their being, [there appears] a veritable flatland of reality where the only solid truth is that an individual thing is itself" (*ibid.*, ...hwp224.htm). See Robert Sweetman, "Univocity, Analogy, and the Mystery of Being according to John Duns Scotus," in *Radical Orthodoxy and the Reformed Tradition: Creation, Covenant, and Participation*, eds. James K. A. Smith and James H. Olthuis (Grand Rapids: Baker, 2005), 73-87; Catherine Pickstock, "Duns Scotus: His Historical and Contemporary Significance," *Modern Theology* 21 (2005): 543-574 (see also in the same issue responses by several authors). For more general approach see E. Jennifer Ashworth, "Medieval Theories of Analogy," in *The Stanford Encyclopedia of Philosophy (Winter 2004 Edition)*, edited by Edward N. Zalta, <http://plato.stanford.edu/archives/win2004/entries/analogy-medieval/>.

⁶¹ "Ad logicam autem communiter pertinet considerare predicationem uniuersaliter, secundum quod continet sub se predicationem que est per se et que non est per se, set demonstratiue sciencie propria est predicatio per se" (*In Poster.*, I, 35 [Leon. 1*/2, p. 129, lin. 20-25]). "Aliquid dicimur scire simpliciter, quando scimus illud in se ipso; dicimur scire aliquid secundum quid, quando scimus illud

Let us turn now to beings of reason. As we said before, whatever we know, we know as a being. But we know some things that are not real beings. Aquinas often gives an example of blindness to show that something can be known which has no real existence. We say that sight exists and blindness exists. Yet to be precise, sight exists in the mode of real being in the category of quality, whereas blindness is perceived as a privation, a lack of something that should be present. It is the lack of a capacity and not the existence of capacity of a certain kind. Blindness is perceived as the non-existence of sight. Yet, it is known and predicated as existent. For example, we say: "Socrates *is* blind." Is it true that blindness *is* in Socrates when Socrates is really blind? We should thus clarify the statement that whatever is known is known as being by adding that whatever we know about a thing is always *in relation* (either positive or negative) *to* some kind of existence. Indeed, our way of knowing things that have no real existence is through the ten categories. St. Thomas explains that "that which is not a being in nature, is considered as a being in the reason, wherefore negations and privations are said to be 'beings of reason.'"⁶² Blindness does not exist in the mode of real being or of a being of nature: in this mode it is rather non-being (*non ens*); it exists, however, in the mode of a being of reason.⁶³ Thus, blindness can be called being "even though it is nothing positive in reality."⁶⁴ Beings of reason are called beings but they are non-real beings in the primary sense of the term. However, they are beings in a particular way, and we should keep in mind their fundamental difference from real beings. Blindness is only one example of all possible kinds of beings of reason.

St. Thomas says that beings of reason differ from real beings divided by the ten categories, in that beings of reason, though also a kind of being *per se*, have a different mode of existence.⁶⁵ To their specific existence beings of reason require, beyond the actual state of affairs' being in reality, the activity of the mind, which is able to conceive this state of affairs in such a way that the beings of reason are related to real

in alio in quo est, uel sicut pars in toto ... uel sicut accidens in subiecto ... uel sicut effectus in causa ... uel quocunque simili modo; et hoc est scire per accidens, quia scilicet scito aliquo per se, dicimur scire illud quod accidit ei quocunque modo" (ibid., I, 4 [p. 18, lin. 63-73]).

⁶² "Illud quod non est ens in rerum natura accipitur ut ens in ratione; unde negationes et privationes entia dicuntur rationis" (*STh*, I-II, 8, 1 ad 3).

⁶³ Cf. Gyula Klima, "Aquinas' Theory of the Copula and the Theory of Being," *Logical Analysis and History of Philosophy* 5 (2002): 159-176.

⁶⁴ "Etiam si illud in re nichil ponat" (*De ente*, 1 [Leon. 43, p. 369, lin. 7-8]).

⁶⁵ Cf. *In Meta.*, V, 9, n. 889.

beings like an effect is to a cause.⁶⁶ The being of reason is, therefore, a being *secundum quid* and not a being *simpliciter*; in this case the *quid*, according to which the being is, is reason. By contrast, real beings do not require our knowing in order for them to exist. They exist on their own, subsisting as substance or inhering in substance as accidents. They exist apart from and even in the absence of the activity of the human mind. The mind's activity which is the basis for the existence of beings of reason is expressed in propositions. In other words, propositions are signs of this mental activity. This is why a being of reason is said to signify the truth of a proposition.⁶⁷

Being of reason is thus a result of the activity of the human mind and hence its existence – if we apply to it the division of being into substance and accidents – is a kind of accident inhering in the human mind as in its subject.⁶⁸ In other words, ontologically speaking, beings of reason are accidents of the mind that conceives them, and are not real beings capable of existing outside of the mind.⁶⁹ Conversely, it is also accidental to extramental things whether they are known by any human being or not: if it happens that a thing is known, this changes nothing in the thing itself. Therefore, we

⁶⁶ “Sciendum est autem quod iste secundus modus comparatur ad primum, sicut effectus ad causam. Ex hoc enim quod aliquid in rerum natura est, sequitur veritas et falsitas in propositione, quam intellectus significat per hoc verbum est prout est verbalis copula. Sed, quia aliquid, quod est in se non ens, intellectus considerat ut quoddam ens, sicut negationem et huiusmodi, ideo quandoque dicitur esse de aliquo hoc secundo modo, et non primo. Dicitur enim, quod caecitas est secundo modo, ex eo quod vera est propositio, qua dicitur aliquid esse caecum; non tamen dicitur quod sit primo modo vera. Nam caecitas non habet aliquod esse in rebus, sed magis est privatio alicuius esse” (*In Meta.*, V, 9, n. 896).

⁶⁷ “Ens per se dupliciter dicitur: uno modo, quod diuiditur per decem genera, alio modo quod significat propositionum ueritatem” (*De ente*, 1 [Leon. 43, p. 369, lin. 2-5]).

⁶⁸ “Mentis nostrae conceptus non est ipsa mentis nostrae essentia, sed est quoddam accidens ei, quia nec intelligere nostrum est ipsum esse intellectus” (*De rationibus Fidei*, 3, n. 958). Cf. *De pot.*, 8, 1 c.

⁶⁹ Klima writes that “the first thing to realize about the distinction between real beings and beings of reason is that it does not constitute a division of a class into its subclasses, as, for example, the distinction between rational vs. non-rational animals constitutes the division of the class of animals into two kinds of animals, namely, humans and brutes. Real beings and beings of reason do not constitute in this way two subclasses, or two kinds of beings, indeed, not any more than real money and forged money would constitute two kinds of money. Just as it is only real money that is money *simpliciter*, that is, without qualification, so it is only a real being that is a being *simpliciter*, without qualification. As medieval logicians, as well as Aquinas himself, would say, the qualifications ‘of reason’ as added to ‘being’, or ‘forged’ as added to ‘money’ are examples of a “diminishing” qualification or determination, *determinatio diminuens*, whereas the qualification ‘real’ in both cases is a “non-diminishing” qualification, *determinatio non diminuens*.” And further “Therefore, asking the question: ‘What are nonexistent beings of reason?’, understood as asking about the nature of a curious kind of beings, namely, beings that do not exist, is just as misguided as asking about the actual legal currency rate between, say, yen and forged dollars. But, again, this of course does not mean that we cannot understand what we mean by the phrase ‘beings of reason’, on the contrary, as we just explained, such beings of reason are what certain expressions signify in virtue of the fact that we can think of them when we understand the expressions in question, whether they actually exist *in rerum natura* or not” (“The Semantic Principles Underlying Saint Thomas Aquinas’s Metaphysics of Being,” *Medieval Philosophy and Theology* 5 [1996]: 87-141).

can say that everything that is called being in the first sense, that is, real being, can also be being in the second sense, i.e., being of reason, “because everything which has natural being in reality can be signified to be in an affirmative proposition, as when we say colour is or man is. However, not everything which is being in the second way can be being in the first way.”⁷⁰ Non-real beings or beings of reason are of two kinds: some of them have non-existence in their definition (e.g. blindness or asymmetry), and some of them, though they do not exist in reality, do not have this lack of existence in their definition (e.g. genus or golden mountains).⁷¹ According to this division, on the one side there are negations and privations, and on the other side there are some beings of reason which do not have a negative relation to existence in their definition. Only this second kind of being of reason may be the subject of logic.

In order to appreciate the second type of beings of reason we should note that St. Thomas divides concepts into three kinds according to their relation to extramental reality.⁷² First, concepts acquired in acts of simple apprehension – these concepts are similitudes of things existing *extra animam*, and as such have an immediate foundation in the things from which they come. The conformity of the understanding with the thing understood accounts for the fact that the word which signifies this understanding (or this concept), properly signifies the real external thing.⁷³ These are principally concepts which can be grouped into ten genera (obviously, besides transcendentals).

Second, there are concepts that are not similitudes of things existing *extra animam*, but instead are similitudes of intentions that the intellect perceives (*intentiones quas intellectus noster adinvenit*) in the process of understanding those things (so-called

⁷⁰ “Quia omne quod habet naturale esse in rebus, potest significari per propositionem affirmativam esse; ut cum dicitur: color est, vel homo est. Non autem omnia quae sunt entia quantum ad secundum modum, sunt entia quantum ad primum” (*Super II Sent.*, 34, 1, 1 sol.).

⁷¹ Cf. *De ver.*, 3, 4 ad 6. Here we are only talking about nominal definition, in the sense of “ratio quam significat nomen” (*In Poster.*, I, 4 [Leon. 1*/2, p. 19, lin. 111]; *STh*, I, 13, 8 ad 2) and not about real definition: “non entium enim non sunt definitiones” in this sense (*In Poster.*, I, 2 [Leon. 1*/2, p. 11, lin. 65]).

⁷² “Ipsa conceptio intellectus tripliciter se habet ad rem quae est extra animam” (*Super I Sent.*, 2, 1, 3 sol.). “Eorum quae significantur nominibus, invenitur triplex diversitas” (*Super I Sent.*, 19, 5, 1 sol.). Perhaps it would suffice to evoke the text from the *De pot.*, 1, 1, ad 10, where St. Thomas says about two types of correspondence between the intellect and things: immediate and mediate. In the third kind of concepts distinguished in *Super I Sent.*, 2, 1, 3 sol., there is no correspondence at all.

⁷³ “Aliquando enim hoc quod intellectus concipit, est similitudo rei existentis extra animam, sicut hoc quod concipitur de hoc nomine ‘homo’; et talis conceptio intellectus habet fundamentum in re immediate, inquantum res ipsa, ex sua conformitate ad intellectum, facit quod intellectus sit verus, et quod nomen significans illum intellectum, proprie de re dicatur.” (*Super I Sent.*, 2, 1, 3 sol.).

“second intentions”). The foundation of such intentions is remotely and mediately in real things: they are mediated likenesses of things. St. Thomas gives an example:

the significatum of the noun ‘genus’ is not a similitudo of any thing existing *extra animam*, but from the fact that the intellect understands animal as something common to many species, attributes to it an intention of genus; and so although such an intention does not have the immediate foundation in a thing but in the intellect, nonetheless its remote foundation is the thing itself.⁷⁴

What he says here indicates that this second type of concepts consists of logical concepts. Aquinas adds: “Thus the intellect is not false when it discovers such intentions. It is likewise with everything else that follows the mode of understanding.”⁷⁵ In what we understand from the real world, we can perceive certain unities, kinds, or types. The remote source of logic is thus in the simple experience of things. Through the process of abstraction reason can consider the fruits of its previous activity, fruits which have an immediate foundation in extramental things and are re-understood in various relations and compositions based on the similarities of those things as understood. These similarities to extramental things, even though they be remote, are still essential to any meaningful (only subjectively or a fortiori intersubjectively meaningful) discourse. They are also a sign of foundation in reality: logical concepts are not for Aquinas a pure fiction.

It is true that no particular thing *extra animam* corresponds directly to logical concepts. There are nonetheless some forms the intellect distinguishes and grasps as existing in things (they are understood as existing in extramental reality), which correspond to logical concepts. These forms, when understood as existing in the mind and as common to many or as in relation to other forms, become logical concepts.⁷⁶

⁷⁴ “Aliquando autem hoc quod significat nomen non est similitudo rei existentis extra animam, sed est aliquid quod consequitur ex modo intelligendi rem quae est extra animam; et huiusmodi sunt intentiones quas intellectus noster adinvenit; sicut significatum huius nominis ‘genus’ non est similitudo alicujus rei extra animam existentis; sed ex hoc quod intellectus intelligit animal ut in pluribus speciebus, attribuit ei intentionem generis; et huiusmodi intentionis licet proximum fundamentum non sit in re sed in intellectu, tamen remotum fundamentum est res ipsa” (ibid.). “Huic ergo intellectui quo intellectus intelligit genus non respondet aliqua res extra immediate quae sit genus: sed intelligentiae, ex qua consequitur ista intentio, respondet aliqua res” (*De pot.*, 1, 1 ad 10).

⁷⁵ “Unde intellectus non est falsus, qui has intentiones adinvenit. Et simile est de omnibus aliis qui consequuntur ex modo intelligendi” (*Super I Sent.*, 2, 1, 3 c.). Cf. *In Phys.*, II, 3, n. 5; *In Boet. De Trin.*, 5, 3 ad 1.

⁷⁶ “Humanitas enim est aliquid in re, non tamen ibi habet rationem universalis, cum non sit extra animam humanitas multis communis; sed secundum quod accipitur in intellectu, adjungitur ei per operationem intellectus intentio secundum quam dicitur species” (*Super I Sent.*, 19, 5, 1 sol.). “Sicut est quaedam conceptio intellectus vel ratio cui respondet res ipsa quae est extra animam; ita est quaedam conceptio vel ratio cui respondet res intellecta secundum quod huiusmodi; sicut rationi hominis vel conceptioni hominis respondet res extra animam: rationi vero vel conceptioni generis aut speciei respondet solum

This is what justifies the claim that the intellect discovering logical intentions is not false, but acts on a higher level of generality than simple perception and judgment of what things *extra animam* are or are not.⁷⁷

St. Thomas distinguishes the third kind of concepts that we can have in mind: concepts that are pure fiction. As an example of such a concept, he gives the concept of Chimera, a mythological monster: “it is neither a similitude of anything *extra animam*, nor it truly follows the mode of understanding of a thing.”⁷⁸ It is true that the concept of Chimera is something complex, created by the imagination from “imaginary material” gathered in the experience of the real world (it was described as something with three heads, lion-fronted and snake behind, a goat in the middle). Since, however, nothing in the real world corresponds to it, St. Thomas says simply that this concept is false. Note that the falsehood appears in a complex concept, created as a composition from simple apprehensions.

We know already that there are some beings of reason which are not relations. However, it turns out that the logician strictly speaking deals only with relations of reason. These logical beings always have the character of relations, because relation is the only category that can be predicated of things whose any existence is in reason.⁷⁹ Negations and privations are examples of beings of reason which are not relations;

res intellecta” (*De pot.*, 7, 6 c.). “In omnibus autem intentionibus hoc communiter verum est, quod intentiones ipsae non sunt in rebus sed in anima tantum: sed habent aliquid in re respondens, scilicet naturam, cui intellectus huiusmodi intentiones attribuit; sicut intentio generis non est in asino, sed natura animalis, cui per intellectum haec intentio attribuitur” (*Super I Sent.*, 33, 1, 1 ad 3).

⁷⁷ “Sunt autem quaedam rationes quibus in re intellecta nihil respondet; sed ea quorum sunt huiusmodi rationes, intellectus non attribuit rebus prout in se ipsis sunt, sed solum prout intellectae sunt; sicut patet in ratione generis et speciei, et aliarum intentionum intellectualium: nam nihil est in rebus quae sunt extra animam, cuius similitudo sit ratio generis vel speciei. Nec tamen intellectus est falsus: quia ea quorum sunt istae rationes, scilicet genus et species, non attribuit rebus secundum quod sunt extra animam, sed solum secundum quod sunt in intellectu. Ex hoc enim quod intellectus in se ipsum reflectitur, sicut intelligit res existentes extra animam, ita intelligit eas esse intellectas” (*De pot.*, 7, 6 c.).

⁷⁸ “Aliquando vero id quod significatur per nomen, non habet fundamentum in re, neque proximum neque remotum, sicut conceptio chimerae: quia neque est similitudo alicujus rei extra animam, neque consequitur ex modo intelligendi rem aliquam verae: et ideo ista conceptio est falsa” (*Super I Sent.*, 2, 1, 3 c.).

⁷⁹ “Sicut realis relatio consistit in ordine rei ad rem, ita relatio rationis consistit in ordine intellectuum; quod quidem dupliciter potest contingere: uno modo secundum quod iste ordo est adinventus per intellectum et attributus ei quod relative dicitur; et huiusmodi sunt relationes quae attribuentur ab intellectu rebus intellectis, prout sunt intellectae, sicut relatio generis et speciei: has enim relationes ratio adinvenit considerando ordinem eius quod est in intellectu ad res quae sunt extra, vel etiam ordinem intellectuum ad invicem” (*De pot.*, 7, 11). Cf. *De ver.*, 21, 1. On relations in a broader context see Jeffrey Brower, “Medieval Theories of Relations,” in *The Stanford Encyclopedia of Philosophy* (Fall 2005 Edition), edited by Edward N. Zalta, <http://plato.stanford.edu/archives/fall2005/entries/relations-medieval/>.

therefore, they are not the subject of logic. Furthermore, there are some relations of reason, which are not logical relations because even if they follow on our mode of understanding, they are founded on things *as they really exist*.⁸⁰ The logician treats only such relations of reason that follow from our mode of understanding and are founded on things *as known*.⁸¹ These relations of reason are deliberate constructs of the mind, constructs that exist solely in the mind, but are based upon the way humans know reality. What we grasp from real beings or from beings of nature are some “intentions,” i.e. we grasp what something is. (These intentions are called “first intentions.”) When, however, we consider these intentions as that through which external things are known – in other words, when we consider these intentions as things existing in the mind – we consider these intentions only secondarily in reference to things known. Thus we are not reflecting on things, but on intentions. It is in this reflexive way that we come to understand the intentions by which the intellect knows real things. Aquinas calls them *intentiones intellectae* or *intelligibiles*:

What is understood in the first place are things outside the soul and to them primarily the intellect refers in understanding. What is understood in the second place are certain ‘intentions’ and are consequent upon our mode of understanding, because in this second situation the intellect understands inasmuch it reflects on itself, understanding both the fact that it understands and the manner of its understanding.⁸²

Why does Aquinas refer to intentions in this context? We are obviously familiar with the word “intention” in moral discourse. Intention is one of the components of the moral

⁸⁰ Ralph McInerney writes that: “Logical relations are attributed to known things precisely insofar as they are known. The intellect forms the relation of species by considering the order of that which is in the mind to that which is in the real order; it forms the relation of genus by considering the order of one concept to another. To say of a given nature that it is a species or a genus is to attribute a relation to it insofar as it is known. The foundation of the relation is in things as they are known by our minds. This is not the case with non-logical relations of reason. Non-logical relations of reason are said to follow on our mode of understanding in that the intellect understands one thing as ordered to another. Such relations, although they are not in things as they exist, are nonetheless founded on them as they exist” (*Logic of Analogy*, p. 41-42). Afterwards (p. 42-46) the author analyzes the text *De Pot.*, 7, 11 where St. Thomas gives three conditions for a relation to be real (both extremes of the relation must be: 1. beings; 2. really distinct entities; 3. able to be ordered one to another) and from that distinguishes four kinds of non-real relations which are only beings of reason but nonetheless are non-logical: 1. the relation between being and non-being, or between two non-beings (e.g. between two things perceived as future); 2. the relation of identity; 3. the relation between a relation and the subject of that relation (e.g. paternity and a man who is father); 4. the relation through which one understands B as related to A, because A is ordered to B yet B in reality is not ordered to A (e.g. a natural thing known is in such relation of reason to the human knowledge of this thing). These relations of reason are non-logical. All these belong to the set of first intentions. Cf. also *STh*, I, 13, 7; *CG*, IV, 14, n. 3504-3510.

⁸¹ Cf. Schmidt, *The Domain of Logic*, p. 128.

⁸² “Prima enim intellecta sunt res extra animam, in quae primo intellectus intelligenda fertur. Secunda autem intellecta dicuntur intentiones consequentes modum intelligendi: hoc enim secundo intellectus intelligit in quantum reflectitur super seipsum, intelligens se intelligere et modum quo intelligit” (*De pot.*, 7, 9 c.). On second intentions see also *Super I Sent.*, 23, 1, 3 sol.

act. "Intentio," however, has a broader meaning. Etymologically it signifies a tendency to something else.⁸³ It can signify even a sensory similitude of a form of a thing received through senses.⁸⁴ But in relation to logic "intention signifies a certain order of one thing to another. Yet an order of one thing to another can be only through the intellect to which it pertains to order."⁸⁵ Intention thus appears as something for which the activity of the intellect is required, because through the intellect's action one thing is ordered to another. When treating logical intentions, by *intentio* St. Thomas means the relation of likeness in the intellect to the thing apprehended. By means of this relation, the intellect knows either an extramental thing or other similarities or regularities perceived in what exists in the intellect. This is so because for Aquinas, it is not from the fact that a similitude exists in the intellect that it is a principle of cognition, but from the fact that, while existing in the intellect, it is a representation of something.⁸⁶ Hence, what is apprehended, that is, what exists as an apprehension in the mind, directs to the cognition of something else, namely, the external thing. This direction or reference of what is apprehended as existing in the mind is called intention.⁸⁷ Yet, to know an extramental thing thanks to the similitude (the *intentio intellecta*) is not the same as knowing the intention itself.⁸⁸ The latter the intellect knows while reflecting upon its own work, that is, when the intellect takes for its object what is the fruit of the cognition of an extramental thing. This act of taking as an object the intention itself is secondary with

⁸³ "Intentio, sicut ipsum nomen sonat, significat in aliquid tendere" (*STh*, I-II, 12, 1 c.). Cf. H. D. Simonin, "La notion d'*intentio* dans l'œuvre de Saint Thomas d'Aquin," *Revue des Sciences philosophiques et théologiques* 19 (1930): 445-463.

⁸⁴ E.g. *STh*, I, 78, 3 c.; 4 c.

⁸⁵ "Intentio in ratione sua ordinem quemdam unius ad alterum importat. Ordo autem unius ad alterum non est nisi per intellectum, cuius est ordinare" (*Super II Sent.*, 38, 1, 3 sol.).

⁸⁶ "Similitudo enim in vi cognoscitiva existens non est principium cognitionis rei secundum esse quod habet in potentia cognoscitiva sed secundum relationem quam habet ad rem cognitam; et inde est quod non per modum quo similitudo rei habet esse in cognoscente res cognoscitur sed per modum quo similitudo in intellectu existens est repraesentativa rei" (*De ver.*, 2, 5 ad 17).

⁸⁷ "Id quod apprehendit [intellectus] ordinat ad aliquid aliud cognoscendum ..., et hic vocatur intentio" (*STh*, I, 79, 10 ad 3). "Dico autem intentionem intellectam id quod intellectus in seipso concipit de re intellecta. Quae quidem in nobis neque est ipsa res quae intelligitur, neque est ipsa substantia intellectus; sed est quaedam similitudo concepta in intellectu de re intellecta, quam voces exteriores significant" (*CG*, IV, 11, n. 3466). Cf. *De ver.*, 4, 1; *De pot.*, 9, 5 c.; *STh*, I, 27, 1 ad 2; 2; 34, 1; 3 c.

⁸⁸ "Et quidem quod praedicta intentio non sit in nobis res intellecta, inde apparet quod aliud est intelligere rem et aliud est intelligere ipsam intentionem intellectam, quod intellectus facit dum super suum opus reflectitur: unde et aliae scientiae sunt de rebus et aliae de intentionibus intellectis. Quod autem intentio intellecta non sit ipse intellectus in nobis ex hoc patet quod esse intentionis intellectae in ipso intelligi consistit: non autem intellectus nostri, cuius esse non est suum intelligere" (*CG*, IV, 11, 3466).

regard to the cognition which produces this intention.⁸⁹ What is understood in the second place is called “second intentions.”⁹⁰ Second intentions are properties of natures as they are known by us; they are attributed by the intellect to the nature as known and as it exists in the soul. Logic concerns, therefore, not the extra-mental reality itself immediately, but the ways of thinking and expressing in words and propositions what is grasped from the reality.⁹¹ This is why there is a difference between real sciences and logical sciences: logical sciences have for their object only second intentions. Intentions in the mind, although they themselves are accidents of quality inhering in the mind and perfecting the intellect, they have some accidents of their own, which are discovered by the intellect by comparison, and attributed to those intentions which already exist in the mind. These accidents of accidents are namely diverse relations, as was said before, through which the intellect knows something else: “relations which follow only the operation of the intellect in the very things understood, are relations of reason only, inasmuch as reason perceives them as existing between two things understood.”⁹²

Now, three kinds of these intentions are logical. The number of kinds of logical intentions flows from the three kinds of intellectual acts, mentioned during the division of logic in the previous section. There is thus first, the *intention of universality* and its particular kinds which follow the abstractive activity of the first act of intellect, the understanding. Secondly, the *intention of attribution* or predication which comes out of the intellectual judgment, the second act of the intellect. And thirdly, the *intention of*

⁸⁹ “In omnibus potentiis quae possunt converti in suos actus, prius oportet quod actus illius potentiae feratur in obiectum aliud, et postmodum feratur in suum actum. Se enim intellectus intelligit se intelligere, prius oportet poni quod intelligat rem aliquam, et consequenter quod intelligat se intelligere: nam ipsum intelligere quod intellectus intelligit, alicuius obiecti est” (CG, III, 26, n. 2080). “Nullus autem percipit se intelligere nisi ex hoc quod aliquid intelligit, quia prius est intelligere aliquid quam intelligere se intelligere; et ideo pervenit anima ad actualiter percipiendum se esse per illud quod intelligit vel sentit” (De ver., 10, 8 c.).

⁹⁰ “Ens est duplex: ens scilicet rationis et ens naturae. Ens autem rationis dicitur proprie de illis intentionibus, quas ratio adinvenit in rebus consideratis; sicut intentio generis, speciei et similium, quae quidem non inveniuntur in rerum natura, sed considerationem rationis consequuntur. Et huiusmodi, scilicet ens rationis, est proprie subiectum logicae. Huiusmodi autem intentiones intelligibiles, entibus naturae aequiparantur, eo quod omnia entia naturae sub consideratione rationis cadunt. Et ideo subiectum logicae ad omnia se extendit, de quibus ens naturae praedicatur. Unde [Philosophus] concludit, quod subiectum logicae aequiparatur subiecto philosophiae, quod est ens naturae” (In Meta., IV, 4, n. 574). Cf. Super I Sent., 23, 1, 3; Super II Sent., 34, 1, 1 sol.

⁹¹ “Logicus enim considerat modum praedicandi, et non existentiam rei” (In Meta., VII, 17, n. 1658).

⁹² “Relationes quae consequuntur solam operationem intellectus in ipsis rebus intellectis, sunt relationes rationis tantum, quia scilicet eas ratio adinvenit inter duas res intellectas” (STh, I, 28, 1 ad 4).

consequence which follows reasoning, which is the discursive process of passing from one thing to another and discovering what is unknown from what is known.⁹³

Above I considered the categories while writing about real being. My goal was to show how real being is distinguishable from being of reason. Now, however, it is important to realize that the categories are also logical concepts, and that the work of discovering or specifying the categories belongs also to logic. We should note here the importance of the logical conception of the nine categories understood as accidents inhering in or belonging to a substance. Such a conception is for Aquinas an instrument for perfecting our description of what really exists: we can ascribe some characteristics to what we are trying to know in a perfect way, not only on the basis of the comparative activity of the human mind, but also on the basis of really existing features or forms.⁹⁴ This is a conception that belongs to logic as well as to metaphysics or the philosophy of nature, but on different levels of consideration. These real features or forms are real beings although they do not exist in the same way as substances exist. There are degrees in the kinds of real being. Some real features have only a “weak” existence.⁹⁵ Despite the fear of creating an appearance of an implausible commitment to an “overpopulated

⁹³ “In operibus rationis est considerare ipsum actum rationis, qui est intelligere et ratiocinari, et aliquid per huiusmodi actum constitutum. Quod quidem in speculativa ratione primo quidem est definitio; secundo, enuntiatio; tertio vero, syllogismus vel argumentatio” (*STh*, I-II, 90, 1 ad 2).

⁹⁴ As is known from the history of philosophy, this conception was soon widely replaced by nominalist beliefs. William Ockham for example left only substance and quality as categories of being and all the rest he “shaved” with his principle of parsimony as things that are not distinguishable from substance and quality. In this shaving he had nonetheless small exception for relation, but only within some theological questions – for him, despite the fact that our natural reason says the contrary, we should accept that relation is something existing outside of our mind only because God says so (sic!). Cf. Gyula Klima, “The Changing Role of *Entia Rationis* in Medieval Philosophy: A Comparative Study with a Reconstruction,” *Synthese* 96 (1993): 25-59.

⁹⁵ E.g.: “Cum relatio habeat debilissimum esse, quia consistit tantum in hoc quod est ad aliud se habere, oportet quod super aliquod aliud accidens fundetur, quia perfectiora accidentia sunt propinquiora substantiae, et eis mediantibus alia accidentia insunt” (*In Phys.*, III, 1, n. 6). “Praedicti modi essendi ad quatuor possunt reduci. Nam *unum* eorum quod est debilissimum, est tantum in ratione, scilicet negatio et privatio, quam dicimus in ratione esse, quia ratio de eis negociatur quasi de quibusdam entibus, dum de eis affirmat vel negat aliquid. ... *Aliud* autem huic proximum in debilitate est, secundum quod generatio et corruptio et motus entia dicuntur. Habent enim aliquid admixtum de privatione et negatione. Nam motus est actus imperfectus, ut dicitur tertio *Physicorum*. *Tertium* autem dicitur quod nihil habet de non ente admixtum, habet tamen esse debile, quia non per se, sed in alio, sicut sunt qualitates, quantitates et substantiae proprietates. *Quartum* autem genus est quod est perfectissimum, quod scilicet habet esse in natura absque admixtione privationis, et habet esse firmum et solidum, quasi per se existens, sicut sunt substantiae. Et ad hoc sicut ad primum et principale omnia alia referuntur. Nam qualitates et quantitates dicuntur esse, inquantum insunt substantiae; motus et generationes, inquantum tendunt ad substantiam vel ad aliquid praedictorum; privationes autem et negationes, inquantum remonent aliquid trium praedictorum” (*In Meta.*, IV, 1, n. 540-543).

ontology,”⁹⁶ since these entities do somehow exist, we should give them a proper place and not take offence at them because they do not exist as substances. (As a matter of fact, it is only an appearance because, thanks to the theory of analogy, “the ontological population” can enjoy a pleasant metaphysical space of things that really are, undisturbed by any invasion of fictive and unintelligible entities.) We should give them a proper place not only in natural science and metaphysics, but also in logical categories, which will allow us to talk about them in a logical way. The category of relation will especially turn out to be important for our topic. This conception of the categories is also a foundation for the theory of predication. With this logical conception, Aquinas integrates harmoniously his metaphysical analysis and they play together an important role in his philosophy of nature, ethics and theology. We shall return to this later. In the next two chapters, we will say more about those three kinds of logical intentions.

Logic is possible because reason can reason about itself on the basis of its own activity.⁹⁷ Yet the purpose of considering logical beings, as we already know, consists in the ordering of our knowledge of real things. As a quasi-science which exists for the sake of speculative sciences, logic deals with beings of reason which are proprieties of things as known, but its consideration is ordered to obtaining true knowledge about things as they exist.⁹⁸ Thus, logic studies such intentions as genus and species, definitions, propositions and syllogisms, contraries, modes of predication, and the true and the false.⁹⁹ In this sense, logic is secondary in relation to sciences (especially to the natural science) which are concerned with what is directly perceived from reality. Yet logic is first in relation to acquiring a method of attaining true knowledge about reality.

This is perhaps the most essential characteristic of ancient logic as a science that distinguishes it from many approaches to contemporary logic: Aquinas, following

⁹⁶ This expression is taken from Gyula Klima, “Buridan’s Logic and the Ontology of Modes” in: *Medieval Analyses in Language and Cognition*, edited by Ebbesen, S. Friedman, R. L. (Copenhagen: The Royal Danish Academy of Sciences and Letters, 1999), p. 473.

⁹⁷ Cf. *In Poster.*, I, 1 (Leon. 1*/2, p. 3, lin. 14-24).

⁹⁸ “Logica ordinatur ad cognitionem de rebus sumendam” (*In Peryerm.*, I, 2 [Leon. 1*/1, p. 10, lin. 49-50]). “Res autem de quibus est logica non querentur ad cognoscendum propter se ipsas, set ut amminiculum quoddam ad alias scientias” (*In Boet. De Trin.*, 5, 1 ad 2).

⁹⁹ “Sic ergo patet qualiter essentia uel natura se habet ad rationem speciei, quia ratio speciei non est de his que conueniunt ei secundum suam absolutam considerationem, neque est de accidentibus que consequuntur ipsam secundum esse quod habet extra animam, ut albedo et nigredo; sed est de accidentibus que consequuntur eam secundum esse quod habet in intellectu. Et per hunc modum conuenit etiam sibi ratio generis uel differentie” (*De ente*, 3 [Leon. 43, p. 375, lin. 147-155]).

Aristotle, conceived logic as necessarily, although only remotely, based upon reality. This does not mean that their logic is based on metaphysics. Although both disciplines have comparable subjects (because they are universal: they cover all known things)¹⁰⁰ and although both study the true and the false,¹⁰¹ they differ in this: metaphysics, like the philosophy of nature, treats the order of things that human reason considers but does not make. Logic, on the other hand, treats the order that human reason makes among its acts while knowing or considering something.¹⁰² This “making” of logical entities is not arbitrary, because it is necessarily based on forms received from real material things in the process of cognition. In other words, philosophy of nature and metaphysics deal with the real order of things, logic deals with the logical order, which is secondary and follows the cognition of the real order. Moreover, the logical order is not considered for its own sake, but for the sake of the better knowledge of the real order. Therefore, logic is not based on metaphysics but on the human way of knowing the world. Thus, although it is necessary to distinguish methodologically the order of metaphysics and the philosophy of nature (the real order) from the order of logic, we should not separate them altogether, because logical order would not exist or have any sense without the real order.

* * *

Respecting the order of learning and faced with the claim that the transition from “is” to “ought” is “logically illicit,” in this chapter we turned our eyes to the kind of logic Aquinas used in his texts. We followed St. Thomas’s division of logic, which associates individual books of the Aristotelian *Organon* with three acts of human

¹⁰⁰ “Subiectum logicae ad omnia se extendit, de quibus ens naturae praedicatur. Unde concludit [Aristoteles] quod subiectum logicae aequiparatur subiecto philosophiae [primae]” (*In Meta.*, IV, 4, n. 574). “Quia circa omnia quae in rebus sunt habet negociari ratio, logica autem est de operibus rationis, logica etiam erit de hiis que communia sunt omnibus, id est de intentionibus rationis, que ad omnes res se habent: non autem ita quod logica sit de ipsis rebus communibus sicut de subiectis: considerat enim logica sicut subiecta sillogismum, enunciationem, predicamentum aut aliquid huiusmodi” (*In Poster.*, I, 20 [Leon. 1*/2, p. 75, lin. 116-124]). Cf. *In Boet. De Trin.*, 6, 1, sol. 1.

¹⁰¹ E.g.: “Philosophia prima considerat universalem veritatem entium ... Cognitio veritatis maxime ad philosophiam primam pertinet” (*In Meta.*, II, 1, n. 273). “Verum et falsum pertinent proprie ad considerationem logici” (*In Meta.*, IV, 17, n. 736).

¹⁰² “Ad philosophiam naturalem pertinet considerare ordinem rerum quam ratio humana considerat sed non facit, ita quod sub naturali philosophia comprehendamus et mathematicam et metaphysicam; ordo autem quem ratio considerando facit in proprio actu pertinet ad rationalem philosophiam” (*In Eth.*, I, 1 [Leon. 47/1, p. 4, lin. 28-33]).

reason. From that, already it appeared that his understanding of logic is somewhat different from modern and contemporary mainstream logics. Moreover, the distinction into *logica docens* and *logica utens* helped us to deal with his seemingly contradictory statements on the nature of logic. This distinction also implicitly brings with it some caution about how to respond to the question on the logically illicit character of the transition from “is” to “ought.” In logic as a scientific discipline (as opposed to logic as an art), that is, from the perspective of *logica docens* we could rightly doubt the possibility of making such a transition, for in this discipline we do not consider the fact that human being is a changing being, naturally inclined toward an end and directing his actions to an end. Indeed, no imperative sentence can follow from indicative sentences if premises are taken in abstraction from real conditions of human being; that is, if they are taken only on the logical level, in their formality. Whereas the situation changes significantly when the same question is considered in applied logic, that is, in *logica utens*, in logic which serves in other scientific disciplines and in shaping the way of life.¹⁰³

To grasp better the nature of such logic and, from there, the possibility of using logic in other disciplines in such a way that it would help to solve the problem of this dissertation, we proceeded to explore what exactly is the subject of logic. A proper understanding of what is secondarily understood (of beings of reason and relations of reason in Aquinas's approach) helped us to see the roots of the possibility of a realistic discourse about what is not directly experienced sensorily. A short mention of the analogical character of the term “being” served to point out one of the fundamental differences between St. Thomas and alternative philosophical trends within which, later in time, the “Is/Ought” problem appeared and has persisted. The description of the character of basic Aristotelian categories had the same function. In addition, this description prepared us, on the one hand, to understand better being of reason, and on the other hand, laid some foundations for several topics treated in the second part of this work.

¹⁰³ Although it is not a great discovery, it happens to be overlooked. In the same direction but from different presuppositions, C. H. Waddington says: “The validity of argument that one cannot logically proceed from an ‘is’ to an ‘ought’ depends entirely on what is the content of the notion conveyed by ‘is’. In fact, any invocation of ‘is’ other than as a logical copula, involves an epistemology, and it is impossible to reduce the relation of ‘is’ to ‘ought’ to a matter of pure logic” (C. H. Waddington, *The Ethical Animal* [New York: Atheneum, 1961], p. 54).

Knowing the nature of logical intentions, which are relations of reason (precisely distinguished from real relations as well as from non-real but non-logical relations), we were able to appreciate properly, although still generally, the interplay between real sciences and logic. Logic, in Aquinas's view, is necessarily, even though remotely, based upon reality, and it is a discipline which is supposed to lead us to know things as they really are and protect against errors in the acts of reason.

Since we are interested in the different types of cognition of human nature, that may or may not provide the basis for inference of moral claims, what we have said thus far about the subject of logic should suffice for our purposes. Now I will move on to consider some issues which, on the one hand, follow from the described comprehension of the subject of logic and, on the other hand, will serve to clarify the problem of this study, mainly on the level of logic, but in some sense also on the level of epistemology. Thus, in Chapter 3, I will clarify some themes concerning understanding within the context of Aquinas's semantics, and I will present some questions about his theory of predication (so, we can group these issues around the first and second kind of logical intentions). In Chapter 4, I will touch briefly on St. Thomas's general methodology as it is presented in his commentary on the *Posterior Analytics* in order to explain what he meant when he spoke about logical inference and what he considered a perfect knowledge of something (this, in turn, can be associated with the third kind of logical intentions).

3. Theory of Signification and Predication

On what grounds do we attribute the character of truth to a proposition? Can logic establish or analyze the special type of proposition that is neither determinately true nor determinately false without reference to the extra-logical? Would there be any mention of proceeding without error in our thinking if in logic we had no reference to the extra-logical? In order to explain these problems I shall refer briefly to St. Thomas's theory of signification.¹ After that we will be well prepared to touch some issues of Aquinas's theory of predication.

¹ The importance and "attractiveness" of St. Thomas's solution of the problem of signification in the context of and in discussion with contemporary philosophy is splendidly presented by John P. O'Callaghan in his book *Thomist Realism and the Linguistic Turn: Toward a More Perfect Form of Existence* (Notre Dame, Ind.: University of Notre Dame Press, 2003). For other comprehensive studies see especially: Gyula Klima, "The Semantic Principles Underlying Saint Thomas Aquinas's Metaphysics of Being," *Medieval Philosophy and Theology* 5 (1996): 87-141. In other article, "The Changing Role of *Entia Rationis* in Medieval Semantics and Ontology" (*Synthese* 96 [1993]: 25-59), Klima shows briefly the role of *entia rationis* in Aquinas's semantics and how the role of this notion was simply eliminated by the entrance of Ockhamist semantics. In the article "Ontological Alternatives vs. Alternative Semantics in Medieval Philosophy" (*European Journal for Semiotic Studies* 3 [1991]: 587-618) Klima demonstrates how the entrance of Ockhamist semantics, despite its logical independence, changed the research program for ontology and, through this, the paradigm of mental representation in the so-called *via moderna* trend of late-mediaeval philosophy. The author suggests that this move directly paved the way for modern treatments of ontological and epistemological questions in post-scholastic philosophy. It is clear that these changes in semantics, ontology and epistemology changed also the whole scientific project and more specifically the mode of moral explanation. In the article "On Being and Essence in St. Thomas Aquinas's Metaphysics and Philosophy of Science" (in *Knowledge and the Sciences in Medieval Philosophy: Proceedings of the Eighth International Congress of Medieval Philosophy*, edited by S. Knuuttila, R. Työrinoja, and S. Ebbesen, vol. 2, series B19, [Helsinki: Luther-Agricola Society, 1990], p. 210-221), Klima presents a complete semantic system constructed to represent Aquinas's ontology. Nevertheless in "Understanding Matters from a Logical Angle" (Essay V of his *Ars Artium* [Budapest: Hungarian Academy of Sciences, 1988], p. 111-149) he treats the issue of the independence of this semantic construction from that particular ontology. See also his "'Socrates est Species' – Logic, Metaphysics

The main question of the theory of signification, called also semantics, is how to account for the relationship between mind, words (or language), and the world. Semantics can be presented in the framework of the subject matter of logic, but issues treated in semantics are diversely related to the philosophy of nature and to metaphysics. Nonetheless, Aquinas's theory of signification enjoys a certain "aloofness"² from ontology or metaphysics. It can, to a certain extent, be understood also without reference to his philosophy of nature, although I will refer to both metaphysics and philosophy of nature several times, as St. Thomas himself does. He does so, and I follow him here, because logic is somehow indirectly concerned with acts of the intellect as those from which beings of reason result (i.e. acts of the intellect are considered so far as it is useful to capture the specificity of beings of reason). However, some topics which belong properly to metaphysics and philosophy of nature are invoked because keeping in mind some clarifying references to other disciplines is useful for integrating the whole picture of the reality that we intend to know. However, the signification of vocal sounds belongs for Aquinas to the principal consideration of logic.³

For the subject of this work a brief presentation of St. Thomas's theory of signification is necessary to justify today his scientific (including philosophical and theological) method. Furthermore, I claim that the very roots of the problem with the transition from "is" to "ought," from descriptive phrases to prescriptive ones, come partially from a semantics that is alien to that of Aquinas. A different semantic paradigm, and the theory of predication that flows from it, contribute to the conviction that this transition is "logically illicit." Salient and disputed issues pertaining to the

and Psychology in Saint Thomas Aquinas's Treatment of a Paralogism," in *Ars Artium*, p. 165-185. See as well: Ralph McNerny, *Aquinas and Analogy* (Washington, D.C.: The Catholic University of America Press, 1996), especially p. 54-85; E. Jennifer Ashworth, "Signification and Modes of Signifying in Thirteenth-Century Logic: A Preface to Aquinas on Analogy," *Medieval Philosophy and Theology* 1 (1991): 39-67.

² Klima uses this expression (in "The Semantic Principles," p. 133) quoting Desmond Paul Henry who, influenced by Stanisław Leśniewski's ontology and some medieval conceptions, postulates the "Principle of Logical Aloofness": see Henry's *That Most Subtle Question (Quaestio subtilissima): The Metaphysical Bearing of Medieval and Contemporary Linguistic Disputes* (Manchester, England: Manchester University Press, 1984).

³ "Quia logica ordinatur ad cognitionem de rebus sumendam, significatio uocum, que est immediata ipsis conceptionibus intellectus, pertinet ad principalem considerationem ipsius, significatio autem litterarum, tanquam magis remota, non pertinet ad eius considerationem, set magis ad considerationem gramatici" (*In Peryerm.*, I, 2 [Leon. 1*/1, p. 10, lin. 49-55).

philosophy of nature and metaphysics, which deepen even more the chasm between “is” and “ought,” will be treated later.

St. Thomas in his personal writings constructs his ideas within the framework of Aristotle’s “semantic triangle”. The terms of this triangle are: significant vocal sounds (names, and verbs, and sentences), passions of the soul (mental grasp of what something is), and things from which the passions have their origin.⁴ According to Aristotle, words signify things through the mediation of passions of the soul.⁵ At the beginning of his commentary to *Peri hermeneias*, Aquinas brings to the fore the usage of common names: as they are applied indifferently to many singulars of the same nature, they signify what is common to them, without bothering about individual nonessential features. Since what is common to them does not exist apart from singular things but *in* things, common names signify therefore general natures abstracted from singulars.⁶ These common names indicate for Aquinas that words signify things only through the mediation of concepts. Indeed, it is impossible for words to signify things directly, because words, as vocal sounds, in themselves signify nothing. If I do not understand a language, if I do not know the signification of words uttered to me as signifying something, the words are for me only some vocal sounds which signify nothing. I can even use unknown words, but due to the fact that I do not understand them, these words signify nothing to me. For Aristotle and Aquinas, understanding constitutes the element that renders vocal sounds significant, i.e. refers vocal sounds to something which is outside the vocal sounds themselves. The understanding forms words: if there is no understanding, there is no word, but only vocal sounds.⁷ Yet, a fundamental question arises: what and how do we understand?

⁴ Cf. *ibid* (Leon. 1*/1, p. 10, lin. 20-48).

⁵ Medieval authors generally agreed that the meaning of our words comes from our concepts, but differed in opinions on the nature of concepts, their kinds, and the way of representing, see Gyula Klima, “The Medieval Problem of Universals,” *The Stanford Encyclopedia of Philosophy (Winter 2004 Edition)*, edited by Edward N. Zalta, <http://plato.stanford.edu/archives/win2004/entries/universals-medieval/>.

⁶ “Non enim potest esse quod [nomina et uerba et orationes] significant immediate ipsas res, ut ex ipso modo significandi apparet: significat enim hoc nomen ‘homo’ naturam humanam in abstractione a singularibus, unde non potest esse quod significet immediate hominem singularem. Vnde Platonici posuerunt quod significaret ipsam ydeam hominis separatam; set, quia hec secundum suam abstractionem non subsistit realiter secundum sententiam Aristotilis, set est in solo intellectu, ideo necesse fuit Aristotili dicere quod uoces significant intellectus conceptiones immediate, et eis mediantibus res” (*In Peryerm.*, I, 2 [Leon. 1*/1, p. 11, lin. 100-112]).

⁷ “Nomina significant intellectus. Si igitur nihil intelligitur, nihil significatur” (*In Meta.*, IV, 7, n. 615).

3.1. Understanding and the infallibility of the first act of the intellect

According to Aristotle, since things of this world are the same to all men, so also are the passions of the soul. Aquinas claims that the passions of the soul, *passiones animae* in the Latin translation of Aristotle's text, should be taken in this context as conceptions of the intellect (*intellectus conceptiones*).⁸ What the intellect apprehends differs from sensory cognition, because the senses apprehend only outward characteristics of things, while the imagination apprehends similitudes of bodies, and not their essences.⁹ The intellect in its first act apprehends from phantasms the simple and indivisible forms of things.¹⁰ Some of these forms are common to every knower; Aquinas gives several examples for such simple apprehensions: being and non-being, one, good, whole, part, equal and unequal etc.¹¹ Other forms depend on the extent of one's experience from which the intellect grasps *what* something is in itself (*quod quid est*)¹² or what is its intelligible character (*ratio*),¹³ or what it is according to its definition.¹⁴ Obviously, such a definition can be only nominal, i.e. explaining a name of something. In this case, such a definition is not the *ratio rei* or *quid rei*, but *ratio*

⁸ Cf. *In Peryerm.*, I, 2 [Leon. 1*/1, p. 10-11, lin. 95-100].

⁹ "Sensus non apprehendit essentias rerum, sed exteriora accidentia tantum. Similiter neque imaginatio, sed apprehendit solas similitudines corporum. Intellectus autem solus apprehendit essentias rerum" (*STh*, I, 57, 1 ad 2). "Est autem differentia inter intellectum et sensum: nam sensus apprehendit rem quantum ad exteriora eius accidentia, quae sunt color, sapor, quantitas, et alia huiusmodi; sed intellectus ingreditur ad interiora rei. Et quia omnis cognitio perficitur secundum similitudinem quae est inter cognoscens et cognitum, oportet quod in sensu sit similitudo rei sensibilis quantum ad eius accidentia: in intellectu vero sit similitudo rei intellectae quantum ad eius essentiam" (*CG*, IV, 11, n. 3475). "Intellectus secundum suum nomen importat cognitionem pertingentem ad intima rei. Unde cum sensus et imaginatio circa accidentia occupentur quae quasi circumstant essentiam rei, intellectus ad essentiam ejus pertingit. Unde secundum Philosophum in III *De anima*, objectum intellectus est *quid*" (*Super III Sent.*, 35, 2, 2, qc. 1 sol.). "It was John Locke's failure to distinguish such generalized images that he called 'ideas' from true intellectual concepts that gave rise to modern empiricism. ... A failure to distinguish between sensible *similarity* and abstract *essential identity* is one of the defects of Nominalism" (Benedict Ashley, *The Way toward Wisdom* [Notre Dame, Ind.: University of Notre Dame Press, 2006], p. 108).

¹⁰ Form is not a shape; it is the actuality of that what a thing is or becomes in its deepest structure – *principium subsistendi*, which is perceivable intellectually as *quod quid est* – *principium cognoscendi*. Cf. *In Meta.*, I, 12, n. 183.

¹¹ "Quarundam propositionum termini sunt tales quod sunt in noticia omnium, sicut ens et unum et alia quae sunt entis in quantum ens: nam ens est prima conceptio intellectus" (*In Poster.*, I, 5 [Leon. 1*/2, p. 25, lin. 120-123]). Cf. *In Boet. De Trin.*, 6, 4 c.; *In Meta.*, IV, 6, n. 605.

¹² Cf. *In Poster.*, II, 20 (Leon. 1*/2, p. 242-247).

¹³ "Ratio autem non significat *esse* sed *esse quid*, idest *quid aliquid est*" (*De pot.*, 8, 2 ad 11).

¹⁴ "Intellectus, per speciem rei formatus, intelligendo format in seipso quamdam intentionem rei intellectae, quae est ratio ipsius quam significat definitio" (*CG*, I, 53, n. 443). "Ratio quam significat nomen est definitio" (*STh*, I, 85, 2 ad 3).

nominis or *quid nominis*. In order to know a thing one must move from this definition to a real definition, i.e. one which expresses what a thing is in itself.¹⁵ The intellect at this point understands the essence of something or its quiddity.¹⁶ What a thing is essentially, in really existing things, is always connected with its non-essential proprieties or characteristics. The intellect can understand one thing without another despite the fact that both may be actually united in an extramental thing.¹⁷ This happens when some part of a unity is understood without the other, in other words when some part of a certain kind of unity does not enter into the definition of the other part.¹⁸ For example, we know what a triangle is, without necessarily thinking whether it is equilateral or isosceles. The intellectual grasp of something thus abstracts from other things (or from other parts when a part is conceivable without taking into consideration some other part of a thing which is in reality complex), and also it abstracts a universal essence of something from its singular extramental mode of existence (i.e. from matter).¹⁹ Therefore the understanding of a thing through its definition is a grasping of its uncompounded quidditative form.²⁰ This is why it is called the understanding of

¹⁵ Cf. *In Poster.*, II, 8 [Leon. 1*/2, p. 203, lin. 91-130]; *De ver.*, 10, 12 ad 4 in contr.; *In Meta.*, VII, 3, n. 1325-1330; 4, n. 1339.

¹⁶ “Indiuisibilium intelligencia, per quam scilicet intellectus apprehendit essenciam uniuscuiusque rei in se ipsa” (*In Peryerm.*, I, 1 [Leon. 1*/1, p. 5, lin. 3-5]). “Intellectus apprehendit rem intellectam secundum propriam essentiam seu diffinitionem; unde et in III De anima dicitur quod obiectum proprium intellectus est quod quid est” (*In Peryerm.*, I, 10 [Leon. 1*/1, p. 50, lin. 71-75]). “Obiectum autem proprium intellectus est quidditas rei” (*STh*, I, 85, 6). Cf. *STh*, I, 13, 2 ad 1; *In Boet. De Trin.*, 5, 3. *In Meta.*, X, 1, n. 1929-1930, 1933-36; VI, 4, n. 1232; *Super I Sent.*, 19, 5, 1 sol., ad 7; *In Phys.*, I, 1, n. 6-11; *In Poster.*, I, 1 [Leon. 1*/2, p. 4, lin. 35-40]). “One may speak either of *the* intelligible character of the thing or of *an* intelligible character. In the first case it means the quiddity viewed adequately and expressed by the definition of the thing; and in the second case it means some formal or intelligible feature of the thing, whether accidental or essential, or some constituent note of the essence or quiddity itself” (Robert W. Schmidt, *The Domain of Logic According to Saint Thomas Aquinas* [The Hague: Martinus Nijhoff, 1966], p. 111).

¹⁷ We are talking here about the abstraction performed by the first act of the intellect, so this is the second modus among the two described here: “Abstrahere contingit dupliciter. Uno modo, per modum compositionis et divisionis; sicut cum intelligimus aliquid non esse in alio, vel esse separatum ab eo. Alio modo, per modum simplicis et absolutae considerationis; sicut cum intelligimus unum, nihil considerando de alio” (*STh*, I, 85, 1 ad 1).

¹⁸ “Ea uero que sunt coniuncta in rebus, intellectus potest distinguere, quando unum eorum non cadit in ratione alterius” (*In Peryerm.*, I, 10 [Leon. 1*/1, p. 50, lin. 46-48]). Cf. *CG*, II, 75, n. 1551-1554.

¹⁹ “Multa sunt coniuncta secundum rem, quorum unum non est de intellectu alterius: sicut album et musicum coniunguntur in aliquo subiecto, et tamen unum non est de intellectu alterius, et ideo potest unum separatim intelligi sine alio. Et hoc est unum intellectum esse abstractum ab alio. ... animal potest intelligi absque homine, et homo absque Socrate et aliis individuis. Et hoc est *abstrahere universale a particulari*” (*In Phys.*, II, 3, n. 5).

²⁰ If we entered into discussion with those among whom the “is/ought problem” arose it would be important to explain in greater detail St. Thomas’s doctrine of abstraction and the process of understanding because this was one of the main problems with which British Empiricism struggled and finally failed to understand, due to its dogmatic nominalist stance that it is impossible to distinguish

indivisibles (*indivisibilium intelligentia*), because the quidditative form is what allows us to know something as a whole. For example, we can physically divide an apple with a knife, but perceiving an apple we perceive it as a kind of unity. To be sure, an apple has its parts and parts of an apple have their own forms; yet, these forms are not forms of an apple but forms of parts of an apple.²¹

In order to give a rough description of how understanding occurs, we should say that the intellectual apprehension of simple indivisible things presupposes the fundamental stage of sense perception – this stage will be discussed briefly in section 7.3. Here, let it suffice to say that according to Aristotle and Aquinas sense cognition is the gate to intellectual cognition,²² and that the final fruits of sense cognition are phantasms, which are sensory similitudes of singulars in their singularity. We should say here also that phantasms are necessary to any actual intellectual cognition: we simply do not understand without phantasms.²³ Yet phantasms are only the fruit of sensory cognition. Although they have some intelligible content, they are not the intellectual cognition itself. The agent intellect extracts from phantasms their intelligible content (quiddity) creating at the same time the intelligible species. We can understand the intelligible species in two ways: as the medium of cognition and as the object of

what is inseparable in nature (cf. section 0.1). Since we do not enter here openly into this discussion, it suffices only to sketch Aquinas's general position. For a more extended discussion of abstraction in Aquinas see Régis, *Epistemology*, translated by I. C. Byrne (New York: Macmillan Co., 1959), p. 253-306; John Deely, *Four Ages of Understanding* (Toronto: University of Toronto Press, 2001), p. 345-47; Ashley, *The Way toward Wisdom*, p. 101-109. See also a critique of "abstractionism" specifically understood done by Peter Geach in his *Mental Acts: Their Content and Their Objects* (London: Routledge and Keegan Paul, Ltd., 1957) as well as John Deely's reaction to it: "Animal Intelligence and Concept-Formation" *The Thomist* 35 (1971): 43-93; and finally Anthony Lisska's clarification of the context of Geach's critique: "Deely and Geach on Abstractionism in Thomistic Epistemology" *The Thomist* 37 (1973): 548-568.

²¹ The object of the *indivisibilium intelligentia* is a universal nature as opposed to individuals, and not a substantial form as opposed to prime matter (the distinction into *forma totius*, which is essence or quiddity, and *forma partis*, which is substantial form): cf. *STh*, I, 3, 3; *In IV Sent.*, 44, 1, 1, qc. 2 ad 2; *CG*, II, 72, n. 1485; *In Meta.*, I, 12, n. 183; VII, 9, n. 1469.

²² "Principium cognitionis nostrae est a sensibilibus, quae sunt materialia, et intelligibilia in potentia" (*In Phys.*, I, 1, n. 7). "Cognitio nostra ortum habet a sensu" (ibid., II, 1, n. 8). "Cognitio sensus qui est cognoscitivus singularium, in nobis praecedit cognitionem intellectivam quae est universalium" (*In Meta.*, I, 2, n. 46). "Cognitio a sensu incipit" (ibid., VII, 2, n. 1302).

²³ "Intelligere non est sine fantasmate, quod non est sine corporali passione" (*In Peryerm.*, I, 2 [Leon. 1*/1, p. 11, lin. 119-120]). "Nam intellectus humanus ... primum suae cognitionis initium ab extrinseco sumit: quia non est intelligere sine phantasmate" (*CG*, IV, 11, n. 3465). "Intellectus noster et abstrahit species intelligibiles a phantasmatibus, inquantum considerat naturas rerum in universali; et tamen intelligit eas in phantasmatibus, quia non potest intelligere etiam ea quorum species abstrahit, nisi convertendo se ad phantasmata" (*STh*, I, 85, 1 ad 5).

understanding; the first is an abstracted quiddity, the second is the universality itself.²⁴ St. Thomas says that the intelligible species, which informs the intellect and puts it into activity, should be considered as a principle for intellectual operation (*intelligibilis operationis principium*). In this it differs from the intention or ratio understood (*intentionisve ratio intellecta*), because the existence of the latter also consists in the very act of understanding, while the intention or ratio understood is *quasi terminus intelligibilis operationis*. Yet both the intelligible species and the intention understood are similitudes of the thing understood: the intelligible species is the form received, while the intention understood is a representation actively formed or expressed.²⁵ The intellectual likeness is universal, which means applicable to many.²⁶ This is not because the thing known is universal,²⁷ or because something in the thing is universal. Nor is this because it is universal as an entity in the mind. Rather, the intellectual likeness is universal because the intellect knows particular things universally or generally,²⁸ that is, in abstraction from all individualizing conditions always associated with extramental things.²⁹ It is, therefore, universal not in its being, but in its mode of representing which

²⁴ “Cum dicitur intellectum in actu, duo importantur, scilicet res quae intelligitur, et hoc quod est ipsum intelligi. Et similiter cum dicitur universale abstractum, duo intelliguntur, scilicet ipsa natura rei, et abstractio seu universalitas” (*STh*, I, 85, 2 ad 2).

²⁵ “Dico autem intentionem intellectam id quod intellectus in seipso concipit de re intellecta. Quae quidem in nobis neque est ipsa res quae intelligitur; neque est ipsa substantia intellectus; sed est quaedam similitudo concepta in intellectu de re intellecta, quam voces exteriores significant” (*CG*, IV, 11, n. 3466) and see further. For a broader discussion of this topic see Schmidt, *The Domain of Logic*, p. 98-111.

²⁶ Cf. *In De An.*, II, 12 (Leon. 45/1, p. 115-116, lin. 96-150); *STh*, I, 12, 4 c. “Uniuersale dicitur esse quiescens in anima, in quantum scilicet consideratur preter singularia, in quibus est motus, quod etiam dicit esse unum *preter multa*, non quidem secundum esse, sed secundum considerationem intellectus qui considerat naturam aliquam, puta hominis, non respiciendo ad Sortem et Platonem, *quodcunque*, etsi secundum considerationem intellectus sit unum preter multa, tamen secundum esse est *in omnibus* singularibus unum et *idem*, non quidem numero, quasi sit eadem humanitas numero omnium hominum, sed secundum rationem speciei” (*In Poster.*, II, 20 [Leon. 1*/2, p. 245, lin. 174-188]).

²⁷ This was the error of Platonists who confused the way things exist with the way in which we know them. Platonists posited some separated entities, so-called *ideas* and claimed that there subsist somewhere as ideal natures, universal things existing by themselves, beings properly speaking, of which material, perceptible things are merely participations. These mysteriously existing ideas were known in the first place and to them names were to refer properly speaking. Cf. *In Peryerm.*, I, 2 (Leon. 1*/1, p. 11, lin. 105-112); *In Meta.*, I, 14, n. 224 (and further three lessons demolishing Plato’s position).

²⁸ “Ipse autem nature quibus accidit intentio uniuersalitatis sunt in rebus” (*In De An.*, II, 12 [Leon. 45/1, p. 116, lin. 145-147]). “Ratio uniuersalitatis, que consistit in communitate et abstractione, sequitur solum modum intelligendi in quantum intelligimus abstracte et communiter” (*De spir. creat.*, 9 ad 6); “Uniuersale quod facit intellectus agens est unum in omnibus a quibus ipsum abstrahitur” (*ibid.*, 10 ad 14). “Id quod cognoscit sensus materialiter et concrete, quod est cognoscere singulare directe, hoc cognoscit immaterialiter et abstracte, quod est cognoscere universale” (*STh*, I, 86, 1 ad 4).

²⁹ “Si enim accipiantur multa singularia que sunt indifferencia quantum ad aliquid unum in eis existens, illud unum secundum quod non differunt *in anima* acceptum est *primum uniuersale*” (*In Poster.*, II, 20

enables it to be applied to many individuals. A similitude or likeness is nothing other than an actualization of human intellectual endowments caused by some cognitive contact with something of which the similitude or likeness is produced. This actualization consists in conformity of both bodily sense and immaterial intellect with the thing known.³⁰ Although the senses grasp only the exterior accidents of things, the intellect grasps the essence or quiddity of the thing.³¹ The same form which constitutes the quiddity of a thing existing *extra animam* as a singular, also informs human cognition: in sense cognition with some or all individualizing conditions and in intellectual apprehension without them. This is not the same form numerically: the identity between the thing known and human cognition is a formal identity, not numerical. The form that I have in my mind differs numerically from the form you have in your mind, and our forms differ numerically from the form of the thing we both know. The form in the mind also differs ontologically from the form existing in things:³² the mind informed by the form of thing is not the thing itself. It remains this mind but now it is the mind knowing this thing.³³ Yet it is the same form that we take from the thing in the cognitive process that forms our minds, that allows us to know and to speak about the same thing, and that allows us to experience that we know and speak

[Leon. 1*/2, p. 246, lin. 243-247]). On abstraction from individualizing conditions see: *STh*, I, 54, 4; 79, 3-4; 84, 2 and 6; 85, 1; 86, 1; *CG*, II, 77, n. 1581-1584; *De spir. creat.*, 10 ad 4 and ad 17; *De anima*, 4; *De ver.*, 10, 6 ad 2 and ad 7; *In De An.*, III, 2 and 4 (Leon. 45/1, p. 208-213 and 218-223).

³⁰ “Cognitio fit per assimilationem cognoscentis ad rem cognitam” (*In Meta.*, V, 19, n. 1048). “Res non cognoscitur ab anima nisi per aliquam sui similitudinem existentem uel in sensu uel in intellectu” (*In Peryerm.*, I, 2 [Leon. 1*/1, p. 12, lin. 199-201]).

³¹ “Est autem differentia inter intellectum et sensum: nam sensus apprehendit rem quantum ad exteriora eius accidentia, quae sunt color, sapor, quantitas, et alia huiusmodi; sed intellectus ingreditur ad interiora rei. Et quia omnis cognitio perficitur secundum similitudinem quae est inter cognoscens et cognitum, oportet quod in sensu sit similitudo rei sensibilis quantum ad eius accidentia: in intellectu vero sit similitudo rei intellectae quantum ad eius essentiam” (*CG*, IV, 11, n. 3475). Yet sense apprehension contains also what is universal and so interior regarding a thing: “Manifestum est enim quod *singulare sentitur*, proprie et per se, set tamen sensus est quodam modo etiam ipsius *uniuersalis*” (*In Poster.*, II, 20 [Leon. 1*/2, p. 246, lin. 258-260]). Cf. *In Phys.*, I, 1, n. 11.

³² On the difficulties had by contemporary thinkers influenced by “classical representationalism” in understanding what it means that a form is in a thing or in a mind, see John O’Callaghan, “Concepts, Beings and Things in Contemporary Philosophy and Thomas Aquinas,” *The Review of Metaphysics* 53 (1999): 69-98. After quoting eight senses of “in” from Aristotle’s *Physics* (among which only one sense is spatial) he concludes: “the spatial sense of ‘in’ for ‘classical representationalism,’ whether taken metaphorically or literally, is simply not at play in St. Thomas’s discussion of intellect and world, and the reading of Aristotle in that light” (p. 76-77).

³³ “Quod enim recipitur in aliquo recipitur in eo secundum modum recipientis” (*STh*, I, 79, 6 c.). Cf. 84, 4 c.; III, 11, 5 c.; *CG*, II, 50, n. 1264; 74, n. 1534; *De Pot.*, 7, 10 ad 10; *Quodl.*, VII, 1 c.

about the same thing.³⁴ There is thus a formal identity of the knower and the known. The identity is guaranteed by the specificity of simple acts of human cognition characterized by their essential connection to their ultimate and proper objects, i.e. to the things of the sensible and intelligible reality. The similitude or likeness is thus an actualization of human cognition caused by a thing known.³⁵ It is thus not *what* (*quod*) is known, but *that by which* (*quo*) an extramental thing is sensorily or intellectually known. In other words, the essential characteristic of a similitude or likeness existing in the mind is to refer to the extramental thing of which it is the similitude or likeness.³⁶

In its first act the intellect cannot fail. The explanation of this statement can be very short: St. Thomas says that to fail in this act amounts to failing to make this act at all. In this act “the intellect understands the quiddity or essence of a thing absolutely, but understands the quiddity or essence *as existing in the thing*, for instance what man is or what white is.”³⁷ If one understands something other than the thing before him, one does not understand the thing, but something else or nothing at all: “for if someone is at variance with what is true, in this instance he does not understand.”³⁸ This means that the unfailing character of the first act of the intellect is essentially connected with the

³⁴ Klima uses the example of many copies of the same book: copies are distinct but they have the same content, each copy is a copy of the same book; there is no general book, but when the content of the book is known to us, we can know on a general level all copies of the book (abstracting for example from print characters, paper, format of the book, etc.). Even when there are different editions and format is changed, when the content of the book is the same, we say that this is *the same* book, not a similar one. It is maybe not similar on some secondary aspect, but it is the same because what is essential, the content is exactly the same: see Klima, “The Medieval Problem of Universals.”

³⁵ Cf. *STh*, I, 85, 2 c.

³⁶ Representing something in cognition is not necessarily connected with a production of some substantial “third thing” between knower and known as walking does not produce any substance named “a walk.” O’Callaghan insists on this point: “Nominalization of verbs into substantives is a way of talking about our activities, not a way of recognizing another realm of things in addition to our activities” (“Concepts, Beings and Things,” p. 79). Cf. also the chapter “The Third Thing Thesis” in his *Thomist Realism*, p. 159-198. See as well Gyula Klima, “Tradition and Innovation in Medieval Theories of Mental Representation,” *Proceedings of the Society for Medieval Logic and Metaphysics* 4 (2004): 4-11, where he exploits an excellent example of the recording of a song on a CD to illustrate the fittingness of Aquinas’s account of representation.

³⁷ “Intellectus intelligit absolute cuiuscunque rei quidditatem siue essenciam per se ipsam, puta quid est homo uel quid album uel aliud huiusmodi” (*In Peryerm.*, I, 3 [Leon. 1*/1, p. 14, lin. 41-44]). “Cognoscere res per earum similitudines in cognoscente existentes est cognoscere ea in seipsis, seu in propriis naturis” (*STh*, I, 12, 9 c.).

³⁸ “Quia, si quis a uero discordat, hic non intelligit” (*In Peryerm.*, I, 2 [Leon. 1*/1, p. 12, lin. 218-219]). “Circa quod quid est non decipitur intellectus nisi per accidens: aut enim per intellectum attingit aliquis quod quid est rei, et tunc vere cognoscit quid est res; aut non attingit, et tunc non apprehendit rem illam. Unde circa eam non verificatur neque decipitur. Propter quod dicit Aristoteles in tertio *de Anima*, quod sicut sensus circa propria obiecta semper est verus, ita intellectus circa quod quid est, quasi circa proprium obiectum” (*In Meta.*, IX, 11, n. 1907).

very notion of the ability or ability's act.³⁹ We know the first act of intellect thanks to its correlation with its proper object, which is the quiddity of material things. Without the proper object the first act of intellect would not exist or be intelligible. Without the object there is no act of understanding. This act depends in its existence on the human being in whom it inheres, but it depends also on an object for its specification.⁴⁰ The object specifies the act as a measure to something measured.⁴¹ To call something the first act of intellect there must be a human ability of understanding unfailingly its proper objects because the first act of intellect is something relational and is defined with respect to the extramental object.⁴²

Here, it is important to remark that in the order of discovery or research every ability is known by a certain kind of act and is defined by this kind of act. We know that we have sight because we see and we know that we have will because we want something. There are diverse characteristics of abilities that enter into our understanding of these abilities. For example, the possibility to shut our eyes does not deny the existence of our sight. Also, the fact that there is something like hearing does not deny the fact that we have sight. Accordingly, what Aquinas calls "the first act of intellect" is defined by a specific kind of intellectual activity, through which we grasp what

³⁹ "Ad proprium obiectum unaquaeque potentia per se ordinatur, secundum quod ipsa. Quae autem sunt huiusmodi, semper eodem modo se habent. Unde manente potentia, non deficit eius iudicium circa proprium obiectum. Obiectum autem proprium intellectus est quidditas rei. Unde circa quidditatem rei, per se loquendo, intellectus non fallitur. Sed circa ea quae circumstant rei essentiam vel quidditatem, intellectus potest falli, dum unum ordinat ad aliud, vel componendo vel dividendo vel etiam ratiocinando. Et propter hoc etiam circa illas propositiones errare non potest, quae statim cognoscuntur cognita terminorum quidditate, sicut accidit circa prima principia, ex quibus etiam accidit infallibilitas veritatis, secundum certitudinem scientiae, circa conclusiones. Per accidens tamen contingit intellectum decipi circa quod quid est in rebus compositis ... in rebus simplicibus, in quarum definitionibus compositio intervenire non potest, non possumus decipi; sed deficimus in totaliter non attingendo" (*STh*, I, 85, 6 c.).

⁴⁰ "Manifestum est enim, quod operationes secundum propria obiecta specificantur" (*In Meta.*, XII, 11, n. 2605).

⁴¹ For an extended discussion of this aspect see Régis, *Epistemology*, p. 175-183 and 192-197.

⁴² This is also true about the acts of the senses in reference to their proper objects: "sicut res habet esse per propriam formam, ita virtus cognoscitiva habet cognoscere per similitudinem rei cognitae. Unde, sicut res naturalis non deficit ab esse quod sibi competit secundum suam formam, potest autem deficere ab aliquibus accidentalibus vel consequentibus; sicut homo ab hoc quod est habere duos pedes, non autem ab hoc quod est esse hominem, ita virtus cognoscitiva non deficit in cognoscendo respectu illius rei cuius similitudine informatur; potest autem deficere circa aliquid consequens ad ipsam, vel accidens ei. Sicut est dictum quod visus non decipitur circa sensibile proprium, sed circa sensibilia communia, quae consequenter se habent ad illud, et circa sensibilia per accidens. Sicut autem sensus informatur directe similitudine propriorum sensibilium, ita intellectus informatur similitudine quidditatis rei. Unde circa quod quid est intellectus non decipitur, sicut neque sensus circa sensibilia propria" (*STh*, I, 17, 3).

something is. When it happens that through our activity we fail to grasp, it is not through the first act of intellect that we failed.

The theory of formal identity between thing known and knower in the intentional or representative order is thus the consequence of a simple and initial analysis of what a perception or apprehension is.⁴³ From this analysis we know that a simple cognitive act is not the same as other cognitive acts (as, for example, judging or reasoning) and not the same as failing to make a simple cognitive act. The claim that all simple cognitive acts (sensory or intellectual) are necessarily veridical in reference to their proper objects thus contains not the necessity of *efficient* causality but of *formal* causality: if it is, it is such and such.⁴⁴ In other words, Aquinas does not claim that objects of cognition necessarily cause their concepts in human minds (because the same effects can have different causes); instead, he claims that concepts arising from the first act of the intellect necessarily refer to the objects from which they arise.⁴⁵ This is the necessity that stems from the very meaning of the phrase “simple cognitive act”: simple cognitive acts are only veridical acts of cognition of proper objects. In other words, non-veridical acts in relation to proper objects are not acts of cognition.⁴⁶ Either there is

⁴³ For a broader discussion of this notion see Schmidt, *The Domain of Logic*, p. 194-201.

⁴⁴ Klima calls it “logical necessity” as opposed to “natural necessity”, cf. his “The Demonic Temptations of Medieval Nominalism: Mental Representation and ‘Demon Skepticism’” (*Proceedings of the Society for Medieval Logic and Metaphysics* 4 [2004]: 37-44, here especially p. 44) and “Tradition and Innovation.”

⁴⁵ Klima writes that “in the framework of the efficient causality model ... since mental acts have identity-conditions of their own, irrespective of their objects, it may very well be the case that my concept is indistinguishable from that of the envatted brain, so there is no way of telling whether I myself, who is thinking about this problem, am not an envatted brain. In the formal causality model, however, the objects of concepts cannot be swapped without affecting their identity” (Klima, “Ontological Alternatives vs. Alternative Semantics,” p. 618). He shows in this article that any possibility of such threat of an evil scientist is excluded in the formal causality model. See also his “The Demonic Temptations,” where he shows how the possibility of Demon-skepticism emerged with the emergence of Ockhamism, due to the rejection of the formal identity and taking the relationship between cognitive act and ultimate object to be contingent.

⁴⁶ See Gyula Klima, “Putting Skeptics in Their Place vs. Stopping Them in Their Tracks: Two Anti-Skeptical Strategies,” <http://www.fordham.edu/gsas/phil/klima/FILES/Inaugural.pdf> (being his discussion of John Greco’s book *Putting Skeptics in Their Place: The Nature of Skeptical Arguments and Their Role in Philosophical Inquiry* [Cambridge University Press, 2000]). Klima opposes in this text the strong externalist position of Aquinas (sketched briefly in this paragraph), which renders the main skeptical premise logically impossible, to a line of coping with skepticism that is common to such philosophers as John Buridan, Descartes, Thomas Reid, G. E. Moore and John Greco. See also remarks made by G. Klima in his “*Nulla virtus cognoscitiva circa proprium obiectum decipitur*. Critical comments on Robert Pasnau: ‘The Identity of Knower and Known,’” <http://www.fordham.edu/gsas/phil/klima/APA.htm>. Quoting CG, III, 108, n. 2835 in the title, the author neatly explains in what the skeptical challenge consists and how the Aristotelian-Thomistic veridical externalism with its theory of formal unity rebuts it. Against the claim that the use of this theory begs the question, he writes: “Indeed, a Thomist who puts the theory to such use does not have to beg the question against the skeptic at all. Of course, the Thomistic rebuttal *would* constitute

a single cognitive act, or there is not: *tertium non datur*.⁴⁷ There is no possibility of entering into error here; there is no possibility of a false first act of the intellect.⁴⁸

3.2. The signification of concepts and words

From all this it follows that simple conceptions of the intellect are the same for all people who understand the same things. From the fact that Aristotle's passions of the soul (which as we have seen, are the similitudes or likenesses of things) are the same to all men, it appears that these passions signify things naturally – nobody establishes their signification.⁴⁹ Yet words, by which we name things according to our understanding (i.e. categorematic words), signify in another way.⁵⁰ Words are not the same for all men, because there are many languages containing different words for the same things and the same conceptions in the intellect. Words have two types of signs: sounds or letters.

question begging if the *only* basis of the theory of formal unity were the bland rejection of the skeptic's main premise, namely, the simple, unjustified assertion that at least some of our cognitive acts are necessarily veridical. But this is not the case. The theory of formal unity is based on entirely independent grounds, namely, on the Aristotelian analysis of *what* a simple act of perception of a proper sensible is (*actus sensus proprii*), and *what* a simple act of intellectual apprehension is (*indivisibilium intelligentia*), distinguishing these acts from other mental acts, such as dreaming, imagining, remembering, judging, etc. ... For an important consequence of the doctrine of formal unity is that it is part and parcel of the identity conditions of such a simple cognitive act *what* it is the cognition *of*. Therefore, that such an act is necessarily veridical is the *consequence* of the fact that *what* it is for something to be such a cognitive act is for it to be the form of such and such an object received by the cognitive subject, and so *anything* that *is not so related* to this object, as for example an act of hallucination induced by the demon, *is not* such a cognitive act."

⁴⁷ "Intellectus autem circa quod quid est semper verus est, sicut et sensus circa proprium obiectum, ut dicitur in III *de Anima*. Sed per accidens in nobis accidit deceptio et falsitas intelligendo quod quid est, scilicet secundum rationem alicuius compositionis: vel cum definitionem unius rei accipimus ut definitionem alterius; vel cum partes definitionis sibi non cohaerent, sicut si accipiat pro definitione alicuius rei, animal quadrupes volatile (nullum enim animal tale est); et hoc quidem accidit in compositis, quorum definitio ex diversis sumitur, quorum unum est materiale ad aliud. Sed intelligendo quidditates simplices, ut dicitur in IX *Metaphys.*, non est falsitas: quia vel totaliter non attinguntur, et nihil intelligimus de eis; vel cognoscuntur ut sunt" (*STh*, I, 58, 5 c.). Cf. *In Meta.*, IX, 11, n. 1901-1909.

⁴⁸ "Intellectus apprehendens quod quid est absque compositione et diuisione, semper est uerus" (*In Peryerm.*, I, 3 [Leon. 1*/1, p. 16, lin. 155-157]). O'Callaghan writes that "the intellect by grasping the incomplex intelligible character can be *called* true, insofar as it is 'adequate' to (*De anima* commentary), or 'conformed' to (*De interpretatione* commentary), or 'measured' by (*De interpretatione* commentary) some real being. In fact, the intellect in this act, like sight perceiving color, is never deceived" (*Thomist Realism*, p. 18). Cf. Régis's discussion of the first analogate of the word "truth": *Epistemology*, p. 337-349.

⁴⁹ "Naturaliter ... non ex institutione" (*In Peryerm.*, I, 2 [Leon. 1*/1, p. 12, lin. 208]).

⁵⁰ "Nomina enim imponuntur a nobis secundum quod nos intelligimus, quia nomina sunt intellectuum signa" (*In Meta.*, V, 5, n. 824).

Neither of them signifies things naturally; their signification is established by convention.⁵¹ Words signify *immediately* passions of the soul (the conceptions of the intellect) but *ultimately* the things of which these passions are similitudes or likenesses.⁵² Since immediate significata do not exist in the real world, but only in the intellect, the ultimate significata of words are their proper ones. (It is also possible to refer to the immediate significata, but only secondarily, as was said in the previous section.)⁵³ Therefore, the specificity of Aquinas's interpretation of the Aristotelian semantic triangle consists in noticing that "immediately" or "primarily" does not mean "properly" in this context. When St. Thomas says that a term signifies immediately or primarily a concept which is in the mind, this does not mean that the concept is the proper signification of this term. Properly speaking, the term signifies the thing known through the concept. The identity of the object of the intellect enters into the identity conditions of concepts. The necessary property of the concept is to refer to the thing which it signifies. If it does not refer to the thing, it is not the concept of the thing. Thus, the ultimate or secondary signification of the term is the proper one.⁵⁴

⁵¹ Cf. *In Peryerm.*, I, 2 (Leon. 1*/1, p. 11-12, lin. 166-183). Aquinas adds that there are some sounds which signify naturally, as an example of such he gives a *gemitus infirmorum*. But these are not words of a language unless in some remote sense.

⁵² "Oportet passiones anime hic intelligere intellectus conceptiones quas nomina et uerba et orationes significant, secundum sententiam Aristotilis ... uoces significant intellectus conceptiones immediate, et eis mediantibus res" (*In Peryerm.*, I, 2 [Leon. 1*/1, p. 16, lin. 97-100, 110-112]). "Modus significandi uocum non consequatur immediate modum essendi rerum, sed mediante modo intelligendi; quia intellectus sunt similitudines rerum, voces autem intellectuum, ut dicitur in primo *Perihermeneias*" (*In Meta.*, VII, 1, n. 1245). "Vox est signum intellectus et intellectus est signum rei" (*In Peryerm.*, I, 8 [Leon. 1*/1, p. 39, lin. 21-22]).

⁵³ "Unitas autem sive communitas humanae naturae non est secundum rem, sed solum secundum considerationem; unde iste terminus 'homo' non supponit pro natura communi, nisi propter exigentiam alicuius additi, ut cum dicitur, 'homo est species'" (*STh*, I, 39, 4). Cf. *STh*, III, 16, 7.

⁵⁴ For a better understanding of Aquinas's position it is profitable to compare it with a competing view, namely, Ockham's, who writes in his *Summa Logicae*: "Hoc enim nomen 'homo' non significat primo unam naturam communem omnis hominibus, sicut multi errantes imaginantur, sed significat primo omnes homines particulares ... Ille enim qui primo instituit hanc vocem 'homo', videns aliquem hominem particularem, instituit hanc vocem ad significandum illum hominem et quamlibet talem substantiam qualis est ille homo. Unde de natura communi non oportuit eum cogitare, cum non sit aliqua talis natura communis." For Aquinas it is obvious that there is no need to consider first some general nature, humanity, in order to perceive a particular human being, because it is impossible to consider general nature before perceiving a particular being: every consideration of generality comes from simple apprehensions of particulars. In another place Ockham says: "Unde hoc nomen 'homo' nullam rem significat nisi illam quae est homo singularis, et ideo nunquam supponit pro substantia nisi quando supponit pro homine particulari. Et ideo concedendum est quod hoc nomen 'homo' aequo primo significat omnes homines particulares." Granted, the same is valid for Aquinas, provided we understand here *res* only as *res extra animam*. But for Aquinas it does not mean that only *res extra animam* exist and nothing else; for him, according to his doctrine of analogy, there *exist* somehow also concepts as beings of reason. Another understanding of concepts in Ockham and omission of above mentioned separation of "primarily" from "properly", compels him to say in his commentary to *Perihermeneias*: "Hic primo notandum est quod non intendit Philosophus quod voces omnes proprie et

We can observe that words refer either to conceptions of the intellect or to the extramental things when we are attempting to clarify an ambiguous statement. For example, when we hear a phrase with the word “man,” we may wonder whether this word is being used to refer to a specific person or to signify more generally: in the latter case “man” refers only to a conception of the intellect, or, more properly, as Aquinas puts it, this common noun signifies human nature considered generally, that is humanity.⁵⁵ This ambiguity occurs because words signify both concepts and really existing things. They signify concepts immediately and things ultimately – and, as we have seen, really existing things are the proper significata of words.⁵⁶ For this reason St. Thomas says that in any name we should be aware of two aspects: that *from which* and that *on which* the name is imposed. According to these two aspects, he says that properly speaking a name *signifies* “the form, or quality, from which the name is imposed” and *supposits* for the thing on which it is imposed.⁵⁷ This is a very important distinction because it allows us, if we combine it with Aquinas’s theory of concepts, to explain plausibly, for example, how it is possible to predicate the existence not only of

primo significant passiones animae, quasi sint impositae ad significandum principaliter passiones animae. Sed multae voces et nomina primae intentionis sunt impositae ad significandum primo res, sicut haec vox ‘homo’ imponitur primo ad significandum omnes homines ...” (all quotations from Ockham are taken from Klima, “Ontological Alternatives vs. Alternative Semantics,” p. 595).

⁵⁵ In English it is perhaps less visible due to the presence of definite/indefinite articles, but there are many languages which do not have such articles; for example in Latin, Polish or Russian, where one can properly use a word ‘homo’ or its equivalent without any indication whether one means some specific human being or man as species. In a general consideration, terms refer to abstracted natures: “...significat enim hoc nomen ‘homo’ naturam humanam in abstractione a singularibus” (*In Peryerm.*, I, 2 [Leon. 1*/1, p. 11, lin. 102-105]). “Natura hominis absolute considerata abstrahit a quolibet esse, ita tamen quod non fiat praecisio alicuius eorum. Et hec natura sic considerata est que predicatur de indiuiduis omnibus. ... Ipsa enim natura humana in intellectu habet esse abstractum ab omnibus indiuiduantibus; et ideo habet rationem uniformem ad omnia indiuidua que sunt extra animam, prout equaliter est similitudo omnium et ducens in omnium cognitionem in quantum sunt homines” (*De ente*, 3 [Leon. 43, p. 374-375, lin. 68-72 and 91-96]).

⁵⁶ Klima gives a useful and telling example of the proper significatum or of the ultimate object of a cognitive act: “When you look into the mirror to fix your tie, you see your tie only *through* seeing its reflection. Still, of course, you do not fiddle with the reflection to fix your tie. Instead, you reach your tie, because *what* you see by looking into the mirror is *your tie*, the *ultimate object* of your act of sight, which you see *through* its *immediate object*, the reflection. Indeed, for the reflection to be this immediate object is for it to function *only* as something that directs your act of sight to its ultimate object. That is to say, *to be* this immediate object is *to be recognized only* as something *through which* [*quo*] you see the object you want to see, and, at the same time, not to be recognized as *that which* [*quod*] you want to see, as the ultimate object, *to which* your intention, attention and action are directed *through* or *by* the former” (“*Nulla virtus*”).

⁵⁷ “Forma significata per hoc nomen *homo*, idest humanitas, realiter dividitur in diversis suppositis, per se supponit pro persona; etiamsi nihil addatur quod determinet ipsum ad personam, quae est suppositum distinctum. Unitas autem sive communitas humanae naturae non est secundum rem, sed solum secundum considerationem: unde iste terminus *homo* non supponit pro natura communi, nisi propter exigentiam alicuius additi, ut cum dicitur, *homo est species*” (*STh*, I, 39, 4 ad 3). Cf. *Super I Sent.*, 21, 1, 1 ad 2; *Super III Sent.*, 6, 1, 3 sol.; *De ver.* 4, 1, ad 8; *STh*, I, 31, 3 ad 3; 39, 5 ad 5.

a concept but also of any singular object in a way that this predication be substantially informative.⁵⁸

But to realize that a concept is applicable to many singulars, and therefore that the concept signifies something common to all these singulars, or that a common name supposits for some singulars, is not the domain of the first act of the intellect. Properly speaking, it is the second act of the intellect that allows us to see a singular as singular and a universal as universal, to perceive something like genus or species, to distinguish different kinds of predication and so on, because for all of these a comparison and a judgment is needed. Thus, in any attribution of logical intentions there is the possibility of error, because in any attribution there is always a need of comparison and judgment.⁵⁹

3.3. *The second act of the intellect, the true and the false*

St. Thomas says that the same principle of infallibility of the first act of the intellect applies also to our senses: the activity of our senses has the same binary character – either they perceive their proper object or they do not perceive it. When a sense performs its proper activity, it can be called true insofar as it conforms through its own form to a thing existing outside the soul.⁶⁰ Yet comparison between senses and intellect shows that there is a difference, because:

⁵⁸ After many problems stemming from Kant, many of today's philosophers think we should accept existence as a predicate; e.g. Jaakko Hintikka says, playing with Kant's epoch-making statement: "I think it is the time to lay to rest the myth that 'existence is not a predicate.' It is embarrassingly clear what Kant's grounds for maintaining this thesis were. They were largely due to the paucity of the logics and languages he was contemplating" ("Kant on Existence, Predication and the Ontological Argument," in *The Logic of Being: Historical Studies*, Synthese Historical Library 28, ed. by J. Hintikka and S. Knuuttila [Dordrecht: D. Reidel Publishing Co., 1986], p. 253). See also Juliet Floyd, "On the Use and Abuse of Logic in Philosophy: Kant, Frege, and Hintikka on the Verb 'To Be'," in *The Philosophy of Jaakko Hintikka*, The Library of Living Philosophers, vol. 30, edited by R. E. Auxier and L. E. Hahn, p. 137-187 (Chicago: Open Court, 2006). See also Gyula Klima, "Existence and Reference in Medieval Logic," in *New Essays in Free Logic*, edited by A. Hieke and E. Morscher, p. 197-226 (Dordrecht: Kluwer Academic Publishers, 2001).

⁵⁹ "Si consideremus ea quae sunt circa intellectum secundum se, semper est compositio ubi est ueritas et falsitas, quae nunquam inuenitur in intellectu nisi per hoc quod intellectus comparat unum simplicem conceptum alteri" (*In Peryerm.*, I, 3 [Leon. 1*/1, p. 16, lin. 63-67]).

⁶⁰ "Et, sicut res dicitur uera per comparationem ad suam mensuram, ita etiam et sensus uel intellectus, cuius mensura est res extra animam: unde sensus dicitur uerus, quando per formam suam conformatur rei extra animam existenti. Et sic intelligitur quod sensus proprii sensibilis sit uerus. Et hoc etiam modo intellectus apprehendens quod quid est absque compositione et diuisione semper est uerus" (ibid. [lin. 149-157]).

although the sensation of the proper object is true, the sense does not perceive the sensation to be true, for it cannot know its relationship of conformity with the thing but only apprehends the thing. The intellect, on the other hand, can know its relationship of conformity and therefore only the intellect can know truth.⁶¹

The conformity of senses with a thing known through the senses is similar to the conformity of the first act of the intellect. The conformity on this level is the basis of ascribing the character of truth to these cognitive operations. Thanks to the activity of the first act of the intellect, the transcendental term “truth” can be distinguished from “being,” because truth formally adds to being only the relation of conformity of thing and intellect.⁶² In this sense the truth has an immediate foundation in reality.⁶³ However, this conformity cannot be judged by the first act of intellect, and thus known as truth, because to be conformed or not conformed can be said only by comparison of one thing with another. Cognition resulting from the first acts of the intellect would remain somehow discontinuous – we know only simple quiddities, which in these first acts are neither connected nor compared. In its first act, the intellect is, in fact, conformed to a thing known, but it cannot through this first act know its own conformity. Nothing, however, prevents the intellect from having other kinds of acts. Indeed, experience confirms this, because we compare simple concepts and we can reflect upon our acts of cognition. Hence Aquinas, following Aristotle, says that the conformity of our cognition with the cognitum, i.e. the truth, is judged by the second act of the intellect.⁶⁴ When for example:

the intellect grasps what is a mortal rational animal, it has in itself a likeness of man, but it is not according to this that it knows that it has this likeness, because it does not judge that man is mortal and rational animal. Hence truth and falsity is only in this second operation of the intellect, according to which it not only possesses a likeness of the thing known but also reflects on this likeness by knowing it and by making

⁶¹ “Licet autem in cognitione sensitiva possit esse similitudo rei cognitae, non tamen rationem huius similitudinis cognoscere ad sensum pertinet, sed solum ad intellectum. Et ideo, licet sensus de sensibili possit esse verus, tamen sensus veritatem non cognoscit, sed solum intellectus: et propter hoc dicitur quod verum et falsum sunt in mente” (*In Meta.*, VI, 4, n. 1235).

⁶² Cf. *De ver.*, 1, 1 c.; *In Meta.*, IV, 16, n. 721. “Cum enim veritas intellectus sit adaequatio intellectus et rei, secundum quod intellectus dicit esse quod est vel non esse quod non est, ad illud in intellectu veritas pertinet quod intellectus dicit, non ad operationem qua illud dicit” (*CG*, I, 59, n. 495).

⁶³ See a thorough discussion which substantiates this claim in Schmidt, *The Domain of Logic*, p. 85-89 and 237-241.

⁶⁴ “Cum aliquod incomplexum vel dicitur vel intelligitur, ipsum quidem incomplexum, quantum est de se, non est rei aequatum nec rei inaequale: cum aequalitas et inaequalitas secundum comparisonem dicuntur; incomplexum autem quantum est de se, non continet aliquam comparisonem vel applicationem ad rem. Unde de se nec verum nec falsum dici potest, sed tantum complexum, in quo designatur comparatio incomplexi ad rem per notam compositionis aut divisionis” (*CG*, I, 59, n. 496).

a judgment about it. Thus it is evident from this that truth is not found in things but only in the mind, and that it depends upon composition and division.⁶⁵

For this reason St. Thomas distinguishes two ways in which we find truth in something: in one way we find truth as in what is true, in a second way as in someone speaking or knowing what is true. We find the truth of the first way both in simple apprehensions and in the second act of intellect, which is composing and dividing. Yet the truth in the second way is found only while composing and dividing and not in simple apprehensions.⁶⁶ This is the difference between being true and knowing the true. The intellect is able to reflect on its own activity which makes the thing known the object of knowledge. The thing known is known as subsisting outside the knower, “although there can be no apprehension of this thing except through that which of this thing exists in the knower.”⁶⁷ The only way of apprehending the extramental reality for our intellect is mediated by sensory cognition resulting in phantasms. In other words, the thing known is the object of knowledge when the intellect reflects on the likeness of the thing that it has in itself.⁶⁸ This ability to reflect is achieved by a different act than the first act of intellect, because a thing understood is a different object than that through which this

⁶⁵ “Intellectus autem habet apud se similitudinem rei intellectae, secundum quod rationes incomplexorum concipit; non tamen propter hoc ipsam similitudinem diiudicat, sed solum cum componit vel dividit. Cum enim intellectus concipit hoc quod est animal rationale mortale, apud se similitudinem hominis habet; sed non propter hoc cognoscit se hanc similitudinem habere, quia non iudicat hominem esse animal rationale et mortale: et ideo in hac sola secunda operatione intellectus est veritas et falsitas, secundum quam non solum intellectus habet similitudinem rei intellectae, sed etiam super ipsam similitudinem reflectitur, cognoscendo et diiudicando ipsam. Ex his igitur patet quod veritas non est in rebus sed solum in mente, et etiam in compositione et divisione” (*In Meta.*, VI, 4, n. 1236). Cf. *De ver.*, 1, 9 c.; 10, 9; *Super III Sent.*, 23, 1, 2 ad 3.

⁶⁶ “Veritas in aliquo inuenitur dupliciter: uno modo sicut in eo quod est uerum; alio modo sicut in dicente uel cognoscente uerum; inuenitur autem ueritas sicut in eo quod est uerum tam in simplicibus quam in compositis, set sicut in dicente uel cognoscente uerum non inuenitur nisi secundum compositionem et diuisionem” (*In Peryerm.*, I, 3 [Leon. 1*/1, p. 15, lin. 100-106]).

⁶⁷ “Res cognita dicitur esse cognitionis obiectum secundum quod est extra cognoscentem in se ipsa subsistens, quamvis de re tali non sit cognitio nisi per id quod de ipsa est in cognoscente” (*De ver.*, 14, 8 ad 5).

⁶⁸ “The intellect is not described here as having the strabismic power to look in two directions at once, one eye fixed on the thing and the other on the concept of the judgment! This spatial imagery, requiring the intellect to step outside itself to compare its knowledge with the physical thing it copies, is the result of a complete misunderstanding of the intellect’s life and wholly destroys the immanence of the operations of knowledge. ... We know things existing outside ourselves, but we know them because they exist in us. Knowledge of truth is not arrived at by comparing things as known with things as existing, for that brings up the famous problem of the bridge with which the whole history of idealism is filled, and whose solution is impossible because it is a pseudoproblem. *The intellect knows truth by reflecting upon itself*, and not by eyeing both its act and the extramental thing” (Régis, *Epistemology*, p. 353).

thing is understood. St. Thomas says: “a man with one act of the intellect understands a stone, but with another act he understands himself as understanding the stone.”⁶⁹

Aquinas maintains that in the second act of the intellect “the true or the false are for the first time present.”⁷⁰ Moreover, this act is of necessity either true or false.⁷¹ Simple forms are what they are, and are simply known or not known in the first act of intellect, without any third possibility – thus there is no place for falsehood. Yet they can be taken for what they are not, and then we perceive such a situation as a falsehood. Taking something for what it is not is the same as judging falsely its identity.⁷² The judging of the identity of something occurs in the intellect’s act of composing or dividing.⁷³ Composition and division can be expressed in a proposition: a proposition is a sign of the activity of the second act of intellect. In other words, a proposition *signifies* the intellect’s composition or division. We cannot enter into the details of Aquinas’s theory of predication because we are here only interested in it in relation to his theory of scientific explanation. Hence, in what follows I will only present some crucial points.

3.4. Propositions and the inherence theory of predication

St. Thomas says that there are different types of signifying vocal sounds (*voces significativae*). Some signify the true and the false, while others do not.⁷⁴ Simple

⁶⁹ “Alio actu intelligit homo lapidem, et alio actu intelligit se intelligere lapidem” (*STh*, I, 28, 4 ad 2). St. Thomas says that these relations of reason which follow our mode of understanding can be multiplied to infinity, because a man with still another act can understand that he understands himself as understanding the stone; “et sic in infinitum multiplicantur actus intelligendi, et per consequens relationes intellectae.” Note that this infinity is conditioned by somebody’s will to multiply these acts of understanding which are different both logically (because concern other levels of generality) and really (because our acts of understanding are stretched in time).

⁷⁰ “Secunda uero operatio intellectus est compositio uel diuisio intellectus, in qua est iam uerum et falsum” (*In Poster.*, I, 1 [Leon. 1*/2, p. 4, lin. 42-44]).

⁷¹ Cf. *In Peryerm.*, I, 3 (Leon. 1*/1, p. 14, lin. 14-19).

⁷² “Nam falsum aurum est verum aurichalcum” (*ibid.* [p. 16, lin. 143]).

⁷³ Even to state the identity of something, i.e. that something is identical with itself, our intellect does it as if there were two terms compared between them, although this something is only one in reality: “Intellectus utitur eo quod est unum secundum rem, ut duobus. Alias eiusdem ad seipsum relationem designare non posset. Unde patet, quod si relatio semper requirit duo extrema, et in huiusmodi relationibus non sunt duo extrema secundum rem sed secundum intellectum solum, relatio identitatis non erit relatio realis, sed rationis tantum, secundum quod aliquid dicitur idem simpliciter” (*In Meta.*, V, 11, n. 912).

⁷⁴ “Hic agit de diuersa uocum significatione, quarum quedam significant uerum uel falsum, quaedam non” (*In Peryerm.*, I, 3 [Leon. 1*/1, p. 14, lin. 3-5]). “Duplex est significatio uocis, una que refertur ad intellectum compositum, alia autem que refertur ad intellectum simplicem, prima significatio competit

concepts are neither true nor false. They only become so when coupled to “is” or “is not” or to other verbs signifying some activity. This is so because through the action of these verbs the judgment of the intellect is expressed.⁷⁵ Simple concepts can form some imperfect utterances (*orationes*)⁷⁶ which are not propositions. They can also form some perfect utterances that form complete sentences, such as questions, requests, imperatives or exclamations. Such sentences, however, do not have the characteristic of the true or the false. Only propositions, which are signs of the second act of intellect which is of necessity either true or false, are also of necessity either true or false.⁷⁷ This is the very definition of a proposition: “a speech in which there is truth and falsity.”⁷⁸ A proposition itself is composed.⁷⁹ It must have at least two logically heterogeneous elements, such as a name and a verb: these simple words (*simplices dictiones*)⁸⁰ suffice to compose a proposition.⁸¹ Indeed, for St. Thomas the name and the verb are the most fundamental integral parts of a proposition.⁸² For him, the most general structure of

orationi, secunda uero competit parti orationis” (ibid., I, 6 [Leon. 1*/1, p. 32, lin. 35-39]). “Et cum voces sint signa intellectuum, similiter dicendum est de conceptionibus intellectus. Quae enim sunt simplices, non habent veritatem neque falsitatem, sed solum illae quae sunt complexae per affirmationem vel negationem” (*In Meta.*, VI, 4, n. 1224).

⁷⁵ “Cum solum circa compositionem et diuisionem sit ueritas et falsitas in intellectu, consequens est quod ipsa nomina et uerba, diuisim accepta, assimilantur intellectui qui est sine compositione et diuisione; sicut cum dico ‘homo’ uel ‘album’, si nichil aliud addatur: non enim adhuc est uerum uel falsum (set postea, quando additur esse uel non esse, fit uerum uel falsum)” (*In Peryerm.*, I, 3 [Leon. 1*/1, p. 17, lin. 203-211. Cf. p. 18, lin. 224-239 and p. 29, lin. 261-288]).

⁷⁶ “Oratio est uox significatiua ... cuius partium aliquid significatiuum est separatum” (ibid., I, 6 [Leon. 1*/1, p. 32, lin. 14 and 25-26]).

⁷⁷ “Perfecte orationis, quae complet sententiam, quinque sunt species, uidelicet enunciatua, deprecatua, inperatiua, interrogatiua, uocatiua. ... Harum autem orationum sola enunciatua est in qua inuenitur uerum uel falsum, quia ipsa sola absolute significat [intellectus] mentis conceptum, in quo est uerum uel falsum” (ibid., I, 7 [Leon. 1*/1, p. 37, lin. 57-60 and 68-71]).

⁷⁸ “Enunciatio est oratio in qua est uerum uel falsum” (ibid. [p. 36, lin. 39-40]).

⁷⁹ “Sunt uoces significatiuae, complexe uel incomplexae” (ibid., I, 2 [Leon. 1*/1, p. 9, lin. 5]).

⁸⁰ “Simplicium dictionum triplex potest esse consideratio: una quidem secundum quod absolute significant simplices intellectus, et sic earum consideratio pertinet ad librum Predicamentorum; alio modo secundum rationem prout sunt partes enunciationis, et sic determinatur de eis in hoc libro (et ideo traduntur sub ratione nominis et uerbi, de quorum ratione est quod significant aliquid cum tempore uel sine tempore et alia huiusmodi quae pertinent ad rationem dictionum secundum quod constituunt enunciationem); tercio modo considerantur secundum quod ex eis constituitur sillogisticus ordo, et sic determinatur de eis sub ratione terminorum in libro Priorum” (ibid., I, 1 [p. 6-7, lin. 83-97]).

⁸¹ “Potest autem ex solo nomine et uerbo simplex enunciatio fieri, non autem ex aliis orationis partibus sine his; ... sola nomina et uerba sunt principales orationis partes” (ibid. [p. 7, lin. 103-108]).

⁸² This clear logical standpoint was not obvious to everybody. The competing position, called two-name theory of predication, which was later to become the predominating one, consists in taking two terms (no matter whether they are names or verbs) joined with the copula as the fundamental structure of a proposition. Peter T. Geach in his essay “History of the corruptions of logic” (in *Logic Matters* [Berkeley and Los Angeles: University of California Press, 1972], p. 44-61) compares Aristotle, who

a proposition consists in subject and predicate: accordingly, in a very basic consideration a name functions as the subject in the proposition, while “the verb is always posited on the part of the predicate.”⁸³ This follows from the analysis of the distinct logical roles of names and verbs in proposition. Names (substantive and adjective) are vocal sounds signifying by convention, without time, no part of which is significant separately (i.e. they are syntactically simple).⁸⁴ Conceived in this way, it is proper to names “to signify something as existing *per se*” and whereby to function as a subject in the proposition.⁸⁵ The verb differs from the name in that that it signifies with time and is a sign of something being said of something else.⁸⁶ As such, the verb

wrote the very first treatise on formal logic, to biblical Adam who “began right, but soon wandered into a wrong path, with disastrous consequences for his posterity” (p. 44). The time of innocence epitomizes Aristotle’s early work, the *Peri hermeneias*, where *onoma* and *rhema* are fundamental components of the simplest propositions, and due to their logical nature, *rhema* are essentially predicative in propositions (Geach has defended this doctrine in many publications relating it to logical achievements of Frege and Russell). But in the *Analytica Priora* Aristotle changes his mind and begins to treat proposition as an attachment of one term (*horos*) to another term, without any essentially predicative term. This “marks a transition from the original name-and-predicable theory to a *two-term* theory” and it “was a disaster comparable only to the Fall of Adam” (p. 47). Aristotle made several stipulations to his two-term theory, used it cautiously and never identified terms with names, but some of his followers made a further step and passed from the two-term theory to the *two-name* theory. Geach quotes John Stuart Mill as the best known proponent of this theory in England (apart from Hobbes, for example). He adds: “The two-name theory has had a long history and much stronger representatives than Mill. It was the predominant logical theory of the Middle Ages, and was expounded by such great men as William of Ockham and Jean Buridan; though there was a minority party of logicians who insisted that naming and predicating were radically distinct, and this minority had the support of Aquinas” (p. 51-52). See also Geach’s “Nominalism” (in the same collection *Logic Matters*, p. 289-301), where he opposes Aquinas to Ockham in their coping with trinitarian and christological doctrines, and states that “Aquinas explicitly rejects the two-name theory of predication and truth” (p. 300). The two-name theory finally slid down to the contemporary *two-class* theory of categoricals with its doctrine of ‘distribution’ heavily criticized elsewhere by Geach for, among other things, confusing the relations of a name to the thing named and of a predicate to what it is true of: see his *Reference and Generality. An Examination of Some Medieval and Modern Theories* (Ithaca and London: Cornell University Press, 1980³). Henry B. Veatch says that the motivation of modern logicians to substitute classes for concepts has often been avowedly nominalistic (*Intentional Logic* [New Haven: Yale University Press, 1952], p. 116-117). Cf. also Louis-Marie Régis, *L’Opinion selon Aristote* (Paris-Ottawa: Vrin-Institute d’Etudes Médiévales, 1935), p. 129-130.

⁸³ “Verbum semper est ex parte praedicati” (*In Peryerm.*, I, 5 [Leon. 1*/1, p. 26, lin. 48]). “Enunciatio constituitur ex subiecto et praedicato” (*ibid.*, I, 9 [Leon. 1*/1, p. 47, lin. 115-116]).

⁸⁴ Cf. *In Peryerm.*, I, 4 (Leon. 1*/1, p. 20, lin. 33-46 and 79-117).

⁸⁵ Cf. *ibid.*, I, 5 (p. 26, lin. 52-72). “Nomen autem, prout a uerbo distinguitur, significat rem sub determinato modo, prout scilicet potest intelligi ut per se existens; unde nomina possunt subici et predicari” (*ibid.* [p. 29, lin. 250-255]). “Nomina et participia possunt poni ex parte subiecti et praedicati, set uerbum semper est ex parte praedicati” (*ibid.*, [p. 26, lin. 46-48]). “Aquinas distinguished between a general term that is taken (*tenetur*) *materially* and one that is taken *formally*. The term ‘fish’, say, taken materially is a subject of predication and relates to the objects (*supposita*) called ‘fish’ – e.g. in the sentence ‘A fish swims in the sea’; but the same term taken formally or predicatively relates not to individual fishes – if I say ‘A dolphin is not a fish’, my proposition relates to no individual fish – but rather to the *nature* of fish” (Geach, *Reference and Generality*, p. 201: he refers here to *STh*, I, 13, 12 and 29, 4 ad 1).

⁸⁶ Cf. *In Peryerm.*, I, 5 (Leon. 1*/1, p. 26, lin. 42-48 and 85-105).

on the one hand introduces a composition and is the principal, formal part of the proposition,⁸⁷ and on the other hand it signifies an action or passion.⁸⁸ The action signified by the verb functioning as the predicate is signified in the mode of an action, i.e. as it is proceeding from a substance and inhering in the substance as in its subject. (This mode is opposed to both the signification *per se* in abstraction and the signification of the very process or inherence as a certain thing.)⁸⁹ Therefore, “the subject of an enunciation signifies as *that in which something inheres*,” whereas the nature of a predicate is to signify as *that which inheres*.⁹⁰ Accordingly, subject and predicate terms have clearly different functions in a proposition: a subject relates to a *suppositum*, while a predicate relates to a form or nature which inheres in a *suppositum*. Hence, since judgment is essentially a comparison of apprehended natures, the proposition appears as the relation constituted between the natures, the one signified as the subject and the other as the predicate. From this emphasis on the “inhering” of the significatum of the predicate in the *suppositum*, this doctrine is called the “inherence theory of predication.”⁹¹

⁸⁷ “Verbum est nota eorum que de altero predicantur, predicatum autem est principalior pars enunciationis, eo quod est pars formalis et completiva ipsius (unde uocatur apud Grecos propositio categorica, id est predicativa), denominatio autem fit a forma, que dat speciem rei; et ideo potius fecit mentionem de uerbo tanquam de parte principaliori et formaliori. ... in omni enunciatione oportet esse uerbum, quod importat compositionem quam non est intelligere sine compositis, ... nomen autem non importat compositionem” (ibid., I, 8 [p. 41, lin. 109-116.130-134]).

⁸⁸ “Proprium nominis est ut significet rem aliquam quasi per se existentem, ... proprium autem verbi est, ut significet actionem vel passionem” (ibid., I, 5 [p. 26, lin. 56-58]). “Cum enim uerbum proprie sit quod significat agere uel pati, hoc est proprie uerbum quod significat agere uel pati in actu, quod est agere uel pati simpliciter” (ibid. [p. 28, lin. 206-209]).

⁸⁹ “Proprium autem verbi est, ut significet actionem vel passionem. Potest autem actio significari tripliciter: ... alio modo, per modum actionis, ut scilicet est egrediens a substantia et inherens ei ut subiecto, et sic significatur per uerba aliorum modorum, que attribuuntur personis” (ibid. [p. 26, lin. 58-66]).

⁹⁰ “Notandum est quod, quia subiectum enunciationis significatur ut cui inheret aliquid, cum uerbum significet actionem per modum actionis, de cuius ratione est ut inhereat, semper ponitur ex parte predicati, nunquam autem ex parte subiecti, nisi sumatur in ui nominis, ut dictum est. Dicitur ergo uerbum *semper esse nota eorum que de altero dicuntur*, tum quia uerbum semper significat id quod predicatur, tum quia in omni predicatione oportet esse uerbum, eo quod uerbum importat compositionem, qua predicatum componitur subiecto” (ibid. [p. 27, lin. 108-119]).

⁹¹ This phrasing appears in writings of some medievalists, e.g. Lambertus Marie de Rijk, “Introduction” to his edition of *Dialectica* by Abelard, (Assen: Van Gorcum, 1956), p. 37-38; Desmond Paul Henry, *Medieval Logic and Metaphysics. A Modern Introduction* (London: Hutchinson University Library, 1972) (cf. also John Trentman’s note: “Leśniewski’s Ontology and some Medieval Logicians,” *Notre Dame Journal of Formal Logic* 7 (1966): 361-364); and especially Gyula Klima, “Existence and Reference...”; idem, “Ockham’s Semantics and Metaphysics of the Categories,” in *The Cambridge Companion to Ockham*, edited by P. V. Spade (Cambridge University Press, 1999), p. 118-142; idem, “Buridan’s Logic and the Ontology of Modes,” in *Medieval Analyses in Language and Cognition*, edited by S. Ebbesen (Copenhagen: The Royal Danish Academy of Sciences and Letters, 1999), p. 473-495; and idem, “The Changing Role of *Entia Rationis*.” Klima often presents the inherence

Both the subject and the predicate signify *per modum compositionis et divisionis* when joined together to constitute a proposition. Separately they do not signify in this way. To take only the most general name and verb as examples, neither the name “being” nor the verb “to be” or “is” signify whether *something exists or not* if taken separately – if they do not signify on their own the existence of something, no other name or verb will do so. “Being” signifies *that which exists (quod est)*, but principally it signifies a *thing* that has existence. Also “to be” or “is” as said by itself does not signify whether *something exists*.⁹² St. Thomas notes, that although it signifies existence, as a sign of composition it is unintelligible without joining the extremes of composition.⁹³

theory of predication as proper to the *via antiqua* in medieval philosophy which is usually characterized by the label “moderate realism,” and juxtaposes it with the two-name theory, called also identity theory of predication which was proper to the *via moderna*, characterized by “nominalism.”

⁹² “Ideo autem dicit quod hoc uerbum ‘est’ consignificat compositionem, quia non principaliter eam significat, set ex consequenti: significat enim id quod primo cadit in intellectu per modum actualitatis absolute; nam ‘est’ simpliciter dictum significat esse actu, et ideo significat per modum uerbi. Quia uero actualitas, quam principaliter significat hoc uerbum ‘est’, est communiter actualitas omnis forme uel actus substantialis vel accidentalis, inde est quod, cum uolumus significare quamcunque formam uel actum actualiter inesse alicui subiecto, significamus illud per hoc uerbum ‘est’, simpliciter quidem secundum presens tempus, secundum quid autem secundum alia tempora; et ideo ex consequenti hoc uerbum ‘est’ significat compositionem” (*In Peryerm.*, I, 5 [Leon. 1*/1, p. 31, lin. 391-407]).

⁹³ “Compositio in qua consistit ueritas et falsitas non potest intelligi nisi secundum quod innectit extrema compositionis” (ibid. [lin. 373-376]). Geach writes about Aristotle but to some degree these words apply also to Aquinas: “Aristotle neither had nor needed any theory of the copula; a proposition just consisted of a subject and a predicate” (“History,” p. 55). Cf. also his *Reference and Generality*, especially p. 59-62. And so the copula is considered by Aquinas simply as the predicate or part of the predicate, and it signifies either the actual existence/non-existence of the suppositum or the existence/non-existence of the significate of the predicate *in* the suppositum, according to the determination of the nature of this significate. Thus the verb “to be” or “is,” as it functions in proposition, is not only a syncategorematic particle joining two terms but retains its proper signification of actual existence. In other words, in a proposition the verb “to be” is used to assert the actuality of the suppositum of the subject in respect of what is signified in it by the predicate (cf. Klima, “Aquinas’ Theory of the Copula”). Klima, quoting an interesting discussion of Kant’s influence on Frege’s ideas on existence (Leila Haaparanta, *Frege’s Doctrine of Being*, Acta Philosophica Fennica, vol. 30, [Helsinki, 1985], p. 128-144; and idem, “On Frege’s Concept of Being,” in *The Logic of Being. Historical Studies*, edited by Hintikka Jaakko and Knuttila Simo [Dordrecht: Reidel Publishing Co., 1986], p. 269-289), says that “in mathematical logic, where there is no need of, indeed, no place for, a distinction between actual and non-actual elements of the universe of discourse, the notion of existence could successfully be analyzed in terms of particular, or existential quantification. (Such and such a number, set, function etc. exists, if and only if some number, set, function etc. is such and such.) But this analysis, backed up by the Kantian tradition (‘existence is not a real predicate’) on the one hand, and by the amazing successes of mathematical logic on the other, led to an overall identification of the two notions.” After that he adds: “The situation however, unavoidably led to certain ‘anomalies’ in the logical analysis of non-extensional contexts” (In the note, “for an imposing list of these ‘anomalies’ and an abundance of ‘epicycles’, so to speak, ‘to save the phenomena’,” he refers to Christopher John Fards Williams, *What Is Existence?* [New York: Oxford University Press, 1981]) – Klima, *Ars Artium*, p. 105.

Geach explains that “For the two-name theory, the copula has to be a copula of identity. For, in its pure form, the two-name theory says that an affirmative proposition is true because the subject and predicate terms name one and the same thing” (“History,” 53). This is why the two-name theory of predication is called by others also “the identity theory of predication”. Aquinas, distinguishing substantive names from adjective names, recognizes the possibility of predicating *per identitatem* or

Among propositions there are affirmations and negations (they constitute the subjective parts of the proposition). Affirmation is *vox significativa de eo quod est* and negation is *vox significativa de eo quod non est*. Aquinas warns us that we should refer this *quod est* and *quod non est* not only to the existence or nonexistence of a subject (“is” in function of the predicate) but also to the fact that the thing signified by the predicate is in the thing signified by the subject (“is” as a part of the predicate, i.e. as copula).⁹⁴ The intellect grasps any composition as a whole, a unity, which expresses the actuality of some form signified by the predicate as inhering (in the case of affirmation) or as not inhering (in the case of negation) in the thing supposed for by the subject.⁹⁵ The inherence of something in something, signified in the proposition, expresses the composition attained through the second act of the intellect, that is, the intellectual judgment that is necessarily either true or false. Thus, this composition is not in things, but in the mind.⁹⁶ In relation to the basic structure of extramental being, in the intellect’s

propter identitatem rei, because substantive names “significant non tantum formam, sed etiam suppositum formae, unde possunt praedicari ratione utriusque; et quando praedicantur ratione suppositi, dicitur praedicatio *per identitatem*; quando autem ratione formae, dicitur *per denominationem*, sive *informationem*: et haec est magis propria praedicatio, quia termini in praedicato tenentur formaliter. Adjectiva autem tantum significant formam; et ideo non possunt praedicari, nisi per informationem” (*Super III Sent.*, 5, 3, 3 expos.). Cf. *Super I Sent.*, 9, 1, 2 sol.; *Super III Sent.*, 7, 1, 1 sol.; *STh*, I, 13, 12; 16, 7 ad 4; 39, 3 c.; 5 ad 5; 6 c. and ad 2; *De pot.*, 9, 6 c. Aquinas also takes for granted that materially the subject and the predicate refer to the same thing (e.g. *In Meta.*, V, 11, n. 908), but this is not a sufficient account for the veracity of predication. We are asserting the identity of two terms only in certain peculiar cases and such cases are not properly cases of predication at all. Cf. Herbert McCabe, “The Structure of the Judgment,” *The Thomist* 19 (1956): 232-238.

Looking for reasons for this long-standing preference of the identity theory over the inherence theory, Klima says that the identity theory of predication was used by Ockham to carry out his metaphysical program, called “nominalist reduction”. See Gyula Klima, “The Square of Opposition, Common Personal Supposition and the Identity Theory of Predication within Quantification Theory” (as Essay II) in *Ars Artium*, p. 18-43. In Klima’s words: “Because it was this theory, namely the identity (or two-name) theory, which, unlike the then concurrent inherence theory, provided him with the possibility of reducing the categories of entities admitted by him in his ontology to two, namely to that of substance and that of quality. For, according to the inherence theory the function of the predicate is to signify particular forms, inhering in their subjects, and what makes a predication true is the actual inherence (*inesse*) of the form signified by the predicate in the thing supposed for by the subject. So, e.g., the proposition ‘Socrates is white’ is true, if and only if the whiteness of Socrates exists, or, the same expressed in the ‘material mode of speech’, Socrates is white by his whiteness” (p. 39-40).

⁹⁴ “Non est autem intelligendum quod hoc quod dixit: ‘quod est’ et ‘quod non est’ sit referendum ad solam existenciam uel non existenciam subiecti, set ad hoc quod res significata per predicatum insit uel non insit rei significatae per subiectum” (*In Peryerm.*, I, 9 [Leon. 1*/1, p. 47, lin. 63-68]).

⁹⁵ “Dicitur autem hic affirmatio compositio, quia significat praedicatum inesse subiecto. Negatio vero dicitur hic divisio, quia significat praedicatum a subiecto removeri” (*In Meta.*, VI, 4, n. 1223). “Compositione enim et divisione opus non esset si in hoc ipso quod de aliquo apprehenderetur quid est, haberetur quid ei inesset vel non inesset” (*CG*, I, 58, n. 487).

⁹⁶ Cf. Régis, *Epistemology*, p. 317-334.

composition the subject is taken materially in a proposition, whereas the predicate is taken formally. Just as in extramental material being there is no form without matter nor matter without form, so too for this kind of being of reason: if there is no composition, there is no being of reason which is a proposition.

Nevertheless, a judgment is true only if the intellect *adequatur ad rem extra animam*, i.e. only if the intellect conforms in its activity to what really is. This is the very nature of the proper operation of the intellect: to conform to things. What really is is said to be a cause of the truth of the intellect.⁹⁷ Therefore, also the truth of an affirmative predication consists in a conformity: the predication is true when the form existing in the mind and signified by the predicate corresponds to the form in the thing as it is represented in the soul by means of phantasms. This correspondence means that in a proposition the form, signified (ultimately) by a common term in the position of the predicate, is actual in the thing signified (ultimately) by the term in the position of the subject. The proposition, therefore, is said to be true only if it expresses what actually is in things according to a given supposition. To put it differently, a predicate is true of a thing if and only if what the predicate signifies in respect of the thing actually exists or inheres in this thing.⁹⁸ To signify this actuality in our minds we need a composition of

⁹⁷ "Dicitur autem in enunciatione esse uerum uel falsum sicut in signo intellectus ueri uel falsi; set sicut in subiecto est uerum uel falsum in mente, ut dicitur in VI Metaphisice, in re autem sicut in causa, quia, ut dicitur in libro Predicamentorum, eo quod res est uel non est, dicitur oratio uera uel falsa" (*In Peryerm.*, I, 7 [Leon. 1*/1, p. 36, lin. 41-47]). "Veritas nostrae enunciationis non est causa existencie rerum, set potius e conuerso" (ibid., I, 14 [p. 71, lin. 68-70]). "Oportet enim veritatem et falsitatem quae est in oratione vel opinione, reduci ad dispositionem rei sicut ad causam. Cum autem intellectus compositionem format accipit duo, quorum unum se habet ut formale respectu alterius: unde accipit id ut in alio existens, propter quod praedicata tenentur formaliter. Et ideo, si talis operatio intellectus ad rem debeat reduci sicut ad causam, oportet quod in compositis substantiis ipsa compositio formae ad materiam, aut eius quod se habet per modum formae et materiae, vel etiam compositio accidentis ad subiectum, respondeat quasi fundamentum et causa veritatis, compositioni, quam intellectus interius format et exprimit voce" (*In Meta.*, IX, 11, n. 1898).

⁹⁸ "False judgments represent a failure of the mind, not of its objects. It is mind which stands in need of correction. ... The relationship of correspondence or of lack of correspondence which holds between the mind and objects is given expression in judgments, but it is not judgments themselves which correspond to objects or indeed to anything else. ... The commonest candidate, in modern versions of what is all too often taken to be *the* correspondence theory of truth, for that which corresponds to a judgment in this way is a fact. But facts, like telescopes and wigs for gentlemen, were a seventeenth-century invention. In the sixteenth century and earlier 'fact' in English was usually a rendering of the Latin 'factum', a deed, an action, and sometimes in Scholastic Latin an event or an occasion. It was only in the seventeenth century that 'fact' was first used in the way in which later philosophers such as Russell, Wittgenstein, and Ramsey were to use it. It is of course and always was harmless, philosophically and otherwise, to use the word 'fact' of what a judgments states. What is and was not harmless, but highly misleading, was to conceive of a realm of facts independent of judgments or of any other form of linguistic expression, so that judgments or statements or sentences could be paired off with facts, truth or falsity being the alleged relationship between such paired items" (MacIntyre, *Whose Justice?*, p. 357-358).

what we apprehend (that is of *what* a thing is in itself or *what* is its essential or accidental property) with the fact that it *is*, or is *actual*, or *exists* according to a given likeness that necessarily refers us to the thing of which it is a likeness.⁹⁹

3.5. Ways of predication

In order to judge properly whether a proposition is true or false it is necessary to take into account what a subject of a proposition supposits for, since a name which functions as a subject can supposit for a universal nature or a singular.¹⁰⁰ Moreover, something can be enunciated about a universal in four ways. In two ways a universal is considered as existing in the intellect and separated from singulars. First, to such a universal we can attribute what pertains only to the operation of the intellect: this is already a familiar attribution of logical intention to a nature understood (e.g. “man is a species”). Secondly, to a universal as separated from singulars we can attribute something which

does not belong to the act of the intellect but to the being that the nature apprehended has in things outside of the soul; for example, when we say “man is the noblest of creatures.” For this truly belongs to human nature as it is in singulars, since any single man is more noble than all irrational creatures; yet all singular men are not one man outside of the mind, but only in the apprehension of the intellect; and the predicate is attributed to it in this way, i.e., as to one thing.¹⁰¹

⁹⁹ “To imagine that the intellect checks with exterior reality in order to see whether or not its judgment conforms with the existential mode of things is not only puerile but absurd, for we know only the reality that exists within us and nothing else. ... Knowledge of truth does not consist in going from the world of thought to that of being, but in being united with the world of being in the effects that its physical and intentional activity has caused or actually causes in our soul. Because being makes us to be itself, we can refer to the likenesses we have of it to see whether or not the composition constructed by judgment corresponds with what is” (Régis, *Epistemology*, p. 357).

¹⁰⁰ “[Aristotiles] non diuisit nomina in uniuersale et particulare, set res; et ideo intelligendum est quod uniuersale dicitur quando non solum nomen potest de pluribus predicari, set id quod significatur per nomen est natum in pluribus inueniri” (*In Peryerm.*, I, 10 [Leon. 1*/1, p. 51, lin. 109-114]).

¹⁰¹ “De uniuersali aliquid enunciatum quatuor modis. Nam uniuersale potest uno modo considerari quasi separatum a singularibus, ... secundum esse quod habet in intellectu; et sic potest ei aliquid attribui dupliciter. – Quandoque enim attribuitur ei sic considerato aliquid quod pertinet ad solam actionem intellectus, ut si dicatur quod homo est predicabile de multis aut uniuersale aut genus aut species; huiusmodi enim intentiones format intellectus attribuens eas nature intellecte, secundum quod comparat ipsam ad res que sunt extra animam. – Quandoque uero attribuitur aliquid uniuersali sic considerato, quod scilicet apprehenditur ab intellectu ut unum, tamen id quod attribuitur ei non pertinet ad actum intellectus, set ad esse quod habet natura apprehensa in rebus que sunt extra animam, puta si dicatur quod homo est dignissima creaturarum: hoc enim conuenit nature humane etiam secundum quod est in singularibus, nam quilibet homo singularis est dignior omnibus irrationalibus creaturis; set tamen omnes homines singulares non sunt unus extra animam, set solum in acceptione intellectus; et per hunc modum attribuitur sibi predicatum, scilicet ut uni rei” (ibid. [lin. 130-156]).

Then, there are two ways of attributing something to a universal as existing in singulars. Thus, in the third way we attribute to a universal something that concerns the universal nature itself, namely, when we attribute “something belonging to its essence or to essential principles, as in ‘man is an animal,’ or ‘man is risible.’” Finally, in the fourth way, an attribution to a universal is carried out in view of singulars in which the universal has its real existence, e.g. “when we attribute something to the universal that pertains to the action of the individual, as in ‘man walks.’”¹⁰²

Now, to a singular we can attribute something in three ways: as it is in the intellect (e.g. “Socrates is a singular”); according to its common nature (e.g. “Socrates is an animal”); and lastly, according to itself (e.g. “Socrates walks”).¹⁰³

These divisions enable us to discern the ways in which a proposition may be true or false, according to the various modes of predication. As we shall see, these divisions also help us in the domain of moral science, as when we try to predicate human nature in relation to particular characteristics, singular human beings, or singular human actions.¹⁰⁴

* * *

Since there are three kinds of logical intentions (the intention of 1. universality, 2. attribution or predication, and 3. consequence), in this chapter we embarked on a

¹⁰² “Alio autem modo attribuitur uniuersali prout est in singularibus; et hoc dupliciter. – Quandoque quidem ratione ipsius nature uniuersalis, puta cum attribuitur ei aliquid quod ad essenciam eius pertinet uel consequitur principia essencia, ut cum dico: ‘Homo est animal’, uel: ‘Homo est risibile’. – Quandoque autem attribuitur ei aliquid ratione singularis in quo inuenitur, puta cum attribuitur ei aliquid accidens indiuiduale, ut cum dicitur: ‘Homo ambulat’” (ibid. [lin. 157-166]).

¹⁰³ “Singulari autem attribuitur aliquid tripliciter: uno modo secundum quod cadit in apprehensione, ut cum dicitur: ‘Sortes est singulare’, uel ‘predicabile de uno solo’; quandoque autem ratione nature communis, ut cum dicitur: ‘Sortes est animal’; quandoque autem ratione sui ipsius, ut cum dicitur: ‘Sortes ambulat’. Et totidem etiam modis negationes uariantur, quia omne quod contingit affirmare, contingit negare” (ibid. [lin. 167-176]).

¹⁰⁴ See for example how Aquinas applies these distinctions defining a person: “Respondeo dicendum, quod, ut supra dictum est, hoc nomen ‘persona’ secundum suam communitatem acceptum, non est nomen intentionis, sicut hoc nomen ‘singulare’, vel ‘generis’ et ‘speciei’; sed est nomen rei, cui accedit aliqua intentio, scilicet intentio particularis; et in natura determinata, scilicet intellectuali vel rationali. Et ideo in definitione personae ponuntur tria: scilicet genus illius rei, quod significatur nomine personae, dum dicitur ‘substantia’; et differentia per quam contrahitur ad naturam determinatam, in qua ponitur res, quae est persona, in hoc quod dicitur, ‘rationalis naturae’; et ponitur etiam aliquid pertinens ad intentionem illam, sub qua significat nomen personae rem suam; non enim significat substantiam rationalem absolute, sed secundum quod subintelligitur intentio particularis: et ideo additur ‘indiuia’” (*Super I Sent.*, 25, 1, 1 sol.).

brief study of the first two, in order to explain why we not only do not encounter any obstruction on the side of St. Thomas's logic, but just the opposite: we find very useful tools to justify the transition from "is" to "ought."

We briefly saw how effectively Aquinas undermines the main skeptical premise in his analysis of a simple cognitive act and how he deals with the problem of cognitive representation within the framework of formal causality. This point, together with his genuine theory of signification, constitutes, in my opinion, one of the deepest layers of the justification of the transition from "is" to "ought," if coupled with St. Thomas's conception of science and with what will be said in the second part of this work. The theory of signification (with its integral part on supposition) also shapes the theory of predication, which treats the second kind of logical intentions as resulting from the second act of the intellect. Having explained in what the inherence theory of predication consists (as opposed to the identity theory of predication), we sought for the verificational factor of propositions. Consequently, we learned that for Aquinas we can properly ascribe the character of truth to indicative sentences because such predications signify the relationship of adequacy between the second act of the intellect and things. Imperative sentences, however, express the tendency of will and thus no character of truth can be ascribed to them, unless only remotely, namely insofar as the tendency of will is measured by the true judgment of the intellect. We also learned that what verifies propositions is the actuality of form signified by the predicate as inhering in the thing signified by the subject. Such theories of signification and predication allow St. Thomas to distinguish seven ways of predication (four ways of predication of a universal and three ways of predication of a singular) which are helpful in judging the veracity of sentences. It makes a great difference, of import for moral or normative judgments, when there is a possibility to predicate something of a universal nature as existing in singular things.

4. Scientific Methodology or Ways of Explanation

The examination of the principles of human knowing conducted in the previous chapter has prepared us for an analysis of St. Thomas's general scientific methodology, or what we could call the ways of reliable explanation. This analysis becomes necessary when we consider that although Aquinas calls all branches of philosophy and theology a science, his notion of science is considerably different from what today we usually mean by the word. Moreover, his theory of science is of key importance in our attempt to give a justification of the transition from "is" to "ought" in his writings. The search for this justification presupposes that we first recognize what Aquinas means when he speaks of sciences that treat of the "is" and those that treat of the "ought." Although today we would rather place these questions within the scope of epistemology and the philosophy of science, for Aquinas they belong to the domain of logic, considering the third logical intention.

In this chapter I will not offer an exhaustive presentation of Aquinas's scientific method. Instead, I will only consider some aspects that will help settle the problem of this study. First, I will say something about the nature of reason as the third operation of the human mind. Next, I will explain briefly what the term *scientia* means for St. Thomas and develop the theme of perfect explanation through causes. Within this discussion I will also include some remarks about the syllogism as the fruit of reason's operation, and the notion of inference and conclusion. Then, I will enumerate and briefly present the conditions for premises that allow syllogisms to be used in a proper demonstration. Finally, I will deal briefly with the medium of demonstration, the role of

real definition, the kinds of definitions in relation to demonstration, and first indemonstrable principles.

4.1. Reason, learning, inference

When we are talking about explanation, we are concerned with the third kind of logical intention, the intention of consequence, which was mentioned above in section 2.2. It is the fruit of the third act of the human mind, properly belonging to *ratio* – reason – which as an act is called *operatio ratiocinandi*, or discursive reasoning. The proper feature of reason is the mind's passing from one thing to another.¹

In our knowledge there are two kinds of discursive processes. One is according to succession only, as when we have actually understood anything, we turn ourselves to understand something else. The second kind of discursive process occurs according to causality, as when through principles we arrive at knowledge of conclusions. ... This second kind of discursive process presupposes the first, for whoever proceeds from principles to conclusions does not consider both at once ... because in this discursive process we proceed from the known to the unknown. Hence it is manifest that when the first is known, the second is still unknown; and thus the second is known not in the first but from the first.²

Due to the weakness of human intellectual power, we do not always grasp at once what something precisely is. We do not grasp every truth at once in simple apprehension, as do God and the angels.³ Human apprehension happens, for example, as in the way

¹ “Tertia operatio, scilicet ratiocinandi, secundum quod ratio procedit a notis ad inquisitionem ignotorum” (*In Peryerm.*, I, 1 [Leon. 1*/1, p. 5, lin. 6-8]). “Tercius uero actus rationis est secundum id quod est proprium rationis, scilicet discurrere de uno in aliud, ut per id quod est notum deueniat in cognitionem ignoti” (*In Poster.*, I, 1 [Leon. 1*/2, p. 4-5, lin. 46-49]). “Cognitio discursiua est cognoscere unum cognitum per aliud cognitum absolute” (*Quodl.*, XI, 2 ad 2). “Ratiocinari autem proprie est devenire ex uno in cognitionem alterius” (*STh*, I, 83, 4 c.).

² “In scientia enim nostra duplex est discursus. Unus secundum successionem tantum: sicut cum, postquam intelligimus aliquid in actu, convertimus nos ad intelligendum aliud. Alius discursus est secundum causalitatem: sicut cum per principia pervenimus in cognitionem conclusionum. ... secundus discursus praesupponit primum: procedentes enim a principiis ad conclusiones, non simul utrumque considerant. ... quia discursus talis est procedentis de noto ad ignotum. Unde manifestum est quod, quando cognoscitur primum, adhuc ignoratur secundum. Et sic secundum non cognoscitur in primo, sed ex primo. Terminus vero discursus est, quando secundum videtur in primo, resolutis effectibus in causas: et tunc cessat discursus” (*STh*, I, 14, 7 c.). Cf. *STh*, I, 58, 3; *De ver.*, 18, 2 ad 1; 15, 1.

³ “Ratio dicit quamdam obumbrationem intellectualis naturae, ut dicit Isaac quod ratio oritur in umbra intelligentiae. Quod patet ex hoc quod statim non offertur sibi veritas, sed per inquisitionem discurrendo invenit” (*Super I Sent.*, 25, 1, 1 ad 4). “Ratio est intellectus quasi obumbratus” (*Super II Sent.*, 7, 1, 2 sol.). “Ex imperfectione intellectualis naturae provenit ratiocinativa cognitio” (*CG*, I, 57, n. 481). “Ratiocinari autem est procedere de uno intellecto ad aliud, ad veritatem intelligibilem cognoscendam” (*STh*, I, 79, 8 c.).

a child properly identifies a dog and so grasps something of the essence of dog. Usually, this apprehension is not a precise knowledge according to the essential definition of dog. In a similar fashion does our knowledge of being arise: in its first instance our knowledge is vague and imperfect. Though vague and imperfect, this knowledge suffices to support human living. In other words, it suffices that from this vague knowledge we form in the second act of the intellect a true and basic proposition that something either is or is not,⁴ and at the same time we conclude that it is impossible that something both be and not be.⁵ Still, we have not yet arrived at a perfect understanding of what being is. To use another example, when we understand what whole and part is, we can form at once a true proposition that a whole is greater than its part. Yet to explain what whole is and what part is, and how we distinguish a whole from a union or unity, is more difficult.⁶ These examples show that our simple understanding does not exhaust the intelligibility of something that is grasped. It usually takes several acts of our reason before we distinguish specific characteristics, differentiate them, work out the implications of our first understanding, and finally form a complete definition. Moreover, some truths are difficult for us to grasp, and therefore they require some process of reasoning, as for example when we try to understand clearly something like a moral virtue. Since moral virtues are not directly experienced sensorily, their essences are less evident than the essences of material beings.⁷ When we recognize that we have some confused knowledge about something, we ask questions in order to know it better. In so doing, we seek to find the causes or reasons of the object that makes us wonder. Knowledge of these causes leads us to acquiring a more specified knowledge of that object.⁸

As we said in section 1.1, we wonder about those things that we do not know. Subsequently, we ask questions in order to gain some knowledge against what we see as undesirable, embarrassing, or troublesome ignorance. In our everyday life it often

⁴ Cf. *In Poster.*, I, 5 (Leon. 1*/2, p. 25, lin. 116-130) and 19 (p. 70-71, lin. 18-53); *In Meta.*, IV, 6, n. 606; *In Meta.*, XI, 5, n. 2211-2212; *In Phys.*, I, 6, n. 7-8.

⁵ Cf. *In Meta.*, III, 5, n. 387, 392; IV, 6, n. 600, 603, 605-606.

⁶ Cf. *STh*, I-II, 94, 2 c.; 47, 6 c.; I, 17, 3 ad 2; 62, 8 ad 2; 84, 3 ad 3; *In Poster.*, I, 43 (Leon. 1*/2, p. 164-165, lin. 247-280, 299-323); *In Meta.*, IV, 5, n. 595.

⁷ “Ratiocinatur homo discurrendo et inquirendo lumine intellectuali per continuum et tempus obumbrato, ex hoc quod cognitionem a sensu et imagine accipit” (*Super II Sent.*, 3, 1, 2 sol.).

⁸ Cf. John A. Oesterle, “The Significance of the Universal *ut nunc*,” in *The Dignity of Science: Studies in the Philosophy of Science*, edited by James A. Weisheipl (Washington, D.C.: The Thomist Press, 1961), p. 27-38.

suffices to have a reason that somehow explains an event or a thing. This explanatory reason is usually called by Aquinas a “cause.” In the word “because,” the English language has retained this notion of general explanatory reason as cause. In Aristotelian philosophy, the central issue in scientific methodology and ways of explanation is precisely the term “cause.”⁹ Although in contemporary philosophy cause and explanation are often viewed as two separated and hardly related topics, cause in Aquinas always affords an explanation, and a proper explanation always specifies cause or causes.¹⁰ According to Aristotle, quoted with complete approval by Aquinas, “we know something when we know its cause.”¹¹

Commenting on the text of Aristotle’s *Posterior Analytics* wherein the Philosopher treats of the four causes, St. Thomas refers the reader to the account contained in the second book of the *Physics* and the fifth book of the *Metaphysics*.¹² At first glance, it may seem strange that Aquinas talks about the four causes in a logical treatise and that he refers to other non-logical books for their proper understanding. Yet when we recall what Aquinas says about first and second intentions, his procedure becomes plainly understandable. Apart from what will be said about causes in this chapter, more will be said about them also in Chapter 6 where some topics from the realm of natural science will be treated. For the moment, let it suffice to say that causes are here taken as explanatory reasons, as answers to the questions provoked by our wonder.¹³

⁹ We can boldly say that without a proper understanding of this term we would understand very little of Aristotle or St. Thomas. Obviously, everybody knows somehow what a cause is; after all this is a commonly used term also in modern and contemporary philosophy. But it turns out that if we applied this modern and contemporary understanding of the term to the texts of Aristotle and Aquinas, very often these texts would be simply unintelligible or absurd.

¹⁰ Cf. Alasdair MacIntyre, *First Principles, Final Ends and Contemporary Philosophical Issues*, The Aquinas Lecture, 1990 (Milwaukee: Marquette University Press, 1995), p. 4; Mark Nowacki, “Whatever Comes to Be Has a Cause of Its Coming to Be: A Thomist Defense of the Principle of Sufficient Reason,” *The Thomist* 62 (1998): 291-302.

¹¹ “Quia tunc scimus cum causas cognoscimus” (*In Poster.*, I, 4 [Leon. 1*/2, p. 21, lin. 235-236]).

¹² “Quia scire opinamur cum sciamus causam, ut in I habitum est, demonstratio autem est sillogismus faciens scire, ita consequens est quod medium demonstrationis sit causa; sunt autem quatuor genera causarum, ut in II Phisicorum et in V Metaphisice plenius manifestatur” (*ibid.*, II, 9 [p. 206, lin. 13-19]).

¹³ “Admiramur enim aliquid cum, effectum videntes, causam ignoramus. Et quia causa una et eadem a quibusdam interdum est cognita et a quibusdam ignota, inde contingit quod videntium simul aliquem effectum, aliqui mirantur et aliqui non mirantur: astrologus enim non miratur videns eclipsim solis, quia cognoscit causam; ignarus autem huius scientiae necesse habet admirari, causam ignorans. Sic igitur est aliquid mirum quoad hunc, non autem quoad illum” (*CG*, III, 101, n. 2763). “Et illud desiderium est admirationis, et causat inquisitionem, ut dicitur in principio *Metaphys.* Puta si aliquis cognoscens eclipsim solis, considerat quod ex aliqua causa procedit, de qua, quia nescit quid sit,

Is this explanatory reason something new, something that we did not know before asking the question? For Aristotle, and for Aquinas, it was a vital question whether or not the knowledge of conclusions in reasoning amounts to the acquisition of some new knowledge, i.e., whether it is possible at all to learn something from what is already known. In other words, the question about the possibility of learning something new from what is already known is a question about the possibility of valid inference. In Plato's philosophy, learning understood as acquiring new knowledge from that which is already known was impossible. On the one hand, if something is known, there is no need to learn about it. On the other hand, if something is not known, there is no possibility of learning about it since the very subject, about which something is to be known, is precisely unknown. The Platonic doctrine of remembering was the remedy for this dilemma: the knowledge fully exists in us already as innate ideas imprinted in our souls, but to be conscious of this knowledge we need only to remove the obstacles from our memory.¹⁴ According to this account, we know not material things in themselves but rather ideas that already exist in us, in which ideas of material things somehow imperfectly participate.

Others apart from Plato attempted to respond to this dilemma. Some Sophists and nominalists of the Academy claimed that learning does not consist in the process of syllogizing but only in collecting totally new facts. Knowledge would be thus an aggregation of individual observations.¹⁵ Aristotle, followed by Aquinas, rejected both solutions and applied to the problem the ingenious doctrine of potency and act, which Aristotle fully presents in his *Physics* in the context of analysis of change in general. This doctrine is also useful in logic because a human being is a changing being: whenever he performs an act, he does it in time, as passing from some qualified potency to some qualified act. In the process of learning it is the same: one somehow knows and somehow does not know what one intends to know. Aquinas relates this position in the following way:

For learning is, properly speaking, the generation of science in someone. But that which is generated was not, prior to its generation, a being absolutely, but somehow a being and somehow non-being: for it was a being in potency, although actually non-being. And this is what being generated consists in, namely, in being converted from potency to act. In like fashion, that which a person learns was not previously known

admiratur, et admirando inquirat. Nec ista inquisitio quiescit quousque perveniat ad cognoscendum essentiam causae" (*STh*, I-II, 3, 8 c.).

¹⁴ Cf. *In Poster.*, I, 1 (Leon. 1*/2, p. 8, lin. 138-160) and 3 (p. 15, lin. 36-96).

¹⁵ Cf. *ibid.* (p. 16, lin. 85-96).

absolutely, as Plato preferred; but neither was it absolutely unknown, as they maintained whose answer was refuted above. Rather it was known in potency, i.e., virtually, in the pre-known universal principles; however, it was not actually known in the sense of specific knowledge. And this is what learning consists in, namely, in being brought from potential or virtual or universal knowledge to specific and actual knowledge.¹⁶

This is how we can know a conclusion before inferring it, without destroying the meaning of the inference. There is something known before knowing the conclusion. What is foreknown is not the conclusion itself but various propositions, which contain somehow the elements from which the reason forms the conclusion. Reasoning is a kind of change, a movement from the state of potency regarding some knowledge to the state of actual possession of this knowledge.¹⁷ Every change begins in a kind of immobility and ends up in a kind of immobility. In Aristotelian philosophy, the beginning of every reasoning consists in an act of understanding of something – this is the necessary basis for asking any question. The aim of reasoning is a better understanding of something previously understood only generally and indistinctly. Note that actual knowledge, called also specific (*propria*), is contrasted with potential or virtual or *universal* knowledge. This actual knowledge is said to come from pre-known universal principles. A random succession of acts of cognition which are unrelated is not properly speaking a reasoning. There should be a special relation in the succession for it to be a process of reasoning, a relation, namely, that leads to a conclusion and is the relation of consequence.¹⁸

A syllogism is a form of reasoning in which, certain things being stated, something other than what is stated follows from their being so.¹⁹ In other words, a syllogism is a concatenation of three propositions such that the third follows from the preceding two. Thus, syllogisms are artificial constructs of the human mind, in which

¹⁶ “Addiscere enim proprie est scientiam in aliquo generari; quod autem generatur, ante generationem non fuit omnino ens, set quodam modo ens et quodam modo non ens, ens quidem in potencia, non ens uero actu; et hoc est generari, reduci de potencia in actum. Vnde nec illud quod quis addiscit erat omnino prius notum, ut Plato posuit, nec omnino ignotum, ut secundum solutionem supra inprobatam ponebatur, set erat notum potencia siue uirtute in principiis precognitis uniuersalibus, ignotum autem actu secundum propriam cognitionem; et hoc est addiscere, reduci de cognitione potenciali siue uirtuali aut uniuersali in cognitionem propriam et actualem” (*In Poster.*, I, 1 [Leon. 1*/2, p. 16, lin. 127-140]).

¹⁷ “Docens causat scientiam in addiscente, reducendo ipsum de potentia in actum, sicut dicitur in VIII *Physic.*” (*STh*, I, 117, 1).

¹⁸ “Discurrere de uno in aliud innotescendi causa” (*Super IV Sent.*, 15, 4, 1, qc. 1 c.).

¹⁹ “[Syllogismus habet] tres terminos ex quibus formantur due propositiones concludentes tertiam” (*In Poster.*, I, 31 [Leon. 1*/2, p. 112, lin. 42-44]). “In syllogismo autem est triplex consideratio, secundum tres propositiones, ex quarum duabus tertia concluditur” (*Super II Sent.*, 24, 2, 4 sol.).

two propositions, or premises, are arranged in such way, that they entail a third proposition, called a conclusion.²⁰ A conclusion itself, taken separately, is a proposition, but as a part of a syllogism, it differs from any proposition by the logical relation of consequence. This relation has its subject in the conclusion, while its terms reside in the two propositions that precede and cause the conclusion. These two propositions are taken together as related to each other and are called the principles of a syllogism. A conclusion is constituted by a property (*passio*) attributed to or predicated of some subject. Such a conclusion is inferred from principles in which the property and the subject are contained along with a middle term.²¹

The propositions forming a syllogism consist, therefore, in three terms: 1) the subject of the conclusion; 2) the predicate of the conclusion; and 3) the middle term or medium, i.e., something that justifies why the predicate is joined to the subject in the conclusion.²² A syllogism is thus a kind of objective relation constituted by the third operation of reason.²³ If subject and predicate are taken separately their understanding brings no conclusion and no new knowledge. Thus, there should be a reason to join them and draw a conclusion. Yet it is possible that a person facing the principles, which de facto contain potentially the consequence leading to the conclusion, fails to see the conclusion.²⁴ In this case, one either does not understand principles or he does not grasp the force of the reasoning.²⁵

What is this force of the reasoning? It is precisely the causal relation perceived through the act of the intellect.²⁶ Premises are propositions, and as such are expressions

²⁰ “Omnis *sillogismus* probat *aliquid de aliquo per aliquod medium*” (*In Poster.*, II, 3 [Leon. 1*/2, p. 184, lin. 51-53]). Cf. *STh*, I-II, 90, 1 ad 2.

²¹ Cf. *In Poster.*, I, 2 (Leon. 1*/2, p. 10, lin. 17-27).

²² Cf. *ibid.*, I, 31 (p. 112, lin. 42-54); also 15 (p. 58, lin. 103-139) and 26 (p. 94, lin. 26-38).

²³ “In operibus rationis est considerare ipsum actum rationis, qui est intelligere et ratiocinari, et aliquid per huiusmodi actum constitutum. Quod quidem in speculativa ratione primo quidem est definitio; secundo, enuntiatio; tertio vero, syllogismus vel argumentatio” (*STh*, I-II, 90, 1 ad 2).

²⁴ “Principia vero demonstrationis possunt seorsum considerari absque hoc quod considerentur conclusiones. Possunt etiam considerari simul cum conclusionibus, prout principia in conclusiones deducuntur” (*STh*, I-II, 57, 2 ad 2).

²⁵ “Perfecta enim cognitio conclusionum duo exigit: scilicet principiorum intellectum et rationem ducentem principium in conclusiones. ... in ratiocinando deficiat, aut vim ratiocinationis non comprehendat” (*De ver.*, 14, 6 c.).

²⁶ “Cognitio principiorum est in conclusione sicut causa in causato, et e converso cognitio conclusionum etiam est in principiis sicut causatum in causa” (*Super III Sent.*, 28, 1, 6 sol.). “Causae conclusionis in demonstrabilibus sunt praemissae” (*In Meta.*, V, 6, n. 838). “Cognitio horum principiorum est causa cognitionis conclusionum” (*In Poster.*, I, 7 [Leon. 1*/2, p. 31, lin. 95-96]). “In omni scientia discursiva

of beings of reason, existing only by virtue of the composing and dividing operation of the intellect. Propositions themselves do not formulate a new proposition and do not bring a new knowledge. They are, as it were, instruments through which the agent intellect manifests or actualizes what is contained in premises. In other words, the agent intellect draws the conclusion, which is a new comparison based upon a middle term that is the cause of joining predicates with the subjects contained in premises.²⁷ It sometimes happens that drawing a conclusion is an arbitrary decision without any sufficient foundation, but in this case we are talking about a hasty, forced conclusion, which is an error in reasoning. Nonetheless, reason can also correctly, according to the truth, discover this causal relation between two premises, and can subsequently form a true conclusion.²⁸ In the next section I will invoke several strict conditions for premises elaborated by Aristotle and adopted by Aquinas.

Obviously, a true conclusion is caused by premises only when one compares not empty forms of the mind, but rather the apprehended natures of things, which are related somehow to each other, or some intentions seized from these natures. Because they are recognized as natures of things or something that follows from such natures, the relation of truth arises. This relation between natures existing in the mind is grasped by the intellect through the middle term contained in premises, and precisely in this consists the third kind of logical intentions enumerated above (section 2.2), the intention of consequence.²⁹ It is a relation of propositions remotely founded on reality, as was

oportet aliquid esse causatum: nam principia sunt quodammodo causa efficiens conclusionis; unde et demonstratio dicitur syllogismus faciens scire” (CG, I, 57, n. 477).

²⁷ Cf. *In Poster.*, II, 20 (Leon. 1*/2, p. 246, lin. 223-235). “Prima autem principia demonstrationis ... sunt in nobis quasi instrumenta intellectus agentis” (*De ver.*, 10, 13 c.). “Intellectus in actu principiorum non sufficit ad reducendum intellectum possibilem de potentia in actum sine intellectu agente. Set in hac reductione intellectus agens se habet sicut artifex, et principia demonstrationis sicut instrumenta” (*De anima*, 4 ad 6).

²⁸ Cf. *In Eth.*, I, 1 (Leon. 47/1, p. 4, lin. 32-35). “Ratio nostra componit principia in ordine ad conclusionem” (*De ver.*, 15, 1 ad 5).

²⁹ It is true that without the agent intellect it would be difficult to explain how a conclusion follows from premises. If the intellect cannot act on its own according to what is perceived, that is to say, if the intellect is inert, then no conclusion follows, because no instrument does the job by itself, without being used by an agent. Again, the fact that for somebody, even for a philosopher, no conclusion follows from some two propositions, does not prove that this conclusion does not follow at all.

The existence of the agent intellect follows from the fact that the human being is a changing being, not yet fully actualized: “*In omni natura* que est quandoque in potencia et quandoque in actu oportet ponere *aliquid* quod est sicut *materia in unoquoque genere* (quod scilicet est in *potencia* ad *omnia* que sunt illius generis), et aliud quod est sicut causa agens et *factivum*, quod ita se habet in *faciendo omnia* sicut *ars ad materiam*; set anima secundum partem intellectivam quandoque est in potencia et quandoque in actu; *necesse* est igitur in *anima* intellectiva *esse has differentias*, ut scilicet sit unus *intellectus in quo* possint *omnia* intelligibilia fieri (et hic est intellectus possibilis, de quo supra dictum

said about all logical intentions.³⁰ There would be no consequence if we took concepts without their essential characteristic of referring necessarily to really existing things, that is to say, if we took concepts without intentions. If we took concepts as only accidentally representing extramental things, no necessary consequence would follow from any operation of reason. As we have seen, a consideration of such concepts is possible also in Aquinas's account, namely, when we create concepts which are pure fiction – nothing necessarily follows from such false concepts or from phrases built up from them. This is why it is extremely important to grasp properly the mechanisms of cognition, along with the mode of representing, and thus distinguish between the kinds of concepts by their relation to extramental reality.

4.2. *The role of material logic, conditions for demonstrative premises*

As Aquinas observed, Aristotle devoted several logical books (see the division of logic in section 2.1) to the fruit of the third act of intellect and its fruit, the intention of consequence, but for our purposes two of these works are the most important: *Prior Analytics* and *Posterior Analytics*. Both deal with the process of reasoning: the former under the formal aspect, and the latter under the material aspect.

In logic it is possible to discover some formal rules of thinking according to the consequence perceivable in the very syllogistical form. These rules, however, do not touch the content of individual acts of cognition, or individual unities, called premises, joined together to form the syllogism. This formal aspect is the subject of the *Prior Analytics*.³¹ Aquinas commented only on the *Posterior Analytics*, which has for its subject the material aspect of cognition through syllogistic argument,³² and specifically

est) et alius intellectus sit ad hoc quod possit *omnia* intelligibilia *facere* in actu (qui uocatur intellectus agens) et est *sicut habitus quidam*” (In *De An.*, III, 4 [Leon. 45/1, p. 218, lin. 8-23]).

³⁰ For a more detailed discussion of the intention of consequence see Schmidt, *The Domain of Logic*, p. 242-301.

³¹ For an extensive analysis of many issues related with this aspect see Kevin L. Flannery, *Acts Amid Precepts: The Aristotelian Logical Structure of Thomas Aquinas's Moral Theory* (Washington, D.C.: The Catholic University of America Press, 2001).

³² St. Thomas interprets the difference between these two books, according to an old tradition (practically unique in his time), in terms of the formal and material components of syllogism. Aristotle himself never used the word ‘matter’ (*hyle*) in all of his *Organon*. Daniel W. Graham writes: “Aristotle never makes use of what seems to us a natural extension of the matter-form conception – the distinction of arguments into a formal and a material component. Yet the Greek commentators freely use this distinction. Certainly Aristotle has the general notion of an argument *form*, and it is one of his signal

this particular kind of syllogism, that is demonstration. This means that the main concern of this book is not only the formal rules of reasoning (although they have here their due importance and are quoted several times in St. Thomas's commentary), but also, in a general way, the content of premises, so far as to provide a methodological instrument in what is common in all the sciences.³³ Thus, according to the definition of logic, since it is an art "directive of the acts of reason themselves so that man may proceed orderly, easily and without error in the very act of reason itself,"³⁴ this methodological instrument constitutes a logical model to be used analogically in any science, respecting the diversity of particular subjects of those sciences.³⁵ The difference between the formal and material aspects of a syllogism is important because, as Aquinas says:

deception through a syllogism can occur in two ways: in one way when it fails as to form, not observing the correct form and mode of a syllogism. In another way, when it fails in matter, proceeding from the false. Now there is a difference between these two ways, because one that fails in matter is still a syllogism, since everything is observed that pertains to the form of a syllogism. But one that fails in form is not even a syllogism, but a paralogism, i.e., an apparent syllogism.³⁶

contributions to the history of logic. But the intuitive extension of hylomorphic language to the realm of logic – the terminology of formal arguments and argument forms, of the matter and form of an argument – never appears in Aristotle. Aristotle has intelligible form and separable form, but not logical form" (*Aristotle's Two Systems* [New York: Oxford University Press, 1999], p. 321). The author argues that Aristotle discovered the notion of matter only after finishing the *Organon*. This reportedly explains a certain dichotomy between his logical and scientific/philosophical treatises. Aquinas does not seem to perceive any serious dichotomy: his constant orientation towards distinguishing methods and aspects, and applying an analogical way of thinking allows him to see the works of Aristotle as a genuine unity. That Aristotle does not use the word "matter" in logical context Aquinas explains in this way: "quia materia magis proprie dicitur in sensibilibus, propter hoc noluit eam nominare causam materiale, set causam necessitatis" (*In Poster.*, II, 9 [Leon. 1*/2, p. 207, lin. 83-86]).

³³ Cf. *ibid.*, I, 1 [p. 6, lin. 80-87].

³⁴ "Ars quedam necessaria est que sit directiva ipsius actus rationis, per quam scilicet homo in ipso actu rationis ordinate, faciliter et sine errore procedat; et hec ars est logica" (*ibid.* [p. 3, lin. 21-24]).

³⁵ Nonetheless, every particular science must elaborate its own particular way of applying this general methodology, see for example: *In Meta.*, II, 5, n. 335; *In De an.*, II, 3 (Leon. 45/1, p. 77-78, lin. 1-49).

³⁶ "Contingit autem per aliquem syllogismum deceptionem accidere dupliciter: uno modo quia peccat in materia, procedens ex falsis; alio modo quia peccat in forma, non servando debitam figuram et modum; et est differentia inter hos duos, quia ille qui peccat in materia syllogismus est, cum observentur ibi omnia que ad formam syllogismi pertinent; ille autem qui peccat in forma non est syllogismus, set paralogismus, id est apparens syllogismus" (*In Poster.*, II, 22 [Leon. 1*/2, p. 79, lin. 26-36]).

The formal part of logic gives us only general rules to be applied in formally correct reasoning. Yet it is not a sufficient basis for saying that a given reasoning leads to a true and perfect knowledge.³⁷

We have said that in order to satisfy our wonder we ask questions that aim to discover an explanatory reason called a cause. Yet St. Thomas remarks that in order to know something perfectly it is not enough to know a cause, even if this cause is sufficient to produce such and such an effect of which cause we want to know, due to the fact that some causes can be impeded in producing their effects.³⁸ Another important remark is that not everything that happens has a cause properly speaking: some things happen accidentally, and as accidents are not beings properly speaking (as was said in section 2.2), for they do not have a cause properly speaking.³⁹ What follows from this is that not everything can be *known* in the same way, because things *are* in different ways.

While defining art in section 1.2 as a virtue of cognition, we briefly mentioned the notion of science (*scientia*) as also one of the virtues of cognition. We said that Aquinas enumerates and discusses five such virtues: art, prudence, intellect, science and wisdom. As virtues of cognition they are always concerned with the truth. Science is distinguished from art and prudence because it concerns only *necessary* truths, not contingent ones. It is further distinguished from the intellect because science is

³⁷ The positivist project proved (by its failure) that formal logic alone is impotent and cannot provide an epistemology sufficient to the needs of contemporary science. William A. Wallace in his book *The Modeling of Nature: Philosophy of Science and Philosophy of Nature in Synthesis* (Washington, D.C.: The Catholic University of America, 1996) writes about a new consensus that has begun to emerge among philosophers of science “in last two decades,” according to which “empiricism is no longer the proclaimed epistemology behind the philosophy of science movement and various realist alternatives to it are being actively explored. Prominent among these are what some have referred to as naturalized epistemologies, wherein the concept of ‘natural kind’ is again assuming prominence and causal conceptions of reference are being investigated to replace the standard empiricist accounts. (...) the content or subject or matter being investigated, the content logic that in former times was regarded as ‘material’ logic, must henceforth be taken to be on a par with ‘formal’ logic. ... The most fundamental change behind this new consensus is a relinquishing by many philosophers of the doctrines David Hume hitherto imposed on their discipline. The reason for their doing so is clear, namely, the undisputed progress of science in the twentieth century, a progress that invalidates many of Hume’s key suppositions. ... Simply put, we ought do for Hume what Galileo proposed to do for Aristotle ... We should say that if Hume were alive today he would side with the anti-Humeans rather than with those who adamantly defend his outdated teachings” (p. 228-229). See also Jude P. Dougherty, “The Failure of Positivism and the Enduring Legacy of Comte,” in *Recovering Nature: Essays in Natural Philosophy, Ethics, and Metaphysics in Honor of Ralph McInerny*, Thomas Hibbs, John O’Callaghan (eds.), (Notre Dame, Ind.: University of Notre Dame Press, 1999), p. 25-36.

³⁸ “Hec est falsa, quod causa posita, etiam sufficienti, necesse sit effectum poni: non enim omnis causa est talis, etiam si sit sufficiens, cuius effectus impedi non possit; sicut ignis est sufficiens causa combustionis lignorum, set tamen per effusionem aque impeditur combustio” (*In Peryerm.*, I, 14 [Leon. 1*/1, p. 74-75, lin. 231-236]).

³⁹ “Non omne quod fit habet causam, set solum illud quod est per se; set illud quod est per accidens non habet causam, quia proprie non est ens, set magis ordinatur cum non ente” (*ibid.* [p. 74, lin. 223-227]).

a cognition *through causes*. It is finally specified from wisdom by the fact that it is a cognition through *proper* causes, and not the highest ones.⁴⁰

Many errors can arise in interpreting the notion of science as presented in both Aristotle's *Posterior Analytics* and in Aquinas's commentary of it if we fail to distinguish science as a discipline (that is, as a set of objective rules and procedures ordered to explore some particular subject-matter) from science as a virtue (which is a quality of the mind characterized by a subjective possession of a proper demonstration). Aristotle's treatise concerns itself mainly with science as a virtue: it shows when we could claim that we have the virtue of science.⁴¹ Apart from this important distinction we should still remember that the word "scientia" admits of analogous impositions. We have such a virtue when we know something in a perfect way, which means that we 1) know its cause, 2) know that the cause is what makes the object to be what it is, 3) and know that what we know could not be otherwise than it is. In St. Thomas's words:

To know something scientifically is to know it completely, which means to apprehend its truth perfectly. For the principles of a thing's being are the same as those of its truth, as is stated in the second book of *Metaphysics*. Therefore, the one who knows scientifically, if he is to know perfectly, must know the cause of the thing known. But if he were to know the cause by itself, he would not yet know the effect actually – which means to know it absolutely – but only virtually, which means to know in a qualified sense and accidentally. Consequently, one who knows scientifically in the full sense must also know the application of the cause to the effect. Again, because science is also sure and certain knowledge of a thing, whereas a thing that could be otherwise cannot be known with certainty, it is further required that what is scientifically known could not be otherwise.⁴²

⁴⁰ Cf. *CG*, I, 94, n. 792-793.

⁴¹ See for example the following remark: "There is, indeed, an extensive literature of medieval commentaries on the *Posterior Analytics*, and much of this literature is very important; we find in it a great deal of material on the authors' attitudes to necessity, the structure of science, the relation between various sciences, the autonomy of philosophy *vis-à-vis* theology, and the like. However, it cannot be taken to be automatically relevant to the *practice* of reasoning in the Middle Ages: the logical metatheory (that of the syllogism) is far too restrictive, and the conditions placed on scientific demonstrations are far too stringent, for it to be a plausible description of very many actual processes of reasoning, in the Middle Ages or at any other time" (Graham White, "Medieval Theories of Causation," *The Stanford Encyclopedia of Philosophy* (Fall 2005 Edition), edited by Edward N. Zalta, <http://plato.stanford.edu/archives/fall2005/entries/causation-medieval/>). From this quotation we can see that the author repeats such widespread misreading of this work. What is also interesting in this article, is that, with a title referencing Medieval theories, one has the impression that this period begins in the fourteenth century and apart from Ockham there is little else to be referred to. If that is the case for the author, perhaps this is why we find him utterly perplexed when he talks about final causes, wishing to reduce them to efficient causality.

⁴² "Scire aliquid est perfecte cognoscere ipsum, hoc autem est perfecte apprehendere ueritatem ipsius: eadem enim sunt principia esse rei et ueritatis ipsius, ut patet ex II Metaphisice; oportet igitur scientem, si est perfecte cognoscens, quod cognoscat causam rei scite; si autem cognosceret causam tantum, nondum cognosceret effectum in actu, quod est scire simpliciter, set uirtute tantum, quod est scire secundum quid et quasi per accidens, et ideo oportet scientem simpliciter cognoscere etiam

It is clear that for Aquinas to know a thing truly is to know intellectually the causes of a thing. This is the case because, as causes of a thing cause the being of the thing, they also cause the deepest truth of the thing in the mind which knows the thing. Note in the quotation above what Aquinas says as regards knowing the truth of the thing: “to apprehend *its* truth,” and not, for example, a truth *about* the thing, because he does not mean any proposition that could be validly predicated about the thing, but the deepest possible intellectual grasping of the ultimate *why* of the thing.

These stipulations distinguish the perfect kind of knowledge (*scientia simpliciter*), called epistemic or scientific knowledge,⁴³ from the imperfect kind of knowledge (*secundum quid*), that is, from accidental, uncertain or unnecessary, and only

applicationem cause ad effectum; quia uero scientia etiam est certa cognitio rei, quod autem contingit aliter se habere non potest aliquis per certitudinem cognoscere, ideo ulterius oportet quod id quod scitur non possit aliter se habere” (*In Poster.*, I, 4 [Leon. 1*/2, p. 19, lin. 82-97]).

⁴³ The translation of this notion into today’s English as ‘scientific knowledge’ has some limitations because current qualifications of scientific knowledge can differ significantly from Aquinas’s *scientia*. Mainly, this is due to a fairly common agreement that science cannot be differentiated from opinion (since it happens to be understood as ‘a system of knowledge’ or ‘justified belief’ or as a kind of rhetoric).

Armand Maurer in his article “The Unity of a Science: St. Thomas and the Nominalists” (in *Being and Knowing: Studies in Thomas Aquinas and Later Medieval Philosophers*, [Toronto: Pontifical Institute of Mediaeval Studies, 1990], p. 71-93) writes about the difference between Aquinas’s understanding of the unity of science in terms of one intellectual virtue and nominalists’ notion of science as a unified body of knowledge (or, in Kantian terms, as a system, a totality of knowledge arranged according to principles). Maurer, quoting contemporary dictionaries, remarks that this nominalist understanding is prevailing today. He relates that Leibniz acknowledged that “nominalists were the most profound scholastic sect and the one most in harmony with the spirit of modern philosophy” (p. 72). Moreover, Leibniz recognized that almost all the modern reformers of philosophy were nominalists. Maurer suggests that the nominalist notion of science, of which Ockham was chief theoretician and popularizer, “was conceived in opposition to St. Thomas’ doctrine of science, according to which an individual science is not in essence or primarily a system or body of knowledge but a single and simple *habitus* of the intellect” (p. 73). Ockham directly criticized Aquinas and was not able to accept his solution because of the presupposed belief that “many materially different items share in a common nature (*ratio*)” (p. 82). Ockham would have to surrender the main axiomatic tenet of his nominalism, namely that reality is individual and in no way common or universal. “Ockham’s conception of reality as radically individual led to a new interpretation of the object of science. ... ‘Every science,’ he writes, ‘whether real or rational, is concerned only with propositions as with objects known, for only propositions are known’” (p. 83).

Another difficulty in translating *scientia* as ‘scientific knowledge’ is that to have recourse to a necessary cause of a thing is still not so fashionable in our days since some Scottish gentleman denied that the human mind had the ability ever to grasp a necessary causal connection. One of the leading encyclopedias of philosophy treats the problem of causality as if before Hume there was nothing interesting in philosophy (the same fate suffer many other problems). “Hume’s legacy” is indeed overwhelming; this is the opening gambit of the article on causation: “Two opposed viewpoints raise complementary problems about causation. The first is from Hume ... The second is from Kant” (Nancy Cartwright, “Causation,” in *Routledge Encyclopedia of Philosophy*, edited by E. Craig London: Routledge, 1998, <http://www.rep.routledge.com/proxyu.wrlc.org/article/Q010> (Accessed November 2006). Compared with the Aristotelian philosophy, this is a somewhat reductionistic account of causality. Cf. also Wallace, *The Modeling of Nature*, p. xi-xii.

probable knowledge.⁴⁴ As we have seen already, probable knowledge, for Aquinas, is also called opinion and can be born from the method of research, that is, dialectical method. To have an opinion is to assent to a proposition rather than to its opposite, but with an awareness that the proposition might be false and the opposite true. In sciences as disciplines we use the dialectical method in its richness wherever and whenever it is necessary or useful, but the dialectical method does not give us the virtue of science in the strict sense, because in opinion we have only an accidental relation to the truth. Opinion can be true or false. The virtue of science has a necessary relation to the truth: science as virtue either is true or it is not science. To acquire this virtue we must develop a proper demonstration, and in the *Posterior Analytics* Aristotle, according to Aquinas's interpretation, went to great lengths to highlight under what conditions we can construct such a demonstration.

This perfect kind of knowledge can be attained only through a valid demonstration: “*scire* seems to be nothing else than to understand the truth of a conclusion through demonstration.”⁴⁵ Demonstration is a kind of syllogism. There are different kinds of syllogisms that use various kinds of premises, not all of which produce scientific knowledge. Special conditions for premises, precisely on the level of their content, must be fulfilled, or we cannot say that the syllogism is a perfect demonstration. St. Thomas comments on Aristotle's formula:

it is necessary that demonstrative science, i.e., science acquired through demonstration, proceed from propositions which are true, primary, and immediate, i.e., not demonstrated by some other middle, but clear in virtue of themselves (they are called ‘immediate’, inasmuch as they do not have a middle demonstrating them, but ‘primary’, in relation to other propositions which are proved through them); and which, furthermore, are better known than, prior to, and causes of, the conclusion.⁴⁶

All these conditions follow from the purpose of a demonstration (it is supposed to produce science)⁴⁷ and thus constitute the material definition of demonstration. For

⁴⁴ Cf. *In Poster.*, I, 4 (Leon. 1*/2, p. 18-19, lin. 61-78).

⁴⁵ “*Scire nihil aliud esse uideatur quam intelligere ueritatem alicuius conclusionis per demonstrationem*” (ibid. [Leon. 1*/2, p. 20, lin. 142-144]). See a very helpful and comprehensive study by William A. Wallace, *The Role of Demonstration in Moral Theology. A Study of Methodology in St. Thomas Aquinas* (Washington, D.C.: The Thomist Press, 1962).

⁴⁶ “*Necesse est quod demonstratiua sciencia, id est que per demonstrationem acquiritur, procedat ex propositionibus ueris et primis et immediatis, id est que non per aliquod medium demonstrantur, set per se ipsas sunt manifeste (que quidem immediate dicuntur, in quantum carent medio demonstrante, prime autem in ordine ad alias propositiones que per eas probantur); et iterum ex notioribus et prioribus, et causis conclusionis*” (*In Poster.*, I, 4 [Leon. 1*/2, p. 20, lin. 164-173]).

⁴⁷ “*Finis autem demonstratiui sillogismi est acquisitio sciencie*” (ibid., I, 1 [p. 7, lin. 134-135]).

a valid syllogism there is no need for all these conditions, but a valid demonstration requires that all these be fulfilled, otherwise it would not bear a perfect *scientia*.⁴⁸ Generally speaking the principle of a demonstrative syllogism is two-fold: its middle and first indemonstrable propositions.⁴⁹ This collection of conditions for premises is a development of these two general principles.

Therefore, to be suitable for a demonstration, the following conditions must be met: propositions should be 1) *true* and express the truth, because what is not true, does not exist, since to be true and to be are convertible. What does not exist cannot be known, and all the more cannot be demonstrated. In formal considerations of the syllogism it is possible to infer a true conclusion from false premises. Thus, syllogism remains a syllogism, but it does not constitute a scientific demonstration. If there is a false premise, it is no longer a scientific demonstration.⁵⁰ Subsequently, the propositions in the position of premises of demonstration should be 2) *primary* in the sense that they do not themselves need demonstration.⁵¹ Such premises are also called 3) *immediate* because their subjects are joined with their predicates without any middle term, that is, the intellect connects them only from the meanings of the terms.⁵² In the case of any shortage of elements from which something can be demonstrated, a deficiency appears in the certainty of the conclusion, and so premises should also be necessary and not contingent.⁵³ The demonstrable premises can be used in demonstration only if they are demonstrated beforehand, so as to reach eventually the

⁴⁸ “Licet sillogismus non requirat premissas condiciones in propositionibus ex quibus procedit, requirit tamen eas demonstratio: aliter enim non faceret scientiam” (ibid., I, 4 [p. 20, lin. 1185-188]). Cf. ibid., I, 22 (p. 80-82, lin. 85-299).

⁴⁹ “Est autem duplex principium demonstratiui sillogismi, scilicet medium eius et prime propositiones indemonstrabiles” (ibid., II, 1 [Leon. 1*/2, p. 174, lin. 5-7]).

⁵⁰ Cf. ibid., I, 4 [p. 20, lin. 194-196].

⁵¹ “Non tamen omne primum accipit demonstrator, set primum proprium illi generi circa quod demonstrat, sicut arimeticus non accipit primum quod est circa magnitudinem, set circa numerum” (ibid., I, 13 [p. 51, lin. 112-116]).

⁵² “Non enim contingit aliquem habere scientiam nisi habeat demonstrationem eorum quorum potest esse demonstratio, et hoc dico per se, et non secundum accidens; et hoc ideo dicit quia possibile esset scire aliquam conclusionem non habens demonstrationem praemissorum, etiam si essent demonstrabilia, quia sciret eam per alia principia; et hoc esset secundum accidens” (ibid., I, 4 [p. 21, lin. 213-220]).

⁵³ “Oportet demonstrationem haberi per medium necessarium, alioquin nesciet quod conclusio sit necessaria, neque propter quid neque quia, cum necessarium non possit sciri per non necessarium” (ibid., I, 13 [p. 52, lin. 288-232]). “Demonstratio est de necessariis et ex necessariis” (ibid., I, 14 [p. 53, lin. 2-3]).

principles which are immediate and indemonstrable.⁵⁴ Finally, propositions have to be 4) *causes* of the conclusion, specifically efficient causes, insofar as through them the active intellect reduces the possible intellect from potency to act.⁵⁵ Since premises are efficient causes, it must also follow that premises are to be the proper principles of a conclusion; that is, proportionate to it.⁵⁶ This causal requirement follows from the very definition of demonstration and, as Aquinas explains: *quia tunc scimus, cum causas cognoscimus*.⁵⁷

The last condition has two more consequences, namely, that the premises be 5) *prior* and 6) *better known* than the conclusion. These in turn are closely connected with the signification of the word “cause.” Cause is in a natural way prior and better known than its effect. As there is no *scientia* of non-existents, the cause should be better known from the conclusion not only on the side of *what* it is, but also *that* it is. Another important distinction to be made in the “better known condition” is that, on the one hand, things are better known in reference to our human way of acquiring knowledge (*quoad nos*), and on the other, they are better known absolutely, that is, in themselves or according to their own nature (*secundum naturam* or *simpliciter*). What is better known *simpliciter* is usually less known *quoad nos* because our cognition is bound to the senses. Therefore, what is better known to us is the external and superficial characteristics of material beings which produce in us sensory data. A demonstration, however, is an operation of reason and not of sense. A gradation of knowing exists also

⁵⁴ Cf. *ibid.*, I, 4 (p. 21, lin. 211-233). “Quia conclusio demonstrationis non solum est necessaria, set etiam per demonstrationem scita, ut dictum est, sequitur quod *demonstratiuus sillogismus* sit *ex necessariis*” (*ibid.*, I, 9 [p. 36, lin. 24-27]). “Conclusio necessaria non potest sciri nisi ex principiis necessariis; set demonstratio facit scire conclusionem necessariam; *ergo oportet* quod sit *ex necessariis* principiis. In quo differt demonstratio ab aliis sillogismis: sufficit enim in aliis sillogismis quod sillogizetur *ex ueris*, nec est aliquod aliud genus sillogismi, in quo oportet ex necessariis procedere, *set demonstrantem* tantum oportet hoc obseruare; et *hoc est proprium demonstrationis*, scilicet ex necessariis semper procedere” (*ibid.*, I, 13 [p. 51, lin. 79-88]). To explain further would be too complex for this short sketch, because we would have to say what it *dici de omni* means, show the four ways of *per se* predication, and say much more about what *universale* means. For details see *In Poster.*, I, 9-13 (p. 36-52).

⁵⁵ “Principia autem se habent ad conclusiones in demonstratiuis sicut cause actiue in naturalibus ad suos effectus (unde in II Phisicorum propositiones sillogismi ponuntur in genere cause efficientis); effectus autem, ante quam producat in actum, praeexistit quidem in causis actiuis uirtute, non autem actu, quod est simpliciter esse; et similiter ante quam ex principiis demonstrationis deducatur conclusio, in ipsis quidem principiis precognitis precognoscitur conclusio uirtute quidem, non autem actu: sic enim in eis praeexistit. Et sic patet quod non precognoscitur simpliciter, sed secundum quid” (*In Poster.*, I, 3 [Leon. 1*/2, p. 14-15, lin. 23-35]). Cf. *In Phys.*, II, 5, n. 10; *De Anima*, 4 ad 6.

⁵⁶ Cf. *In Poster.*, I, 4 (Leon. 1*/2, p. 20, lin. 179-182 and p. 22, lin. 313-322).

⁵⁷ *Ibid* (p. 21, lin. 235-236).

in the intellectual order, according to which what is more universal is easier to grasp than what is specific.⁵⁸ Since the aim of demonstration is to cause knowledge in us, bringing us from a potential into actual knowing, then the better known condition has to be taken in reference to us, provided that the intellectual order is governing the demonstration and not the order of sense. Demonstrations, being processes of reasoning, operate on intellectual knowledge. Therefore, the premises must be universal in nature, not singular. To sum up the foregoing, we can say that through demonstration we are passing from things which are better known to us to things better known absolutely.⁵⁹

4.3. Foreknowledge, indemonstrable principles, middle term, causes

If the conclusion marks the final point of reasoning and the human striving for a perfect kind of knowledge and, in fact, a new truth discovered in this reasoning, then we have three elements that should be somehow known before completing the process of reasoning and which should be contained in the propositions that form the principles of demonstration: the subject, the predicate, and the justification for joining the predicate and subject. These three can be foreknown in two respects: *that* they are and *what* they are, though each one is known differently.

⁵⁸ “Ea ex quibus procedit demonstratio sunt *priora et notiora* simpliciter et secundum naturam, non quo ad nos. – Et ad huius expositionem dicit quod *priora et notiora* simpliciter sunt illa que sunt remota a sensu ut *universalia*, *priora* autem *et notiora* quo ad nos sunt *proxima sensui*, scilicet *singularia*, que *opponentur* uniuersalibus siue oppositione prioris et posterioris, siue oppositione propinqui et remoti” (ibid. [lin. 247-255]). “Cognitio autem generis est quasi potencialis in comparatione ad cognitionem speciei, in qua actu sciuntur omnia essentialia rei; unde in generatione sciencie nostre prius est cognoscere magis commune quam minus commune” (ibid. [lin. 275-280]). “Ex singularibus autem, que sunt in sensu, non sunt demonstrationes, set ex uniuersalibus tantum, que sunt in intellectu. ... in omni demonstratione oportet quod procedatur ex hiis que sunt notiora quo ad nos, non tamen singularibus, set uniuersalibus: non enim aliquid potest fieri nobis notum nisi per id quod est magis notum nobis” (ibid. [p. 22, lin. 289-296]).

⁵⁹ Cf. *In Boet. De Trin.*, 6, 4. “Demonstration is merely an instrument of our intellect by which we proceed from premises which are more certain *quoad nos* to conclusions which are certain *quoad se*” (Wallace, *The Role of Demonstration*, p. 21). For an interesting and more extensive discussion of conditions for premises of a demonstration see John Jenkins, *Knowledge and Faith in Thomas Aquinas* (Cambridge University Press, 1997), p. 21-50. See also Edward D. Simmons, “Demonstration and Self-Evidence,” in *The Dignity of Science: Studies in the Philosophy of Science*, edited by James A. Weisheipl (Washington, D.C.: The Thomist Press, 1961), p. 3-26; Wallace, *The Modelling*, p. 292-300.

The first element somehow foreknown is the subject of the conclusion. In any science it must be known in both respects;⁶⁰ that is, we should know beforehand *that* the subject is and also *what* it is. It can be either the subject of the whole science or simply one of its parts. Furthermore, ontologically speaking, it can belong either to the order of substance or of accident.⁶¹ Although we may not know the subject perfectly at the beginning, we do know *quoquo modo de eis 'quid est' sub quadam confusione*.⁶² We reason, therefore, in order to attain a better knowledge of the subject. And so this universal or general, confused, and opaque precognition of the subject allows us to ask questions that seek to explain, clarify, and understand it better. The goal is to understand the subject specifically and thoroughly. Without this precognition, however, no questions would be possible.

It is proper to the predicate, as to all accidents, to exist or inhere in the subject (*inesse*). Because the existence of the predicate *in* the subject is to be stated in the conclusion, we are supposed to know, before concluding anything, only *what* the predicate is and not *that* it is. Yet we cannot know exactly what the predicate is according to its real definition when we do not know if it exists, for, as Aquinas claims, *non entium non sunt definitiones*. That is why the question “does it exist?” (*an est*) precedes the question “what it is?” (*quid est*). Therefore, we know beforehand only what is the signification of the name used to refer to this attribute. In other words, we do not know *quid est* but *quid est quod dicitur*.⁶³

The third element to be known in demonstrative syllogisms are indemonstrable principles that are usually assumed and do not enter expressly into the terms of a syllogism. As they are always propositions (as for example *de unoquoque est affirmatio uel negatio uera*)⁶⁴ and as such cannot be defined (what is complex in this

⁶⁰ Cf. *In Poster.*, I, 2 (Leon. 1*/2, p. 11, lin. 43-49). “Rationem autem huiusmodi diuersitatis ostendit, quia non est similis modus manifestationis predictorum, scilicet principii, passionis et subiecti: non enim est eadem ratio cognitionis in ipsis; nam principia cognoscuntur per actum componentis et diuidentis, subiectum autem et passio per actum apprehendentis quod quid est; quod quidem non similiter competit subiecto et passioni, cum subiectum diffiniatur absolute, quia in diffinitione eius non ponitur aliquid quod sit extra essentiam ipsius, passio autem diffinitur cum dependencia ad subiectum quod in diffinitione eius ponitur; unde, ex quo non eodem modo cognoscuntur, non est mirum si eorum diuersa precognitio sit” (ibid. [p. 12, lin. 121-135]).

⁶¹ Cf. ibid., I, 2 (p. 11, lin. 75-95) and I, 15 (p. 57, lin. 46-66).

⁶² *In Boet. De Trin.*, 6, 3.

⁶³ “Non potest ostendi de aliquo an sit nisi prius intelligatur quid significatur per nomen” (*In Poster.*, I, 2 [Leon. 1*/2, p. 11, lin. 67-69]). Cf. section 1.1.

⁶⁴ Cf. *In Poster.*, I, 2 (Leon. 1*/2, p. 11, lin. 57-58).

way, is not definable),⁶⁵ we are able to know *that* they are true but not *what* they are. By knowing the truth of such principles in connection with the subject and predicate contained in premises, we can know the conclusion. Stated more precisely, we potentially or virtually know the conclusion. We know the conclusion potentially because we do not grasp it actually at once. We know it virtually for it is in virtue of these principles that the conclusion is known. The actualization in reasoning of the potentiality or virtuality of the conclusion occurs in a distinct consideration. If it did not, one timeless consideration would suffice to see a conclusion *in* the principles (as opposed to seeing the conclusion *from* the principles), and thus there would be no place for either inference or transition from one consideration to another.⁶⁶

There are two kinds of principles of demonstration: *principia demonstrationis sicut medium* and *prima principia demonstrationis communia* (or *primae propositiones indemonstrabiles*). The entire second book of the *Posterior Analytics* treats these two types of principles and the manner in which we come to know them.⁶⁷ Every demonstration requires a medium or middle term, which is a definition.⁶⁸ As we know, a definition is a *quid rei* or *ratio rei* (as opposed to *quid nominis* or *ratio nominis*). It captures the quiddity, substance, or essence of a thing, that which is grasped by our intellect in its first operation. Granted that our intellect is not so powerful as to grasp at once every possible essence, we often do not understand exactly what something is. Instead, we seize it generally. Thus, we initially possess a confused knowledge, and oftentimes we can confuse this one thing with something else. There are some special and complex techniques to make certain that we have a proper definition of something,

⁶⁵ “Ostensum est autem in VII *Metaphysicae* quod complexa non definiuntur” (ibid. [p. 10, lin. 31-32]).

⁶⁶ “Omnis ratiocinans alia consideratione intuetur principia et conclusionem” (CG, I, 57, n. 475). “Conclusiones in principiis sunt in potentia” (ibid., n. 476). “Discursus attenditur secundum quod semotim cognoscimus principia, et ex eis in conclusiones venimus: si enim in ipsis principiis intueremur conclusiones ipsa principia cognoscendo, non esset discursus, sicut nec quando aliquid videmus in speculo” (ibid., 76, n. 650). “Si enim intellectus noster statim in ipso principio videret conclusionis veritatem, numquam intelligeret discurrendo et ratiocinando” (STh, I, 58, 4 c.). “Primo aliquis intelligit ipsa principia secundum se; postmodum autem intelligit ea in ipsis conclusionibus secundum quod assentit conclusionibus propter principia” (STh, I-II, 8, 3 c.). “Primo enim intellectus fertur in principia tantum, secundo fertur per principia in conclusiones” (De ver., 8, 15 c.).

⁶⁷ Cf. *In Poster.*, II, 1 (Leon. 1*/2. p. 174, lin. 1-21).

⁶⁸ “Ex diffinitione subiecti et passionis sumatur medium demonstrationis” (ibid., I, 2 [p. 11, lin. 48-49]). “Principium autem sillogismi dici potest non solum propositio sed etiam diffinitio” (ibid., I, 5 [p. 26, lin. 177-178]). “In demonstrationibus autem semper proceditur ex diffinitionibus” (ibid., I, 22 [p. 81, lin. 127-128]). Cf. ibid., I, 13 (p. 50, lin. 60-65). “Demonstrationis autem medium est definitio” (STh, I, 3, 5 c.).

but these lie beyond the scope of our discussion.⁶⁹ In any event, it is always important to have a proper definition, for in demonstrations our reason always proceeds from definitions. Thus, we may say that a definition is to the intellect like something described sensorily to the senses. Definitions carry a considerable share of the required evidence for demonstrations.⁷⁰ Consequently, definitions are assumed in order to understand something about which a doubt or question could arise.⁷¹ In conclusion, a property is predicated about the subject so that the subject becomes better known, which means that knowledge about it is more specific. Thus, the principles of a demonstration should contain in some way the definition of the property and of the subject.⁷²

When we define something, we grasp intellectually what something is, and in so doing it becomes possible to predicate things that are not directly experienced through our senses. Since our knowledge about these things is in this way universal, that is, abstracted from here and now (from material and temporal conditions), the object of our knowledge can be changeable in itself, though our knowledge remains scientific in the proper sense, that is to say, necessary. To be sure, our knowledge of changeable things is necessary, but this does not mean that we can necessarily know all singulars to which a given definition or demonstration applies. Changeable things themselves are by their very definition not necessary. In order to have a perfect science, we should take for demonstration a medium that is true always and in all cases (*semper et de omni*). We could also take for a demonstration such a medium that is true not always but only in majority of cases (*sicut frequenter* or *ut in pluribus*). This kind of medium rests upon a hypothesis that there is a certain regularity that allows us to take a universal truth as holding for all cases sharing this regularity. In consequence, such demonstration will not be of perfect kind, yet still it will remain a valid demonstration that holds for the

⁶⁹ About this difficult art of constructing proper definitions see *In Poster*, II, 2-8 and 13-16 (Leon. 1*/2, p. 180-204 and 220-231).

⁷⁰ “Cum enim aliquid diffinitur, ita se habet ad intellectum, sicut id quod sensibiliter describitur se habet ad uisum. Et ideo dicit quod *hec*, scilicet diffinita in demonstratiuis scienciis, *sunt ut uidere intellectu*” (ibid., I, 22 [p. 81, lin. 123-127]).

⁷¹ Cf. ibid., II, 1 (p. 174, lin. 23-25).

⁷² “Diffinitio passionis perfici non potest sine diffinitione subiecti: manifestum est enim quod principia que continet diffinitio subiecti sunt principia passionis. Non ergo demonstratio resoluet in primam causam, nisi accipiat ut medium demonstrationis diffinitio subiecti. Sic igitur oportet concludere passionem de subiecto per diffinitionem passionis, et ulterius diffinitionem passionis concludere de subiecto per diffinitionem subiecti” (*In Poster*, II, 1 [Leon. 1*/2, p. 177, lin. 251-263]). “Diffinitio principaliter quidem est substantie, aliorum autem in quantum se habent ad substantiam” (ibid., II, 6 [p. 195, lin. 144-146]).

majority of cases.⁷³ Our knowledge in this sense can be certain *ut in pluribus*, i.e., insofar as something of necessity is in changeable things.⁷⁴ This is especially important when we think about different aspects of human nature and moral issues.

As was said earlier, a demonstrative syllogism consists of a subject, a predicate, and a middle term. The four questions enumerated in section 1.1 ask about the middle term, which is the reason or cause why we assent to the inherence of the predicate in the subject of the conclusion. The first and third questions ask if there is a middle term; whereas the second and fourth, presupposing a positive answer to the previous two questions, ask just what that middle term is.⁷⁵ St. Thomas explains:

It is obvious that a cause is the middle in a demonstration which enables one to know scientifically, because to know scientifically is to know the cause of a thing. But it is precisely the cause that is being sought in all the above questions.⁷⁶

Thus, the function of the middle term is to justify the inherence of a predicate in the subject. In other words, the middle term contains all the force of the demonstrative argument.⁷⁷ For the middle term it can be assumed to be either *quid* or *propter quid*, because *an est* and *quia* ask about the existence of the subject or predicate and, as such, are not used as middle terms in a strict demonstration (although they serve as such in a demonstration *quia*). Aquinas manifestly says that “the same is to know *quid est* as to know the cause of the question *an est* just as it is the same to know *propter quid* and to

⁷³ “Possunt accipi quedam *immediata principia eorum que sunt frequenter*, ita quod ipsa principia sint aut fiant sicut *frequenter*. Huiusmodi tamen demonstrationes non faciunt simpliciter scire uerum esse quod concluditur, set secundum quid, scilicet quod sit uerum ut in pluribus, et sic etiam principia que assumuntur ueritatem habent; unde huiusmodi sciencie deficiunt a scienciis que sunt de necessariis absolute, quantum ad certitudinem demonstrationis” (ibid., II, 12 [p. 219, lin. 109-118]).

⁷⁴ “Est autem considerandum quod de hiis quidem que sunt sicut frequenter, contingit esse demonstrationem, in quantum in eis est aliquid necessitatis” (ibid., I, 42 [p. 158, lin. 46-49]). “Anything which occurs rarely he [natural philosopher] suspects immediately as having a *per accidens* cause, and not amenable to treatment by the methods of his science” (Wallace, *The Role of Demonstration*, p. 50).

⁷⁵ “Id quod est medium est ratio eius de quo queritur an sit ... Cum ergo, cognito ‘quia est’, *querimus ‘propter quid’* est, aut, cognito ‘si est’, *querimus ‘quid est’*, *tunc quaerimus quid sit medium*” (*In Poster.*, II, 1 [Leon. 1*/2, p. 175, lin. 142-143, 155-157]).

⁷⁶ “Manifestum est enim quod *causa est medium* in demonstratione, que facit scire, quia scire est causam rei cognoscere; causa autem est quod *queritur in omnibus* predictis questionibus” (ibid., II, 1 [p. 176, lin. 185-189]). “Non ergo demonstratio resoluet in primam causam, nisi accipiat ut medium demonstrationis diffinitio subiecti. Sic igitur oportet concludere passionem de subiecto per diffinitionem passionis, et ulterius diffinitionem passionis concludere de subiecto per diffinitionem subiecti” (ibid. [p. 177, lin. 255-261]).

⁷⁷ “Terram esse rotundam per aliud medium demonstrat naturalis, et per aliud astrologus, astrologus enim hoc demonstrat per media mathematica, sicut per figuras eclipsium, vel per aliud huiusmodi; naturalis vero hoc demonstrat per medium naturale, sicut per motum gravium ad medium, vel per aliud huiusmodi. Tota autem virtus demonstrationis, quae est syllogismus faciens scire, ut dicitur in *I Poster.* dependet ex medio” (*STh*, I-II, 54, 2 ad 2). Cf. *In Poster.*, I, 41 (Leon. 1*/2, p. 156, lin. 369-373); *In Phys.*, II, 3, n. 9.

know the cause of the question *quia est*.⁷⁸ This follows the general rule that there has to be a cause for any thing's existence.⁷⁹ In books of logic the principle of causality comes to the fore as something evident for St. Thomas. I hope it will be clearer from the second part of this study that this principle follows simple understanding of what a contingent being is. A contingent being means "such that has not a sufficient cause in itself," which amounts to "that which is caused." Once we understand what it means "to be caused," we understand also that there has to be a cause.⁸⁰ As such, this principle is indemonstrable, but it is evident thanks to a proper understanding of terms.

What are these causes? St. Thomas enumerates them as follows:

There are four kinds of causes ... One of these is the *quod quid erat esse*, i.e., the formal cause, which is the completeness of a thing's essence. Another is the cause which, if given, the caused must also be given: this is the material cause, because things which follow on the necessity of matter are necessary absolutely, as is established in Physics II. The third is the cause which is the source of motion, i.e., the efficient cause. But the fourth is that for the sake of which something is performed, namely, the final cause. And so it is clear that through the middle term in a demonstration all these causes are manifested, because each of these causes can be taken as the middle term of a demonstration.⁸¹

One thing can have all four causes and according to these causes the process of explanation is completed. In things that have four causes, two of them are intrinsic (matter and form, which constitute the essence of the thing) and two are extrinsic (efficient and final cause). Because one cause is in a way the cause of another, there exists a sequence among causes: "the agent acts for an end and unites the form to the

⁷⁸ "*Idem est scire quid est et scire causam* questionis 'an est', sicut idem est scire 'propter quid' et scire causam questionis 'quia est'" (*In Poster.*, II, 7 [Leon. 1*/2, p. 198, lin. 28-31]). "Sicut se habet quaestio *propter quid* ad quaestionem *quia*, ita se habet quaestio *quid est* ad quaestionem *an est*: nam quaestio *propter quid* quaerit medium ad demonstrandum *quia est* aliquid, puta quod luna eclipsatur; et similiter quaestio *quid est* quaerit medium ad demonstrandum *an est*, secundum doctrinam traditam in II *Posteriorum*. Videmus autem quod videntes *quia est* aliquid, naturaliter scire desiderant *propter quid*" (*CG*, III, 50, n. 2278).

⁷⁹ "Oportet quod eius quod est rem esse, sit *aliqua causa*" (*In Poster.*, II, 7 [Leon. 1*/2, p. 198, lin. 33-34]).

⁸⁰ Cf. *In Poster.*, II, 18 (Leon. 1*/2, p. 236, lin. 27-42).

⁸¹ "*Sunt autem quatuor genera causarum* ... Una est '*quod quid erat esse*', id est causa formalis, que est completiua essencie rei; alia autem est causa, qua posita necesse est causatum poni, et hec est causa materialis, quia ea que consequuntur ex necessitate materie sunt necessaria absolute, ut habetur in II *Phisicorum*; tertia autem causa est que est principium motus, id est causa efficiens; *quarta* autem causa est *cuius* gracia fit aliquid, scilicet causa finalis; et ita patet quod per medium demonstrationis *omnes hee* cause manifestantur, quia quelibet harum causarum potest accipi ut medium demonstrationis" (*In Poster.*, II, 9 [p. 206, lin. 17-31]). See also further in this lesson for the examples how particular causes are taken as a medium in demonstration.

matter.”⁸² The efficient cause can be impeded in its operation in natural things; therefore, such contingency disqualifies it from any valid scientific demonstration.⁸³ Nonetheless, there is a possibility of demonstrating from the final cause, which is somehow a cause of the efficient. Supposing that the end is to be attained, we can show what is necessary for the efficient cause to be (the same works for formal and material cause). Aquinas gives an example of such demonstration *ex suppositione finis*, demonstrating virtue from the end of the human being, that is, from happiness.⁸⁴ This leads to the claim that the final cause is the cause of causes.⁸⁵ In this way, we can construct a definition that answers not only the question *quid est* but also *propter quid*. Obviously, there are things that happen by chance or luck, i.e., things that do not have a cause *per se*, but *per accidens*. Again, St. Thomas gives an example from purposeful human action, which can have a cause either *per se* (entering the house to take something) or *per accidens* (unconsciously avoiding somebody’s attack by the fact of entering the house to take something – the avoidance was not directly caused by the agent).⁸⁶

In one place Aristotle says that there are things that do not have causes, that is, external causes, which are not the essence of something.⁸⁷ St. Thomas interprets his words in three ways, the third of which seems to be the most plausible reading. It relates that there exist things having no cause in the subject genus of some particular science, as for example when in arithmetic we suppose *what* unity is and *that* it is.⁸⁸ The definitions of such immediate things (immediate in relation to the subject genus) are simply accepted as some immediate indemonstrable principles. And so, Aquinas, following Aristotle, says that there are three kinds of definitions in relation to demonstration:

⁸² “Nam agens operatur propter finem et unit formam materie” (ibid. II, 7 [p. 198, lin. 40-41]). “Manifestum est enim in rebus habentibus quatuor causas, quod una causa est quodam modo causa alterius” (ibid., II, 8 [p. 202, lin. 28-30]).

⁸³ For a long discussion and analysis of the possibility of a true predication about singular future events, see *In Peryerm.*, I, 13-15 (Leon. 1*/1, p. 66, lin. 85 – p. 82, lin. 122). This passage contains also a defense of the roots of contingency, which defense, St. Thomas admits, seems “logici negotii modum excedere” (ibid., I, 14 [p. 79, lin. 522]).

⁸⁴ Cf. *In Poster.*, II, 7 (Leon. 1*/2, p. 198, lin. 45-68).

⁸⁵ Cf. ibid., II, 8 (p. 202, lin. 27-43).

⁸⁶ Cf. ibid., II, 9 (p. 209, lin. 291-314).

⁸⁷ “Presupponit quod *quorundam est quedam altera causa, quorundam autem non*” (ibid., II, 8 [p. 201, lin. 5-7]).

⁸⁸ Cf. ibid., II, 8 (p. 202, lin. 65-69).

For there is a definition which is an indemonstrable reason of what something is; and this is that which he said to be of immediate things. Another kind of definition is as it were a demonstrative syllogism of what something is; and this does not differ from a demonstration as only in form, i.e., according to different arrangement of words ... The third kind of definition is that which only signifies what something is, and this one is a conclusion of demonstration.⁸⁹

These immediate indemonstrable principles deserve special attention in this study, for they (or their feature, namely, their autonomy) seem to be a key issue for a proper interpretation of the “Is/Ought Thesis.” St. Thomas recognizes the validity of Aristotle’s proof that in demonstrative sciences we need first indemonstrable principles, because otherwise we would fall into circularity.⁹⁰ It is impossible to demonstrate everything. Some propositions are simply self-evident in themselves, because their predicate is contained in the subject.⁹¹ In other words, propositions are self-evident that can be seen as necessarily true once their terms are known. Besides being true, this type of proposition is also immediate, so as to ground the necessity of a scientific conclusion.⁹² Self-evident propositions are necessarily true and immediate, and this makes them at the same time primary, because they have no propositions prior to them. Reasoning is compared to understanding as movement to rest. And just as in every movement there is some initial immobility, so also reasoning proceeds from certain truths absolutely understood, namely, from first principles.⁹³ In every demonstration we need some principles that are better known than the conclusion, and there should be some principles which are not conclusions but are best known in themselves, without any demonstration. Therefore, there is no *scientia* of these immediate indemonstrable

⁸⁹ “Ex hoc ergo concludit quod triplex est genus definitionis per comparisonem ad demonstrationem: quedam enim est diffinitio que est *indemonstrabilis ratio* eius ‘quod *quid est*’, et hec est illa quam dixerat esse immediatorum; alia *uero* est diffinitio que est quasi quidam *sillogismus* demonstratiuus eius ‘quod *quid est*’, et non differt a *demonstratione* nisi *casu*, id est secundum diuersam acceptionem et positionem dictionum ... *tercia autem* est diffinitio que est solum significatiua *ipsius* ‘*quid est*’ et est *conclusio demonstrationis*” (ibid., II, 8 [p. 204, lin. 179-191]).

⁹⁰ Cf. *In Poster.*, I, 7-8 (Leon. 1*/2, p. 41-35). “Non est in omnibus eodem modo causa inquirenda, alioquin procederetur in infinitum in demonstrationibus, sed in quibusdam sufficit quod bene demonstretur, id est manifestetur, quoniam hoc ita est; sicut in his quae accipiuntur in aliqua scientia ut principia; quia principium oportet esse primum, unde non potest resolvi in aliquid prius” (*In Eth.*, I, 11 [Leon. 47/1, p. 40, lin. 99-106]).

⁹¹ “Propositiones per se notae sunt quae statim notis terminis cognoscuntur” (*In Meta.*, IV, 5, n. 595). “Principia per se nota sunt illa quae statim intellectis terminis cognoscuntur ex eo quod praedicatum ponitur in definitione subiecti” (*STh*, I, 17, 3 ad 2). Cf. *In Poster.*, I, 30 (Leon. 1*/2, p. 109-110, lin. 70); II, 5 (p. 192, lin. 167-192); *STh*, I, 82, 2; 85, 6; I-II, 94, 2; I-II, 47, 6; *De malo*, 3, 3; 16, 7 ad 18; *De ver.*, 11, 1; *Quodl.*, 8, 4; *In De ebdom.*, 1 (Leon. 50, p. 269, lin. 118-185).

⁹² Cf. Edward D. Simmons, “Demonstration and Self-Evidence,” p. 3-26.

⁹³ Cf. *STh*, I, 79, 8.

principles, because to have *scientia* we need to have a demonstration. If we cannot have a demonstration of these principles, we do not have any *scientia* of them. Along with Aristotle, Aquinas rejects the Platonic opinion that we have the habit of these principles but it escapes our notice. As evidence to the contrary, we form demonstrations for which it is necessary to have some principles which are better known, and are indemonstrable. We cannot be unconscious that we have such a knowledge of principles.⁹⁴ It is also unacceptable to Aristotle and Aquinas to suggest that the knowledge of these principles is generated in us totally anew, following utter ignorance and without any other habit.⁹⁵

Aristotle says that it is necessary for us to have, from the beginning, a kind of cognitive power, which precedes the knowledge of the principles but is less certain than the knowledge of principles. St. Thomas concludes that “the knowledge of principles does not come about in us from pre-existing knowledge in the same way as things which are known through demonstration.”⁹⁶ This cognitive power we share with other animals; it is sense cognition. Sense cognition is not equal in every animal. Some animals seem not to have memory of this cognition, whereas others do. Further, some animals seem not to calculate over what remains in memory, while some animals visibly do so.⁹⁷ In the case of human beings there is still another step to be made:

Now, from memory many times referred to the same thing, but in diverse singulars, there arises experience, because experience seems to be nothing else than taking something from many things retained in the memory. However, experience requires some reasoning about the particulars, in that one is compared to another: and this is peculiar to reason.⁹⁸

As an example, Aquinas speaks of someone remembering that some herb cured fever many times. This already is called an experience. Reason does not stop at any particular experience. From many particular cases it takes something common (*unum commune*), which can be considered as something universal, without considering every feature of each particular experience – “and this something common accepts as a principle of an

⁹⁴ Cf. *In Poster.*, II, 20 (Leon. 1*/2, p. 243, n. 41-56).

⁹⁵ Cf. *In Poster.*, II, 20 (Leon. 1*/2, p. 243-244, lin. 57-79).

⁹⁶ “Non eodem modo principiorum cognitio fit in nobis ex praeexistenti cognitione sicut accidit in hiis que cognoscuntur per demonstrationem” (*In Poster.*, II, 20 [p. 244, lin. 99-102]).

⁹⁷ Cf. *ibid.* (p. 244, lin. 103-133).

⁹⁸ “*Ex memoria autem multociens facta circa eandem rem, in diuersis tamen singularibus, fit experimentum, quia experimentum nichil aliud esse uidetur quam accipere aliquid ex multis in memoria retentis. Sed tamen experimentum indiget aliqua ratiocinatione circa particularia, per quam confertur unum ad aliud, quod est proprium rationis*” (*ibid.*, II, 20 [p. 244-245, lin. 147-154]).

art and science.”⁹⁹ We have already treated briefly in section 3.2 what is universal and that it is the domain of the first act of the intellect to form it in the mind. We also mentioned in section 1.2 the difference between art and science, namely, that art concerns things that can be made (*factibilia*), whereas science concerns things that are necessary. Respectively, when the universal is taken about things that are to be made (e.g. healing or agriculture), it pertains to art and constitutes a rule for an art, and “if the universal bears on things which are always in the same way, it pertains to science.”¹⁰⁰ And lest anyone think that there is perhaps an exception, for example in moral science, St. Thomas adds clearly: “and this way [of acquiring principles], as described above, is the same for the principles of all sciences and arts.”¹⁰¹ Therefore we acquire the knowledge of first indemonstrable principles from our senses in the way of specifically understood induction.¹⁰² Because they are universal, these principles belong to the domain of intellectual knowledge. Senses alone cannot account for the existence and functioning of such principles, hence it is necessary to presuppose such a nature of the mind which can fully account for it. This is why the possible and active intellect are in this context mentioned by Aristotle. Yet it is good to note that the cognitive powers through which we acquire universal concepts are not themselves strictly speaking the habit of first principles, because this habit grasps not a universal nature but an evident common proposition which follows from the understanding of terms.¹⁰³

⁹⁹ “Et hoc commune accipit ut principium artis et sciencie” (ibid. [p. 245, lin. 162-163]). “Ex ipso enim lumine naturali intellectus agentis prima principia fiunt cognita, nec acquiruntur per ratiocinationes, sed solum per hoc quod eorum termini innotescunt. Quod quidem fit per hoc, quod a sensibilibus accipitur memoria et a memoria experimentorum et ab experimento illorum terminorum cognitio, quibus cognitis cognoscuntur huiusmodi propositiones communes, quae sunt artium et scientiarum principia” (*In Meta.*, IV, 6, n. 599). Cf. *Super III Sent.*, 34, 1, 2; 23, 3, 2 ad 1; *STh*, I-II, 51, 1.

¹⁰⁰ “Et ideo si uniuersale consideretur circa ea que semper eodem modo sunt, pertinet ad scienciam” (*In Poster.*, II, 20 [Leon. 1*/2, p. 245, lin. 203-205]).

¹⁰¹ “Et iste modus qui dictus est competit in principiis omnium scientiarum et artium” (ibid. [lin. 206-207]). Cf. *In Boet. De Trin.*, 6, 4 c.

¹⁰² “Quia igitur uniuersalium cognitionem accipimus ex singularibus, concludit *manifestum* esse quod necesse est *prima* uniuersalia principia cognoscere per inductionem” (*In Poster.*, II, 20 [Leon. 1*/2, p. 246, lin. 282-285]). For a larger discussion of this Aristotelian solution and on its superiority over modern empiricist models see James D. Madden, “Aristotle, Induction, and First Principles,” *International Philosophical Quarterly* 44 (2004): 35-52. “Ipsa autem principia non eodem modo manifestantur, sed quaedam considerantur inductione, quae est ex particularibus imaginatis, sicut in mathematicis, puta quod omnis numerus est par aut impar; quaedam vero accipiuntur sensu, sicut in naturalibus, puta quod omne quod vivit indiget nutrimento; quaedam vero consuetudine, sicut in moralibus, utpote quod concupiscentiae diminuuntur si eis non obediamus; et alia etiam principia aliter manifestantur, sicut in artibus operativis accipiuntur principia per experientiam quandam” (*In Eth.*, I, 11 [Leon. 47/1, p. 40, lin. 106-116]).

¹⁰³ “Quidam posuerunt intellectum agentem idem esse cum intellectu qui est habitus principiorum. Quod esse non potest, quia intellectus qui est habitus principiorum presupponit aliqua iam intellecta in actu,

* * *

Having discussed the first and second kinds of logical intentions in Chapter 3, in Chapter 4 we moved onto the topic of the third logical intention: the intention of consequence. This intention plays an essential role in the reasoning, that is, in drawing conclusions. Thus, in the context of what was said in Chapter 3, we were well prepared to appreciate Aquinas's scientific methodology, which is for him a general manner of reliable explanation. The task of creating scientific methodology belongs to the third part of Aristotelian logic.

St. Thomas's scientific method is one of the privileged ways of saying what there is and what should be. What is most important is that this scientific method provides not only a description of phenomena, but also a causal explanation, which may – and sometimes should – include material, formal, efficient and final causality. We saw how the proper understanding of the first and second intentions is of use for the very foundations of scientific explanation. The logical inference was presented in the context of the conception of learning, which is based for Aristotle and Aquinas on the genuine act-potency conception. Following St. Thomas's texts we analyzed what reasoning is and emphasized the role of the active intellect in drawing conclusions. We also noticed that concepts without their essential characteristic of referring necessarily to really existing things (concepts without intentions), would not allow us to draw any conclusion. And concepts which only accidentally represent extra-mental things would not allow us to draw necessary conclusions. Yet to understand how this general scientific method can be applied to particular sciences we focused on the distinction into formal and material logic.

When causal explanation fulfills several conditions, enumerated and discussed by Aquinas, it may become a demonstration, which constitutes the source of science. We know by now that in order to fulfill these conditions sometimes it is necessary to demonstrate through final cause, *ex suppositione finis*. We only generally mentioned this possibility as it is treated in logic, but we will treat it once again in the second part.

scilicet terminos principiorum per quorum intelligenciam cognoscimus principia” (*In De An.*, III, 4 [Leon. 45/1, p. 219, lin. 26-34]). More extensive elaboration of how we know the first indemonstrable principles see Régis, *Epistemology*, p. 369-423 and Joseph M. Christianson, “Aquinas: The Necessity and Some Characteristics of the Habit of First Indemonstrable (Speculative) Principles,” *American Catholic Philosophical Quarterly* 62 (1988): 249-296.

Already now, however, it seems to be clear that the rejection of this logical instrument for attaining true demonstrations results in many difficulties for determining what there is and what should be.

Another important component was to see kinds and functions of definitions in science, as well as the source and status of first indemonstrable principles. We did not enter into all the details of this elaborate theory of science, because this is not directly our topic. What was of interest to us was to see how the semantical framework and general approach of cognition result in the way of explanation in sciences. But we should still examine which particular science could provide such an explanation of the human being that it could possibly give the basis for moral science. This is not yet fully visible because we have not yet treated all the necessary elements constituting Aquinas's understanding of our cognitive capacities.

From what was said in the fourth chapter, at least one thing is worth special stress before we move to the second part. As we have seen, in St. Thomas's view of science we should distinguish between science as a *habit* or intellectual virtue (i.e. somebody's possession of a valid demonstration) and science as a *discipline* (i.e. a methodologically determined field of human knowledge with objective rules and procedures). Now, the requirement of necessity for premises dictates that when in a science an accident is taken as a subject for some property, it is necessary that there be a demonstration that this accident inheres in a substance, because the substance is its cause. That is to say, it is possible to take as a subject in science not only a substance, which in no way can be taken as a property of something, but also an accident really inhering in a substance, as well as an accident which constitutes a subject for other properties. In this case, the definition of the subject is assumed in this science of the accident, i.e., taken as proved or made evident in the science of this substance, which causes this accident. The definition of such an accident always refers to the real substance in which it inheres, even if this substance does not belong directly to the subject matter of a given science. Therefore, for a complete understanding of such a caused subject of science, there is a need for some previous demonstration, which belongs to a more fundamental or more general science.¹⁰⁴ If one has no demonstration

¹⁰⁴ Cf. *In Poster.*, I, 2 (Leon. 1*/2, p. 11-12, lin. 75-112). "*Demonstratiua sciencia non potest esse accidentium que non sunt per se, sicut determinatum est 'per se' superius, scilicet quod accidens 'per se' est in cuius diffinitione ponitur subiectum, sicut par aut impar est 'per se' accidens numeri; album autem animalis non est 'per se' accidens, quia animal non ponitur in eius diffinitione. Quod autem de huiusmodi accidentibus que non sunt per se, non possit esse demonstratio, sic probat: accidens quod*

of what it is possible to demonstrate about the subject, one does not have a science but dialectical knowledge or opinion. Obviously, the demonstration about the subject is impossible within a particular *discipline*, because “no science demonstrates its principles”: each discipline should remain within its limits under the threat of an error in demonstrating.¹⁰⁵ Particular sciences differ from dialectics in so far as they do not question about premises, but only about conclusions.¹⁰⁶ A particular discipline remains a science in so far as it is a discipline respecting scientific rules. But a *person* who wants to acquire the science of something (science as an intellectual virtue), according to some particular discipline, has to be aware of the way of demonstrating about the subject, even if it exceeds the limits of this particular science as a discipline.

This conclusion is important, especially when we want to account for the status of moral science, which has an accident for its subject (namely human action), considered under a special aspect (ordered to an end).¹⁰⁷ Moral science takes for granted and does not prove that human action is really caused by human beings, nor does it consider the character of this or these causes. For St. Thomas it was obvious that false anthropological solutions result in undermining the relation of causality in human activity and so may simply destroy the principles of moral science and the whole of moral science.¹⁰⁸ Anthropology, as the science of human being, constitutes one of the

non est per se *contingit non inesse* (de hoc enim accidente loquimur); si ergo demonstratio fieret de accidente quod non est per se, sequeretur quod conclusio demonstrationis non esset necessaria, cuius contrarium supra ostensum est. Quod autem accidens quod non est ‘per se’, non necessario insit, ex hoc potest haberi: Si enim aliquod accidens ex necessitate et semper insit subiecto, oportet quod causam habeat in subiecto, qua posita, non possit accidens non inesse. Quod quidem contingit dupliciter: uno modo, quando ex principiis speciei accidens causatur, et tale accidens dicitur per se passio uel proprium; alio modo quando accidens causatur ex principiis indiuidui, et hoc est accidens inseparabile. Omne autem accidens quod causatur ex principiis subiecti, si debeat diffiniri, oportet quod subiectum ponatur in sua definitione: nam unumquodque diffinitur ex propriis principiis; et sic oportet omne accidens, quod ex necessitate inest subiecto, esse accidens per se. Illa ergo quae non sunt per se, non ex necessitate insunt” (ibid., I, 14 [p. 53-54, lin. 14-46]).

¹⁰⁵ “Nulla enim sciencia probat sua principia ... quia contingit in aliqua sciencia probari principia illius sciencie, in quantum illa sciencia assumit principia alterius sciencie, sicut geometra probat sua principia secundum quod assumit formam philosophi primi” (*In Poster.*, I, 21 [Leon. 1*/2, p. 77, lin. 73-79; cf. lin. 80-110]). Before saying this, St. Thomas clarified: “Et quod dictum est de geometria, intelligendum est *in aliis scienciis*, quia scilicet propositio uel interrogatio dicitur proprie alicuius sciencie ex qua demonstratur uel in ipsa sciencia uel in sciencia ei subalternata” (ibid. [lin. 54-58]).

¹⁰⁶ “Sciendum tamen est quod interrogatio aliter est in scientiis demonstratiuis et aliter est in dyalectica: in dyalectica enim non solum interrogatur de conclusione, set etiam de premissis, de quibus demonstrator non interrogat, set ea sumit quasi per se nota uel per talia principia probata; set interrogat tantum de conclusione; set, cum eam demonstrauerit, utitur ea ut propositione, ad aliam conclusionem demonstrandam” (ibid., [p. 76-77, lin. 32-40]).

¹⁰⁷ Cf. *In Eth.*, I, 1 (Leon. 47/1, p. 4, lin. 40-43).

¹⁰⁸ Criticizing Plato, who “non uult hominem ex anima et corpore esse, sed animam corpore utentem et uelut indutam corpore,” and Plotinus, who “ipsam animam hominem esse testatur,” St. Thomas says

integral parts of the science which has for its subject changing being.¹⁰⁹ One cannot know scientifically the moral character of human acts without knowing what human acts are and what human nature is, as you cannot know what even and odd are without knowing what number is. To be sure, we can know *somehow* the moral character of human acts without having an explicit knowledge of the nature of human acts or an explicit knowledge of human nature. But if we agree with Aquinas that ethics is a moral *science*, then it is not sufficient to know *somehow* – we should strive to know in a *scientific* way, as far as it is possible. In order to fulfill to a proper degree the conditions of scientific knowledge, understood as having the virtue of science in moral matters, we cannot dispense ourselves from studying a science on which ethics is based as an accident on a substance.

Note how far this is from our contemporary conviction that if one is a moralist, one has no need to bother about other sciences. It is true that within the domain of moral science one cannot demonstrate the subject, one can only assume it. Yet, this does not mean for Aquinas that the *person* who wants to have the virtue of science in moral matters, i.e. to possess moral demonstrations, can dispense himself from having demonstrations of more fundamental issues. Methodological order kept only *within* a particular science (understood as a discipline) like, for example, moral science, coupled with having a blind eye to any influence of other sciences, results in the fact that this order simply does not supply any science (understood as a virtue). For Aquinas we should also keep methodological order *among* sciences as disciplines in order to really possess a virtue of science, and, above all, to possess wisdom. Obviously, the situation changes when we start to think about moral theology, but not so significantly

that “Secundum istorum positionem, destruuntur moralis philosophie principia: subtrahitur enim quod est in nobis. Non enim est aliquid in nobis nisi per uoluntatem; unde et hoc ipsum uoluntarium dicitur, quod in nobis est. Voluntas autem in intellectu est, ut patet per dictum Aristotilis in III De anima ... Si igitur intellectus non est aliquid huius hominis ut sit uere unum cum eo, sed unitur ei solum per fantasmata uel sicut motor, non erit in hoc homine uoluntas, sed in intellectu separato. Et ita hic homo non erit dominus sui actus, nec aliquis eius actus erit laudabilis uel uituperabilis: quod est diuellere principia moralis philosophie. [Quod est] absurdum, et uite humane contrarium” (*De unitate intellectus*, 3 [Leon. 43, p. 305-306, lin. 261-265 and 336-355]). Also from the opinion, according to which there is “unus intellectus omnium, ex necessitate sequitur quod sit unus intelligens, et per consequens unus uolens, et unus utens pro sue uoluntatis arbitrio omnibus illis secundum que homines diuersificantur ad inuicem. ... Quod est manifeste falsum et impossibile: repugnat enim hiis que apparent, et destruit totam scientiam moralem et omnia que pertinent ad conuersationem ciuilem, que est hominibus naturalis, ut Aristotiles dicit” (ibid., 4 [p. 308, lin. 81-85 and 91-95]). According to Aquinas, also claiming that not the *intellectus possibilis* but the *intellectus passivus* is the act of the body, is “destructivum totius moralis philosophiae et politicae conuersationis” (CG, II, 60, n. 1374).

¹⁰⁹ Cf. *In Poster.*, I, 25 (Leon. 1*/2, p. 89-92).

as to invalidate the main claim of this paragraph. We shall return to this problem in following chapters.

I have not yet directly taken up the problem of defining goodness in the quest for the foundations of moral science – the problem advanced by G. E. Moore. From what has been said so far on defining basic concepts and on acquiring indemonstrable principles we may, however, already account for some considerable discrepancies between the approaches of Aquinas and Moore. I will delay this discussion until some additional clarifications have been furnished in the second part, so that we may be better armed to handle the issue.

PART TWO

Aquinas's Way of Constructing Human "Is"

5. The Division of Theoretical Sciences

While delineating the scope of art in section 1.1, it was already mentioned that the element distinguishing the speculative sciences from the practical ones is what could be called a “feasibility feature,” that is, in the practical sciences (this category comprises all arts and moral science) we consider what we can do or make, whereas in the speculative sciences we consider what we cannot make but only discover. The aim therefore of practical science is an action or operation, while the aim of speculative science is simply knowledge.¹ For now we will leave aside practical sciences. Our concern at the moment is this question: how many ways can one speak scientifically of what is. We saw in Chapter 4 that in the Aristotelian approach the descriptive sciences, or sciences of matter of fact, are never merely descriptive of our sense experience. Though this is a necessary first step in growing in scientific knowledge, the descriptive sciences persevere toward reasoning and grasping intellectually the causes of our experience. This is why the descriptive sciences are more properly called the speculative sciences. To proceed in our study of determining how and why Aquinas grounds the “ought” in the “is,” we need to examine his treatment of the speculative sciences and identify in exactly which one he places the human “is.” By studying in greater detail St. Thomas’s particular study of the “is,” we may uncover the beginnings of his movement toward the “ought.”

¹ Cf. *In Boet. De Trin.*, 5, 1.

Since in the speculative sciences knowledge is always the domain of the intellect, which itself is immaterial, the object of the speculative faculty (*speculabilium*) must conform to the immateriality of the intellect. Immateriality is a prerequisite of intelligibility. Accordingly, St. Thomas holds that material things to which we have immediate cognitive access are unintelligible in themselves unless in our cognitive powers they become immaterial and unless an active cognitive power renders them intelligible.² Immateriality may thus be called a condition for the object of science. This condition arises from the nature of the intellective faculty and thus concerns our mode of apprehending the object of science. There is another condition for the object of science which arises from the nature of the virtue of science. Following Aristotle, Aquinas repeats several times that science considers what is necessary, because science is supposed to achieve a certitude that the object cannot be other than it is. The requirement of necessity in this context means that the object should be immobile or immobilized, because something moving and changing is always other than it was before and thus there is in it some opposition to the necessity condition of science. On the basis of these two conditions – immateriality and immobility – the speculative sciences can be distinguished.³

Because they can differ in the degree of their immateriality and immobility, diverse objects of the speculative faculty do not conform to the intellect in the same way. In order to understand these differences we should know that:

when habits or powers are distinguished according to their objects, they are not distinguished according to just any difference of objects, but according to those which essentially characterize the objects as objects. For instance, to be either animal or plant is accidental to a sensible thing as sensible; and so the distinction of the senses is not taken from this difference, but rather from the difference of colour and sound. Consequently, the speculative sciences must be distinguished according to the differences among objects of speculation precisely as objects of speculation.⁴

² Material things are actually sensible but not intelligible in themselves: “Sicut Philosophus dicit in III De anima, ‘sicut separabiles sunt res a materia, sic et que circa intellectum sunt’: unumquodque enim intantum est intelligibile, inquantum est a materia separabile. Vnde ea que sunt secundum naturam a materia separata, sunt secundum se ipsa intelligibilia actu; que uero sunt a nobis a materialibus condicionibus abstracta, fiunt intelligibilia actu per lumen nostri intellectus agentis” (*In De sensu*, I, prohem. [Leon. 45/2, p. 3, lin. 1-9]). “Ex hoc est aliquid intelligibile actu, quod est immateriale. Sed quia Aristotiles non posuit formas rerum naturalium subsistere sine materia; formae autem in materia existentes non sunt intelligibiles actu: sequebatur quod naturae seu formae rerum sensibilium quas intelligimus, non essent intelligibiles actu” (*STh*, I, 79, 3 c.). Cf. *In Meta.*, IV, 14, n. 706-707.

³ Cf. *Super Boet. De Trin.*, 5, 1.

⁴ “Quando habitus uel potentie penes obiecta distinguuntur, non distinguuntur penes quaslibet differentias obiectorum, set penes illas que sunt per se obiectorum in quantum sunt obiecta: esse enim animal uel plantam accidit sensibili in quantum est sensibile, et ideo penes hoc non sumitur distinctio sensuum, set magis penes differentiam coloris et soni; et ideo oportet scientias speculatiuas diuidi per

According to St. Thomas, every specific object of speculation is distinguished by an essential difference in the way of consideration. Particularly, the main concern is about the manner of defining what is considered in speculative science (*speculabilium*):

since every science is established through demonstration, and since the definition is the middle term in demonstration, it is necessary that sciences be distinguished according to the diverse modes of definition.⁵

Three kinds of *speculabilia* can be distinguished according to the degree of remoteness from matter and motion.⁶ Despite this distinction, it is important to remember that these *speculabilia* may originate from or concern the same real thing.

St. Thomas follows Aristotle in saying that there are three speculative sciences which complementarily deal with this diversity: natural science, mathematics and metaphysics.⁷ These sciences are distinguished on the basis of the manner of defining because definition is the middle term in demonstration and the diversity of speculative sciences follows precisely from the different characteristics of definitions.⁸ Natural science (*physica* or *scientia naturalis* or *philosophia naturalis*) treats such *speculabilia*, which exist only in matter and cannot be understood without sensible matter. Mathematics considers *speculabilia* which exist in matter but can be understood without

differentias speculabilium in quantum speculabilia sunt” (*In Boet. De Trin.*, 5, 1). Cf. *In Poster.*, I, 41 (Leon. 1*/2, p. 154-155, lin. 242-300); *STh*, I, 77, 3; I-II, 54, 2.

⁵ “Sciendum est igitur quod, cum omnis scientia sit in intellectu, per hoc autem aliquid fit intelligibile in actu, quod aliquantulum abstrahitur a materia; secundum quod aliqua diversimode se habent ad materiam, ad diversas scientias pertinent. Rursus, cum omnis scientia per demonstrationem habeatur, demonstrationis autem medium sit definitio; necesse est secundum diversum definitionis modum scientias diversificari” (*In Phys.*, I, 1, n. 1).

⁶ “To say that the basic sciences are divided by (a) three kinds of immobility; (b) three kinds of immateriality; (c) three orders of abstraction; or (d) three modes of definition is to say the same thing” (Vincent Edward Smith, *The General Science of Nature* [Milwaukee: Bruce Publishing Company, 1958], p. 14).

⁷ Cf. *In Boet. De Trin.*, 5, 1; *In Meta.*, VI, 1, n. 1166.

⁸ “Ad cognoscendum differentiam scientiarum speculatarum adinvicem, oportet non latere quidditatem rei, et ‘rationem’ idest definitionem significantem ipsam, quomodo est assignanda in unaquaque scientia. Quaerere enim differentiam praedictam ‘sine hoc’, idest sine cognitione modi definiendi, nihil facere est. Cum enim definitio sit medium demonstrationis, et per consequens principium sciendi, oportet quod ad diversum modum definiendi, sequatur diversitas in scientiis speculativis” (*In Meta.*, VI, 1, n. 1156). “Et quia habitus alicuius potencie distinguuntur specie secundum differentiam eius quod est per se obiectum potencie, necesse est quod habitus scientiarum, quibus intellectus perficitur, distinguantur secundum differentiam separabilis a materia, et ideo Philosophus in VI Metaphisice distinguit genera scientiarum secundum diversum modum separationis a materia: nam ea que sunt separata a materia secundum esse et rationem pertinent ad metaphisicum, que autem sunt separata secundum rationem et non secundum esse pertinent ad mathematicum, que autem in sui ratione concernunt materiam sensibilem pertinent ad naturalem” (*In De sensu*, I, 1, n. 1 [Leon. 45/2, p. 3, lin. 9-22]).

sensible matter, meaning that in their definition there is no sensible matter.⁹ Finally, metaphysics (*metaphysica* or *scientia divina* or *theologia* or *philosophia prima*) reflects on what does not depend on matter at all.¹⁰

5.1. Natural science

Devoid of Heraclitean and Platonic pessimism, in the Aristotelian account natural science can be a science in the strict sense despite the fact that it treats things existing in matter which cannot be understood without sensible matter (such really existing things are by definition mobile, changeable, unnecessary). Natural science is possible because it treats such things insofar as there exists something of necessity in them. Aquinas remarks that “nothing is so contingent that it did not have something necessary in it.”¹¹ It was indicated in sections 3.1 and 4.3 that we are able to abstract necessary universals from unnecessary singulars.¹² These universals are not mobile in themselves, since when they are considered in science they are abstracted from their individuating conditions in temporal and spatial dimensions, i.e. from *materia signata*, or *materia particularis* or *singularis*. As Aquinas explains: “The forms and natures of

⁹ “Et ex hoc accipitur differentia inter mathematicam et scientiam naturalem; quia naturalis scientia est de his in quorum definitionibus ponitur materia sensibilis. Mathematica vero est de aliis, in quorum definitionibus non ponitur materia sensibilis, licet habeant esse in materia sensibili” (*In Meta.*, XI, 7, n. 2258).

¹⁰ Cf. *In Boet. De Trin.*, 5, 1 c. and ad 1; *In Phys.*, I, 1, n. 2; *In Meta.*, XI, 7, n. 2264.

¹¹ “Nihil enim est adeo contingens, quin in se aliquid necessarium habeat” (*STh*, I, 86, 3). “Omnis motus supponit aliquid immobile, cum enim transmutatio fit secundum qualitatem, remanet substantia immobilis; et cum transmutatur forma substantialis, remanet materia immobilis. Rerum etiam mutabilium sunt immobiles habitudines, sicut Socrates etsi non semper sedeat, tamen immobiliter est verum quod, quandocumque sedet, in uno loco manet. Et propter hoc nihil prohibet de rebus mobilibus immobilem scientiam habere” (*STh*, I, 84, 1 ad 3).

¹² “Vt autem probatur in VII Metaphisice, cum in substantia sensibili inueniatur et ipsum integrum, id est compositum, et ratio id est forma eius, per se quidem generatur et corrumpitur compositum, non autem ratio siue forma, set solum per accidens ... et ideo forme et rationes rerum quamuis in motu existentium, prout in se considerantur absque motu sunt; et sic de eis sunt scientie et diffinitiones” (*In Boet. De Trin.*, 5, 2 c.). “Immanuel Kant ... raised the question as to how scientific knowledge is possible at all, considering that science must be always contingent and concrete. His answer was in terms of the famous distinction between phenomena and noumena. He proposed that the phenomena, or the appearances of things, can be known scientifically, whereas the noumena, or things-in-themselves, are forever inaccessible to human reason. Once Kant’s solution was accepted, natural philosophy as traditionally understood became impossible and natural science inherited the only task that was left, that, namely, of collecting data and analyzing phenomena as these present themselves in human experience” (William A. Wallace, “Defining the Philosophy of Science” as Essay I in *From a Realist Point of View: Essays on the Philosophy of Science*, 2nd ed. [Lanham-New York-London: University Press of America, 1983], p. 2-3).

things, though they be forms and natures of things existing in motion, are without motion according as they are considered in themselves.”¹³

Admittedly, therefore, natural science considers such *speculabilia* that contain in their definitions sensible matter.¹⁴ But this sensible matter is *understood*, which means it belongs to the intellectual realm and not to the senses. As such this intellectual matter is called *materia sensibilis non signata*, or *materia communis* or *universalis*.¹⁵ Back in section 3.5 we saw that one can attribute something to a universal not only as it exists in the intellect, but also as it exists in singulars. Moreover, this attribution to a universal can refer either to the essence (or essential principles) of the singular thing or to some of its accidents, as for example to quantity, quality, or action. By now, it should be clearer that natural science does not consider universals as they are in the intellect. These fall under the domain of logic or metaphysics. Instead, the universals proper to natural science are those that exist under material and mobile conditions.¹⁶ We must allow this brief description of natural science to suffice for the moment. In the next chapter we will give the issue more adequate attention.

5.2. Mathematics

Mathematical *speculabilia* differ from those of natural science by means of another kind of abstraction. In natural science there is an abstraction of a whole from its

¹³ “Forme et rationes rerum quamuis in motu exsistentium, prout in se considerantur, absque motu sunt” (*In Boet. De Trin.*, 5, 2).

¹⁴ Aquinas gives an example: “Ut in diffinitione hominis oportet accipere carnem et ossa” (*In Boet. De Trin.*, 5, 1 c.).

¹⁵ “Oportet quod secundum hoc aliquid sit mobile, quod est hic et nunc; hoc autem consequitur rem ipsam mobilem secundum quod est indiuiduata per materiam existentem sub dimensionibus signatis; unde oportet quod huiusmodi rationes, secundum quas de rebus mobilibus possunt esse scientie, considerantur absque materia signata et absque omnibus his que consequuntur materiam signatam, non autem absque materia non signata, quia ex eius notione dependet notio forme que determinat sibi materiam; et ideo ratio hominis, quam significat diffinitio et secundum quam procedit scientia, consideratur sine his carnibus et sine his ossibus, non autem sine carnibus et ossibus absolute. Et quia singularia includunt in sui ratione materiam signatam, uniuersalia uero materiam communem, ut dicitur in VII Metaphisice, ideo predicta abstractio non dicitur forme a materia absolute, set uniuersalis a particulari” (*In Boet. De Trin.*, 5, 2 c.). Cf. *ibid.*, 5, 2 ad 2. “Materia signata est indiuiduationis principium a qua abstrahit omnis intellectus secundum quod dicitur abstrahere ab hic et nunc; intellectus autem naturalis non abstrahit a materia sensibili non signata: considerat enim hominem et carnem et os, in cuius definitione cadit sensibilis materia non signata” (*De ver.*, 2, 6 ad 1). Cf. *In Phys.*, II, 5, n. 4.

¹⁶ “Rationes autem uniuersales rerum omnes sunt immobiles, et ideo quantum ad hoc omnis scientia de necessariis est; set rerum quarum sunt ille rationes, quedam sunt necessarie et immobiles, quedam contingentes et mobiles, et quantum ad hoc de rebus contingentibus et mobilibus dicuntur esse scientie” (*In Boet. De Trin.*, 5, 2 ad 4). Cf. *ibid.*, 5, 2 c. 3; *In Meta.*, VI, 1, n. 1155.

parts (*abstractio totius*), which here means an abstraction of a universal from particulars. This kind of abstraction is present in every science: each employs the abstraction of universals from particulars, for this is the condition of all intellectual knowledge.¹⁷ Mathematical abstraction (*abstractio formae*), however, abstracts a form from *materia sensibilis non signata*.¹⁸ This abstraction is not another step in the process of general abstraction proper to natural science, but it is another process, another kind of abstraction. This must be emphasized, because when we are talking about abstraction of form from matter, as opposed to the abstraction of universal from particular, we never mean the abstraction of substantial form, for “substantial form and matter corresponding to it, depend on each other, and one without another is unintelligible.”¹⁹ The abstraction proper to mathematics involves abstracting only the accident of quantity.

St. Thomas states that not every form can be abstracted from matter in this way, but only such forms whose essence is intelligible independent from sensible matter.²⁰ Sensible matter (*signata* or *non signata*) is called also *materia corporalis* since it is a foundation for sensible qualities. Apart from sensible matter there is also something like intellectual matter. Substance is called in this way insofar as it constitutes the basis for quantity.²¹ Aquinas clarifies that all accidents are compared to their substance as form to matter and so their intelligibility depends upon substance; that is to say, they are understandable only as existing in substance.²² Earlier in section 2.2, while enumerating different categories, we said nothing about the proper order of accidents in relation to substance, because we were concerned more about the relation between real being and the being of reason. Now, considering the division of sciences, we are faced with this

¹⁷ Cf. *In Boet. De Trin.*, 5, 3 c. 5. Cf. also Edward D. Simmons, “In Defense of Total and Formal Abstraction,” *The New Scholasticism* 29 (1955): 427-440.

¹⁸ Cf. *De ver.*, 2, 6 ad 1.

¹⁹ “Cum dicimus formam abstrahi a materia, non intelligitur de forma substantiali, quia forma substantialis et materia sibi correspondens dependent ad inuicem, ut unum sine alio non possit intelligi, eo quod proprius actus in propria materia fit; set intelligitur de forma accidentali, que est quantitas et figura” (*In Boet. De Trin.*, 5, 3 c.).

²⁰ “Forma autem illa potest a materia aliqua abstrahi, cuius ratio essentie non dependet a tali materia, ab illa autem materia non potest forma abstrahi per intellectum a qua secundum sue essentie rationem dependet” (*In Boet. De Trin.*, 5, 3 c.).

²¹ Cf. *STh*, I, 85, 1 ad 2.

²² “Vnde cum omnia accidentia comparentur ad substantiam subiectam sicut forma ad materiam, et cuiuslibet accidentis ratio dependeat ad substantiam, impossibile est aliquam talem formam a substantia separari” (*In Boet. De Trin.*, 5, 3 c.). The matter or material cause of a substance is part of the substance, while the matter or material cause of an accident is not part of the accident but rather its appropriate subject: cf. *STh*, I-II, 55, 4; *In Meta.*, VIII, 4, n. 1742-1745.

order of accidents because it is the key to understanding the difference between natural science and mathematics.

We recognize an order to exist between individual accidents of a substance (which means, that some of them are related to substance more fundamentally than others) when we perceive that the comprehension of some accidents does not depend on the comprehension of others, though the comprehension of some accidents does depend in this way. Hence, there are some accidents which are more fundamentally or primarily related to their substance than others, while the others require understanding both their substance and its other accidents to become intelligible. Consequently, we receive the dictum that what is more knowable intellectually, that is what has precedence in the intellectual order, can be understood without what is posterior, but not conversely.²³ Accordingly, in the analysis of accidents, quantity appears as the most fundamental accident, which we can understand only in dependence upon substance and without any dependence on other accidents.²⁴ Obviously, this “without any dependence” is to be taken *secundum rationem, et non secundum esse*,²⁵ because in reality quantity does not exist without sensible matter and it would be impossible to perceive a quantity as it exists in things without other accidents.²⁶ Quantity, therefore, is posterior in our perception as regards quality, for it is known through some sensible qualities. But being prior in relation to substance, quantities can be understood without sensible qualities, in abstraction from sensible matter, although not in abstraction from intellectual matter. In other words, quantity can be considered apart from matter but not apart from substance because with substance quantity is essentially united *secundum rationem et secundum*

²³ “Manifestum est autem quod posteriora non sunt de intellectu priorum, sed e converso: unde priora possunt intelligi sine posterioribus, et non e converso” (*In Phys.*, II, 3, n. 5).

²⁴ “Set accidentia superueniunt substantie quodam ordine: nam primo aduenit ei quantitas, deinde qualitas, deinde passiones et motus. Vnde quantitas potest intelligi in materia subiecta antequam intelligantur in ea qualitates sensibiles, a quibus dicitur materia sensibilis; et sic secundum rationem sue substantie non dependet quantitas a materia sensibili, set solum a materia intelligibili” (*In Boet. De Trin.*, 5, 3 c.). “Inter accidentia omnia quae adveniunt substantiae, primo aduenit ei quantitas, et deinde qualitates sensibiles et actiones et passiones et motus consequentes sensibiles qualitates. Sic igitur quantitas non claudit in sui intellectu qualitates sensibiles vel passiones vel motus: claudit tamen in sui intellectu substantiam. Potest igitur intelligi quantitas sine materia subiecta motui et qualitibus sensibilibus, non tamen absque substantia” (*In Phys.*, II, 3, n. 5).

²⁵ Cf. *De pot.*, 9, 5 ad 8.

²⁶ “Quantitas dimensiva secundum suam rationem non dependet a materia sensibili, quamvis dependeat secundum suum esse” (*Super IV Sent.*, 12, 1, 1 qc. 3 ad 2). “Quae enim coniuncta sunt in re, interdum divisim cognoscuntur ... Sic etiam et intellectus intelligit lineam in materia sensibili existentem, absque materia sensibili: licet et cum materia sensibili intelligere possit. Haec autem diversitas accidit secundum diversitatem specierum intelligibilium in intellectu receptorum: quae quandoque est similitudo quantitatis tantum, quandoque vero substantiae sensibilis quantae” (*CG*, II, 75, n. 1551).

esse.²⁷ Sensible qualities and movement can only be understood by presupposing quantity.²⁸

Mathematics is interested only in the accident of quantity and what pertains to it. In his science, therefore, the mathematician puts aside all the remaining accidents.²⁹ Mathematics is the abstract study of the quantities of physical objects. Hence, “the mathematician does not consider lines, and points, and surfaces, and things of this sort, and their accidents, insofar as they are the boundaries of a natural body,”³⁰ to which we have an immediate cognitive contact through our senses. The mathematician abstracts from all these sensible qualities. This is possible because quantities and their accidents do not contain in their notions any sensible matter. Therefore, quantities and their accidents can be understood without any reference to sensible matter. Because sensible matter is also the subject of motion, it follows that all mathematical consideration *secundum intellectum* is abstracted also from any movement.³¹ It is worth underlining, however, that in Aquinas’s account mathematical consideration would not occur if we had no experience of sensible matter. Only after knowing material things as they are in their real existence, are we able to abstract some accident which is prior *in se* but not *quoad nos*, and treat it as separated, even if, as it exists, it is never separated. St. Thomas concludes that

it is evident that mathematical science studies some things insofar as they are immobile and separate from matter, although they are neither immobile nor separable from matter in being. ... Hence mathematical science differs from the philosophy of

²⁷ “Manifestum est autem quod quantitas prius inest substantiae quam qualitates sensibiles. Unde quantitates, ut numeri et dimensiones et figurae, quae sunt terminationes quantitatum, possunt considerari absque qualitatibus sensibilibus, quod est eas abstrahi a materia sensibili, non tamen possunt considerari sine intellectu substantiae quantitati subiectae, quod esset eas abstrahi a materia intelligibili communi. Possunt tamen considerari sine hac vel illa substantia; quod est eas abstrahi a materia intelligibili individuali” (*STh*, I, 85, 1 ad 2). Cf. *In Meta.*, VIII, 5, n. 1762.

²⁸ “Qualitates sensibiles non possint intelligi non preintellecta quantitate, sicut patet in superficie et colore; nec etiam potest intelligi esse subiectum motus quod non intelligitur quantum” (*In Boet. De Trin.*, 5, 3 c.). “Res aliquae sunt sensibiles per qualitatem, quantitates autem preexistunt qualitatibus, unde mathematicus concernit solum id quod quantitatis est absolute, non determinans hanc uel illam materiam” (*In De an.*, I, 2 [Leon. 45/1, p. 12, lin. 235-239]).

²⁹ “Quantitas potest intelligi in materia subiecta antequam intelligantur in ea qualitates sensibiles, a quibus dicitur materia sensibilis ... Et de huiusmodi abstractis est mathematica, quae considerat quantitates et ea quae quantitates consequuntur, ut figuras et huiusmodi” (*In Boet. De Trin.*, 5, 3 c.). Cf. also Bertrand Mahoney, *The Notion of Quantity in a Thomistic Evaluation of the Sciences* (River Forest, Ill., 1951).

³⁰ “Quia enim mathematicus considerat lineas et puncta et superficies et huiusmodi et accidentia eorum non in quantum sunt termini corporis naturalis, ideo dicitur abstrahere a materia sensibili et naturali” (*In Phys.*, II, 3, n. 5).

³¹ “Mathematica consideret ea quae sunt sine motu, sine quo actio et factio esse non possunt (*In Meta.*, VI, 1, n. 1160). Cf. *In Phys.*, II, 3, n. 5 and 7; *In Meta.*, VIII, 5, n. 1760-1761; XI, 7, n. 2260.

nature in this respect, that while the philosophy of nature considers things whose definitions contain sensible matter (and thus it considers what is not separate insofar as it is not separate), mathematical science considers things whose definitions do not contain sensible matter. And thus even though the things which it considers are not separate from matter, it nevertheless considers them insofar as they are separate.³²

For St. Thomas, the abstraction that distinguishes mathematics from natural science in no way lessens mathematics' status as a science. Compared to natural science, mathematics has only a different formal subject, whereas it shares with natural science the same sensory source of knowledge. It can happen that the natural scientist and mathematician may be drawn to the same really existing substance. Mathematics, however, does not say a word about what does not fall into its scope, because it abstracts from everything but the accident of quantity. Nor does the mathematician deny the discoveries of natural scientist. He would be overreaching if he concludes that nothing but quantity is capable of or even worth study.³³ To be sure, mathematics considers only a part of reality. It fulfills its task by disregarding the material part of existing bodies, which falls under the purview of the natural scientist. Mathematical being is thus more abstract than the being of natural science, but not so abstract as not to be imaginable. Indeed, the imagination is of great use in mathematics. It is precisely to the evidence of imagination that the verification of mathematical arguments is reduced, whereas the verification in natural science is reduced to the evidence of external senses.³⁴

³² "Hoc est manifestum, quod scientia mathematica speculatur quaedam inquantum sunt immobilia et inquantum sunt separata a materia sensibili, licet secundum esse non sint immobilia vel separabilia. ... In hoc ergo differt mathematica a physica, quia physica considerat ea quorum definitiones sunt cum materia sensibili. Et ideo considerat non separata, inquantum sunt non separata. Mathematica vero considerat ea, quorum definitiones sunt sine materia sensibili. Et ideo, etsi sunt non separata ea quae considerat, tamen considerat ea inquantum sunt separata" (*In Meta.*, VI, 1, n. 1161).

³³ "Et nihil differt quantum ad veritatem considerationis, utrum sic vel sic considerentur. Quamvis enim non sint abstracta secundum esse, non tamen mathematici abstrahentes ea secundum intellectum, mentiuntur: quia non asserunt ea esse extra materiam sensibilem (hoc enim esset mendacium), sed considerant de eis absque consideratione materiae sensibilis, quod absque mendacio fieri potest" (*In Phys.*, II, 3, n. 5). Cf. *In Boet. De Trin.*, 5, 3 ad 1.

³⁴ "In qualibet cognitione duo est considerare, scilicet principium et terminum. Principium quidem ad apprehensionem pertinet, terminus autem ad iudicium: ibi enim cognitio perficitur. Principium igitur cuiuslibet nostre cognitionis est in sensu ... Set terminus cognitionis non semper est uniformiter: quandoque enim est in sensu, quandoque in ymaginatione, quandoque autem in solo intellectu. ... Quedam uero sunt, quorum iudicium non dependet ex his que sensu percipiuntur, quia quamvis secundum esse sint in materia sensibili, tamen secundum rationem diffinitivam sunt a materia sensibili abstracta; iudicium autem de unaquaque re potissime fit secundum eius diffinitivam rationem. Set quia secundum rationem diffinitivam non abstraunt a qualibet materia, set solum a sensibili et remotis sensibilibus conditionibus remanet aliquid ymaginabile, ideo in talibus oportet quod iudicium sumatur secundum id quod ymaginatio demonstrat; huiusmodi autem sunt mathematica. Et ideo in mathematicis oportet cognitionem secundum iudicium terminari ad ymaginationem, non ad sensum, quia iudicium mathematicum superat apprehensionem sensus" (*In Boet. De Trin.*, 6, 2 c.).

5.3. Metaphysics

These two speculative sciences, natural science and mathematics, differ from the third, metaphysics, again on the account of the immateriality and immobility of the object. The intelligibility of the object of metaphysics is said to be independent from matter altogether. Metaphysical *speculabilia* are not only abstracted from *materia signata* as in natural science, “but from sensible matter altogether, and not only *secundum rationem* – as it is the case in mathematics, but also *secundum esse*, like in God and intelligences [i.e. angels].”³⁵ Since these *speculabilia* de facto exist without matter, they are not, properly speaking, abstracted from matter. We come to know them as really separated from matter. Tied as our knowledge is to sensible phenomena, the existence of such beings – altogether separated from matter and therefore from motion – is not evident to us. As Aquinas states, the connatural objects of the human mind are sensible things. Everything else we know only if it is anchored in the knowledge of this connatural object. Consequently, human knowledge always remains dependent both epistemologically and linguistically on the knowledge of sensible things. Thus the possibility and need for such a science as metaphysics is not conceivable until we conclude the existence (which means, we should answer the question *an sit*) of at least one cause that is immaterial.³⁶

Natural science itself leads to the search for immaterial causes, for the natural scientist cannot fully explain the world of change without ultimately discovering that there must be a first cause, which itself cannot be material.³⁷ Therefore, the dynamism of natural science leads to studying the first cause because no effect is fully known if its

³⁵ “Ea vero sunt maxime a materia separata, quae non tantum a signata materia abstrahunt, sicut formae naturales in universali acceptae, de quibus tractat scientia naturalis, sed omnino a materia sensibili. Et non solum secundum rationem, sicut mathematica, sed etiam secundum esse, sicut Deus et intelligentiae” (*In Meta.*, prooem.)

³⁶ Cf. Ralph McInerny, *Praeambula Fidei: Thomism and the God of the Philosophers* (Washington, D.C.: The Catholic University of America Press, 2006), p. 187.

³⁷ “De primo motore non agitur in scientia naturali tamquam de subiecto uel de parte subiecti, set tamquam de termino ad quem scientia naturalis perducit. Terminus autem non est de natura rei cuius est terminus, set habet aliquam habitudinem ad rem illam, sicut terminus lineae non est linea set habet ad eam aliquam habitudinem. Ita etiam et primus motor est alterius nature a rebus naturalibus, habet tamen ad eas aliquam habitudinem, in quantum influit eis motum, et sic cadit in consideratione naturalis, scilicet non secundum ipsum set in quantum est motor” (*In Boet. De Trin.*, 5, 2 ad 3).

cause remains unknown.³⁸ After the preparation, consisting in a meticulous analysis of change, matter and form, fourfold causality, and many other elements taken from our sensory experience of material things, *Physics* culminates in Book VII and VIII in the proof of the existence of the Unmoved Mover which is the immaterial First Cause.³⁹ Therefore, since there is other being than material, we need another theoretical science besides natural science and mathematics.⁴⁰

As Aquinas relates, this conclusion changed Aristotle's understanding of the scope of natural science. If there were no such immaterial and unchanging being, the subject of natural science would contain everything that exists. In other words, if the existence of immaterial being were not known, the only known being would be a material and changing being. Natural science, therefore, would consider *ens simpliciter*, or being in general, or being as being. Accordingly, substance and accident, essence and existence, potency and act, one and the many, truth and goodness, causes and effects, and everything else that belongs to being as being, would be properly and exhaustively treated in natural science, for in what other way could one treat all these topics except in reference to material beings. Aquinas repeats this several times in his commentaries that in this case natural science would be *philosophia prima*.⁴¹ To be

³⁸ "In naturalibus oportet semper supremam causam unicuiusque requirere ... procedere usque ad causam supremam; et hoc ideo est quia effectus nescitur nisi sciatur causa ... quousque perveniatur ad primam causam" (*In Phys.*, II, 6, n. 7).

³⁹ More on this point see the section 7.2. See also Ashley's discussion of this argument according to the interpretation of St. Thomas, in relation to metaphysics, in *The Way toward Wisdom*, p. 92-124. He states clearly: "No step in this argument requires a metaphysical notion of Being as *ens commune*, but only the analysis of *ens mobile* proper to natural science. If the argument were proper to metaphysics, it would be circular, since metaphysics presupposes the argument's conclusion, namely, that immaterial being exists" (p. 96). Referring to the achievements of Jan Salamucha of the Kraków School of Thomism, he adds also: "The purely logical coherence of Aquinas's demonstration of the existence of immaterial substances has never been refuted but has been shown to be valid by the modern methods of symbolic logic" (p. 163).

⁴⁰ There is also one less evident way of arriving at the existence of somehow separable form, namely in the analysis of human being: "Terminus considerationis scientiae naturalis est circa formas quae quidem sunt aliquo modo separatae, sed tamen esse habent in materia. Et huiusmodi formae sunt animae rationales; quae quidem sunt separatae inquantum intellectiva virtus non est actus alicuius organi corporalis, sicut virtus visiva est actus oculi; sed in materia sunt in quantum dant esse naturale tali corpori" (*In Phys.*, II, 4, n. 7). "Sed quomodo se habeant formae totaliter a materia separatae et quid sint, vel etiam quomodo se habeat haec forma, idest anima rationalis, secundum quod est separabilis et sine corpore existere potens, et quid sit secundum suam essentiam separabile, hoc determinare pertinet ad philosophum primum" (*ibid.*, n. 9).

⁴¹ "Si non est aliqua alia substantia praeter eas quae consistunt secundum naturam, de quibus est physica, physica erit prima scientia. Sed, si est aliqua substantia immobilis, ista erit prior substantia naturali; et per consequens philosophia considerans huiusmodi substantiam, erit philosophia prima. Et quia est prima, ideo erit universalis, et erit eius speculari de ente inquantum est ens, et de eo quod quid est, et

sure, there would still be many other particular sciences that treat being under other particular forms such as celestial being, living being, or human being etc. But since all of these sciences are directed toward human perfection, which is happiness, particular disciplines need to have a common science which could unite them all and be architectonic for all possible knowledge. Moreover, since science consists of an explanation through causes, the most noble science should be this which explains through ultimate or highest causes, because such an explanation comprises universally every other particular explanation. Such a science is rightly called “wisdom.”⁴²

Nonetheless, since it is proved within the limits of natural science that material being is not the only existing kind of being, which means that there exists at least one immaterial being, the notion of being appears to be larger than that treated in natural science, and thus it exceeds the scope of natural science’s own principles and method. It was already said that in any science we should first know what its subject is and the middle through which it demonstrates.⁴³ Also, every science should inquire about the principles and causes of its own subject.⁴⁴ Hence the principles of the subject determine the limits of the science.⁴⁵ Therefore, the competence of natural science ends in the scientific discovery of something other than material being, in the demonstration of the First Cause as other than the changing, contingent universe. Natural science leaves to another science the name “wisdom” and the task of exploring what positively the First Cause is:

For the ancients did not think any substance existed other than corporeal mobile substance about which the natural scientist is concerned. And therefore it was believed that only natural scientists treated of the totality of nature and consequently of being, even of the first beings. But this is false since there is a certain science that is superior to natural science, for nature, that is, those natural things that have an intrinsic principle of motion, is itself only one genus of universal being. For not all

de his quae sunt entis inquantum est ens: eadem enim est scientia primi entis et entis communis, ut in principio quarti habitum est” (*In Meta.*, VI, 1, n. 1170). Cf. *ibid.*, III, 6, n. 398; IV, 5, n. 593; XI, 7, n. 2267.

⁴² “Omnes autem scientiae et artes ordinantur in unum, scilicet ad hominis perfectionem, quae est eius beatitudo. Unde necesse est, quod una earum sit aliarum omnium rectrix, quae nomen sapientiae recte vindicat. Nam sapientis est alios ordinare” (*In Meta.*, prooem.). Cf. *CG*, III, 25, n. 2063; 79, n. 2543; *STh*, I-II, 66, 5; II-II, 45, 1; *In Meta.*, I, 2, n. 50. Cf. also section 4.2, footnote 42 for the specific notion of the unity of science in Aquinas.

⁴³ “Ea autem quae primo oportet cognoscere in aliqua scientia, sunt *subiectum* ipsius, et *medium* per quod demonstrat” (*In Phys.*, II, 1, n. 1).

⁴⁴ “Quaelibet scientia debet inquirere principia et causas sui subiecti, quae sunt eius inquantum huiusmodi” (*In Meta.*, VI, 1, n. 1145).

⁴⁵ “Consideratio speculativae scientiae non se extendit ultra virtutem principiorum illius scientiae, quia in principiis scientiae virtualiter tota scientia continetur” (*STh*, I-II, 3, 6). Cf. *STh*, I, 1, 7; II-II, 4, 1.

being is of this kind, since it is proved in *Physics VIII* that there exists some immobile being. This immobile being is superior to and nobler than the mobile being that natural science studies.⁴⁶

Knowing that the notion of being is not exhausted in material being, Aristotle and Aquinas along with him step back from such qualifications as “material” or “immaterial,” “changing” or “unchanging,” and consider being as indifferent in regard to such qualifications. This kind of unspecified being is called being simply speaking (*ens simpliciter*), or being as being, or common being (*ens commune*).⁴⁷

It was already mentioned that in speculative sciences there is certain conformity of the object known to the immateriality of the intellect.⁴⁸ More exactly it can be said that what is more separated from the matter is more knowable.⁴⁹ And this is really the case with this totally immaterial First Cause – it is the most knowable, the most intelligible, because absolutely separated from matter. However, this is so objectively (*in se*), but it cannot be so for human being (*quoad nos*) in this present condition due to the human intellect’s dependency on the senses. Intellectual beings, known only through the intellect (and such is the First Cause, since it is immaterial), are intelligible for us only by the mediation of their material effects experienced through the senses.⁵⁰ We can

⁴⁶ “Antiqui enim non opinabantur aliquam substantiam esse praeter substantiam corpoream mobilem, de qua physicus tractat. Et ideo creditum est quod soli determinant de tota natura, et per consequens de ente; et ita etiam de primis principiis quae sunt simul considerata cum ente. Hoc autem falsum est ... cum probatum sit in octavo *Physicorum*, esse aliquod ens immobile” (*In Meta.*, IV, 5, n. 593). Cf. *In Meta.*, IV, 13, n. 690; 17, n. 748.

⁴⁷ “It is important to distinguish between the concept of ‘being-as-such’ and the concept of being which we acquired in our first cognitive notions. The first concept which falls under our apprehension is being, and this concept contains in act, although confusedly, all beings, because outside this concept literally nothing exists. One must avoid the danger of identifying this concept of being and that of ‘being-as-such.’ The former is superficial and confused knowledge; it is easily grasped and is common. The latter abstracts from all matter and is acquired only after a protracted intellectual analysis” (Antonio Moreno, “The Nature of Metaphysics,” *The Thomist* 30 [1966], p. 122).

⁴⁸ “Intelligibile enim et intellectum oportet proportionata esse, et unius generis, cum intellectus et intelligibile in actu sint unum” (*In Meta.*, prooem.).

⁴⁹ “Cum unaquaeque res ex hoc ipso vim intellectivam habeat, quod est a materia immunis, oportet illa esse maxime intelligibilia, quae sunt maxime a materia separata” (*In Meta.*, prooem.).

⁵⁰ “Magis universalia secundum simplicem apprehensionem sunt primo nota, nam primo in intellectu cadit ens. ... Sed quantum ad investigationem naturalium proprietatum et causarum, prius sunt nota minus communia; eo quod per causas particulares quae sunt unius generis vel speciei pervenimus in causas universales. Ea autem quae sunt universalia in causando sunt posterius nota quoad nos, licet sint prius nota secundum naturam; quamvis universalia per praedicationem sint aliquo modo prius quoad nos nota quam minus universalia, licet non prius nota quam singularia; nam cognitio sensus qui est cognoscitivus singularium in nobis praecedat cognitionem intellectivam quae est universalium Illa enim quae sunt a materia penitus separata secundum esse, sicut substantiae immateriales, sunt magis difficilia nobis ad cognoscendum quam etiam universalia; et ideo ista scientia quae sapientia dicitur quamvis sit prima in dignitate est tamen ultima in addiscendo” (*In Meta.*, I, 2, n. 46).

really know something only on the basis of 1) abstraction through the first act of the intellect, 2) dividing and composing what we grasped, and, finally, 3) by looking for causes. We cannot abstract the First Cause because it is already in itself separated from matter, totally immaterial and not falling under sensory cognition and so completely unattainable to the senses. In the same way we cannot abstract either *ens commune* as different from material and changing being before we get to know that material being is not identical with *ens commune*. We could venture to make a conceptual distinction between *ens commune* and material being and say that these are not the same conceptually, yet it would be an insufficient basis for another specific discipline: metaphysics would not be distinguishable from natural science. Only by proving that there is at least one immaterial and unmoved being can we achieve a sufficient reason for constructing the science of metaphysics as distinct from natural science.⁵¹

In general, we can know a cause through its effects insofar as the effects are commensurate to their cause, otherwise we know *that* the cause exists and not much about *what* it is.⁵² However, Aquinas shows that material and changing being is an incommensurate effect of the First Cause. The First Cause is attained through effects which are contingent and mobile beings. As such they are insufficient to manifest the proper nature of the First Cause. They only reveal *that* it is and *something about* its nature by some similarities.⁵³ This is one of the reasons why, according to St. Thomas, the First Cause is not, strictly speaking, the subject of metaphysics, but its condition and aim:

⁵¹ This, however, is not necessary within Scotistic thought because of Scotus's distinction between intuitive and abstractive cognition. Thanks to the intuitive cognition it is possible to grasp intellectually clearly enough the subject of metaphysics without the need of tortuous analysis in natural science. (Interestingly, there are some Thomistic schools which also would like to resolve the problem of the beginning of metaphysics in a similar manner.) Katherine Tachau in her book *Vision and Certitude in the Age of Ockham* considers the introduction of this distinction as the initial frame for the shift of emphasis from being to discourse by the end of Latin era in philosophy: "Despite the difficulties presented by his innovation in grafting intuition onto the process induced by species, the dichotomy of intuitive and abstractive cognition was rapidly and widely adopted by Parisian trained theologians. Within a decade of the Subtle Doctor's death, its acceptance on the other side of the English Channel was also ensured. That is not to say that his understanding was uniformly employed; nor, indeed, that all who employed the terminology of intuitive and abstractive cognition considered Scotus's an adequate delineation of the modes of cognition; nevertheless, the history of medieval theories of knowledge from ca. 1310 can be traced as the development of this dichotomy" (Katherine H. Tachau, *Vision and Certitude in the Age of Ockham: Optics, Epistemology, and the Foundations of Semantics 1250-1345* [Leiden: E. J. Brill, 1988], p. 80-81).

⁵² Cf. *In Poster.*, I, 23 (Leon. 1*/2, p. 85-86, lin. 37-162).

⁵³ Cf. *In Boet. De Trin.*, 1, 2; 6, 4.

The subject of a science is this of which causes and properties we seek, and not the causes themselves of any subject. Since the knowledge of the causes of some subject is the aim to which the consideration of a science reaches.⁵⁴

Knowing *that* an immaterial First Cause exists, we can state that being can exist as separated from matter. But this statement, as indicated, pertains to another operation of the intellect than the act of abstraction. The act of abstraction is performed by the first act of the intellect, the *indivisibilium intelligentia*. It was already said that abstraction can happen in two ways: either it is the abstraction of a whole from its parts (universal from particular – this is the *abstractio totius*, proper to natural science, although it is the condition of all intellectual knowledge), or the abstraction of form from sensible matter (this is the *abstractio formae*, proper to mathematics). A common feature in abstraction is what is cognitively abstracted from something else exists in thing as united.⁵⁵ The situation changes when things are not united in reality, or at least can exist separately. In this case we should talk rather about separation than abstraction. To state that something is not something else, or at least can exist without something else, is the domain of the second act of the intellect, *compositio et divisio intellectus*. The second act is called a judgment, and in this specific case it is a negative judgment in which we state that there is a substance or there are substances that *cannot* be material and therefore materiality does not necessarily belong to the notion of being.⁵⁶ The

⁵⁴ “Hoc enim est subiectum in scientia, cuius causas et passiones quaerimus, non autem ipsae causae alicuius generis quaesiti. Nam cognitio causarum alicuius generis, est finis ad quem consideratio scientiae pertingit” (*In Meta.*, prooem.). Cf. *In Meta.*, IV, 1, n. 533; *In Boet. De Trin.*, 1, 2 ad 1. “The subject of a science accessible in the light of human reason is not the first principles themselves, nor is it one or another of the attributes. Rather it is that which has first principles and causes or elements into which it is resolvable, and it is that which has attributes which can be demonstrated of it. This is the case in all the sciences: in physics and in mathematics. Therefore, the subject of metaphysics is common being as such, not the first principles, nor God, nor the separated substances, nor the attributes of common being” (William H. Kane, “The Subject of Metaphysics,” *The Thomist* 18 (1955), p. 513).

⁵⁵ “Abstractio non possit esse proprie loquendo nisi coniunctorum in esse, secundum duos modos coniunctionis predictos, scilicet qua pars et totum uniuntur uel forma et materia” (*In Boet. De Trin.*, 5, 3 c.).

⁵⁶ Therefore the judgment of separation does not fall upon the act of existence as such. “The judgment of separation, it is true, falls upon existing beings, but not upon existence of these beings as such. Existence is identical in all beings. Essence is the principle of distinction of existing beings, as Aquinas clearly says: ‘The distinction of beings is not due to their existence: since they agree in it ... hence things are distinguished because they have different natures, by which existence is acquired in different ways’ (CG, I, 26, n. 3). ... The judgment separates the concept of being as being from the concept of matter and mobility” (Antonio Moreno, “The Nature of Metaphysics,” p. 112). Yet “the judgment of separation does not positively preclude matter. This occurs with spiritual substances, and their science is theology: ‘First in the sense that it is not of the nature of the thing called separated to be able in no way to exist in matter and motion, as God and the angels ... the theology of Sacred Scripture treats of beings separated in the first sense as its subject’ (*In Boet. De Trin.*, 5, 4). The judgment of

negative judgment that being is not necessarily material but can be also immaterial, separates the notion of being as known naturally through phantasms and is worked out in an *analogical* reasoning (because immaterial being is known to us only by analogy to material)⁵⁷ to appear finally as indifferent to both qualifications “material” and “immaterial.” Aquinas claims that separation belongs properly to metaphysics.⁵⁸ Thus, knowing that there is at least one being that is immaterial, we do not abstract being as being, but rather state that it exists as separated, and consider it as separated from or independent of any matter.⁵⁹ According to St. Thomas, the failure to distinguish between abstraction and separation was the cause of the error of Pythagoras and Platonists who put mathematical beings and universals as separated from matter.⁶⁰

Since everything what exists is being and is known as being, metaphysics, treating the most general notion of being, should treat somehow everything that exists. Thus metaphysical *speculabilia* are twofold:

there are some *speculabilia*, which do not depend upon matter *secundum esse*, because they can exist without matter, whether they never are in matter as God and angels, or in some they are in matter and in others not, such as substance, quality, being, potency, act, one and many, etc.⁶¹

separation is ‘precise’; namely, it does without matter in the sense that matter is not positively precluded nor is it positively included. Matter is not positively precluded because then metaphysics would be the science of spiritual substance only, which it is not. On the other hand, matter is not included either, for this would transform metaphysics into a physics dealing with mobile beings. The concept of being is not opposed to the concept of materiality; materiality simply is not included, and consequently, its ‘ratio’ or formal concept is not material” (Moreno, p. 117-118).

⁵⁷ “Intelligibile uidetur magis dici per remotionem quam per positionem: ex hoc enim est unumquodque intelligibile, quod est a materia immune uel separatum” (*In Boet. De Trin.*, 1, 2 ad 4).

⁵⁸ Cf. *In Boet. De Trin.*, 5, 3 c. Cf. also Louis B. Geiger, “Abstraction et séparation d’après S. Thomas *In de Trinitate*, q. 5, a. 3,” *Revue des sciences philosophiques et théologiques* 31 (1947): 3-40; J. D. Robert, “La métaphysique, science distincte de toute autre discipline philosophique selon Saint Thomas d’Aquin,” *Divus Thomas* 50 (1947): 206-223.

⁵⁹ “In his autem que secundum esse possunt esse diuisa magis habet locum separatio quam abstractio. ... Substantia autem, que est materia intelligibilis quantitatis, potest esse sine quantitate; unde considerare substantiam sine quantitate magis pertinet ad genus separationis quam abstractionis” (*In Boet. De Trin.*, 5, 3 c.).

⁶⁰ “Sic ergo in operatione intellectus triplex distinctio inuenitur: una secundum operationem intellectus componentis et diidentis, que separatio dicitur proprie, et hec competit scientie diuine siue metaphisice; alia secundum operationem qua formantur quiditates rerum, que est abstractio forme a materia sensibili, et hec competit mathematice; tertia secundum eandem operationem que est abstractio uniuersalis a particulari, et hec competit etiam phisice et est communis omnibus scientiis, quia in scientia pretermittitur quod per accidens est et accipitur quod per se est. Et quia quidam non intellexerunt differentiam duarum ultimarum a prima, inciderunt in errorem ut ponerent mathematica et uniuersalia a sensibilibus separata, ut Pittagoras et Platonici” (*In Boet. De Trin.*, 5, 3 c.).

⁶¹ “Quedam uero speculabilia sunt que non dependent a materia secundum esse, quia sine materia esse possunt, siue nunquam sint in materia, sicut Deus et angelus, siue in quibusdam sint in materia et in quibusdam non, ut substantia, qualitas, ens, potentia, actus, unum et multa, et huiusmodi” (*In Boet. De Trin.*, 5, 1).

In metaphysics as a philosophical discipline we cannot know much about God, only *that* he exists and thanks to the threefold way of analogical reasoning (*via causalitatis, remotionis et eminentiae*) we can say something about him.⁶² We are talking here about metaphysics as philosophy. Aquinas calls it also theology,⁶³ but distinguishes between philosophical theology (*theologia philosophica*) and theology of Sacred Scripture (*theologia sacrae Scripturae*).⁶⁴ The latter is based on supernatural revelation; it is the science which is a certain participation through faith in the knowledge of God and the saints. The knowledge about angels is even more disputable in metaphysics understood as philosophy. Strictly speaking, no philosophical science can have for its subject simple substances, i.e. such that are not composed of matter and form (such are God and angels), because every *propter quid* knowledge implies a composition. Obviously, we can consider them as causes of effects which are more known to us.⁶⁵ But we can say much more about such *speculabilia* that may or may not exist in matter, i.e. are the most universal common features of immaterial and material beings.⁶⁶ Such objects of

⁶² “Naturali ratione de Deo cognoscere non possumus nisi hoc quod percipitur de ipso ex habitudine effectuum ad ipsum, sicut illa que designant causalitatem ipsius et eminentiam super causata et que remouent ab ipso imperfectas conditiones effectuum” (*In Boet. De Trin.*, 1, 4). Cf. *In Boet. De Trin.*, 5, 4 c.

⁶³ Cf. *In Boet. De Trin.*, 5, 1 c.

⁶⁴ “Sic ergo theologia siue scientia diuina est duplex: una in qua considerantur res diuine non tamquam subiectum scientie, set tamquam principia subiecti, et talis est theologia quam philosophi prosequuntur, que alio nomine metaphisica dicitur; alia uero que ipsas res diuinas considerat propter se ipsas ut subiectum scientie, et hec est theologia que in sacra Scriptura traditur” (*In Boet. De Trin.*, 5, 4 c.).

⁶⁵ “Palam est quod in substantiis simplicibus, quae non sunt compositae ex materia et forma, non est aliqua quaestio. In omni enim quaestione, ut habitum est, oportet aliquid esse notum, et aliquid quaeri quod ignoramus. Tales autem substantiae, vel totae cognoscuntur, vel totae ignorantur, ut in nono infra dicitur. Unde non est in eis quaestio. Et propter hoc de eis etiam non potest esse doctrina, sicut est in scientiis speculativis. Sed ne videatur consideratio talium substantiarum omnino aliena esse a physica doctrina, ideo subiungit, quod alter est modus quaestionis talium. In cognitione enim harum substantiarum non pervenimus nisi ex substantiis sensibilibus, quarum substantiae simplices sunt quodammodo causae. ... Et ideo in doctrinis et quaestionibus de talibus, utimur effectibus, quasi medio ad investigandum substantias simplices, quarum quidditates ignoramus” (*In Meta.*, VII, 17, n. 1669-1671).

⁶⁶ “Quicumque enim scit universalis, aliquo modo scit ea quae sunt subiecta universalibus, quia scit ea in illa: sed his quae sunt maxime universalis sunt omnia subiecta, ergo ille qui scit maxime universalis, scit quodammodo omnia” (*In Meta.*, I, 2, n. 44). “Ea autem quae sunt universalis in causando, sunt posterius nota quo ad nos, licet sint prius nota secundum naturam, quamvis universalis per praedicationem sint aliquo modo prius quo ad nos nota quam minus universalis, licet non prius nota quam singularis; nam cognitio sensus qui est cognoscitivus singularium, in nobis praecedit cognitionem intellectivam quae est universalis. ... Illa enim quae sunt a materia penitus separata secundum esse, sicut substantiae immateriales, sunt magis difficilia nobis ad cognoscendum, quam etiam universalis: et ideo ista scientia, quae sapientia dicitur, quamvis sit prima in dignitate, est tamen ultima in addiscendo” (*ibid.*, n. 46).

theoretical reasoning exist not in the same way in material and immaterial beings, except analogically.

Hence, metaphysics plays the role of a common science, which treats being as being, in the sense that it treats all actually existent substances, whether material or immaterial, in their contingent condition, and subordinated to the First Cause as their ultimate principle.⁶⁷ Unlike mathematics, the science of metaphysics leaves nothing out of consideration: it considers everything *secundum communem rationem entis*.⁶⁸ It leaves aside only the *becoming* of material being (*fieri* or *devenire*), its changeable and dynamic character, its passing from non-being to being, because this consideration is reserved to natural science.⁶⁹ The fact that its subject is being as being does not say that every other science is a part of metaphysics because every other science treats some part of being or some aspect of being and treats it according to a special mode, which is necessarily distinct from that of metaphysics.⁷⁰

To metaphysics pertains also the consideration of the truth of all first principles of demonstration.⁷¹ It does not belong to other sciences to examine the truth of these principles because they are assumed in every other particular science as true on the

⁶⁷ For more explanations and a thorough discussion see Ashley, *The Way towards Wisdom*, p. 134-144 and 146-169. He enumerates in his book eight chief ways of understanding Aquinas's views on the nature of metaphysics: 1. Essentialist or Conceptualist, 2. Platonizing, 3. Transcendental, 4. Existential, 5. Phenomenological, 6. Analytic, 7. Semiotic, 8. Aristotelian (cf. p. 46-54 for short a characterization of each). From what I have written so far it can be already seen that I espouse his position, which is classified as Aristotelian Thomism. He gives two conditions for the validity of metaphysics in this approach: "1. There can be no valid metaphysics formally distinct from natural science unless its subject, Being as Being (*esse*), as it analogically includes both material and immaterial being, has first been validated in a manner proper to the foundations integral to natural science by a demonstration of the existence of immaterial being as the cause of material beings. 2. Modern natural science can achieve such a demonstration, but only if its own foundations are rendered unequivocally consistent with sense observation by an analysis such as is exemplified by Aristotle's *Physics* as interpreted by Aquinas" (p. 53). Throughout the whole book he develops his argument supporting such reading of St. Thomas's texts and refutes the objections coming from other interpretations.

⁶⁸ Cf. *In Boet. De Trin.*, 5, 4 ad 6; *In Meta.*, VII, 11, n. 1526; *In Meta.*, XII, 2, n. 2427.

⁶⁹ "Ipsa speculatio mathematici est sine materia et motu ... *Theologia*, id est tertia pars speculatiue, que dicitur diuina, uel metaphisica, uel philosophia prima, est *sine motu*" (*In Boet. De Trin.*, expos. cap. II).

⁷⁰ "Quamuis subiecta aliarum scientiarum sint partes entis, quod est subiectum metaphisice, non tamen oportet quod alie scientie sint partes ipsius: accipit enim unaqueque scientiarum unam partem entis secundum specialem modum considerandi, alium a modo quo consideratur ens in metaphisica. Vnde proprie loquendo subiectum illius non est pars subiecti metaphisice: non enim est pars entis secundum illam rationem qua ens est subiectum metaphisice, set hac ratione considerata ipsa est specialis scientia aliis conditua. Sic autem posset dici pars ipsius scientia que est de potentia uel que est de actu aut de uno uel de aliquo huiusmodi; quia ista habent eundem modum considerandi cum ente de quo tractatur in metaphisica" (*In Boet. De Trin.*, 5, 1 ad 6).

⁷¹ "Dicitur etiam philosophia prima, in quantum alie omnes scientie ab ea sua principia accipientes, eam consequuntur" (*In Boet. De Trin.*, 5, 1 c.). Cf. *In Meta.*, IV, 1, n. 595.

basis of the reasonableness of our ordinary experience. Every particular science in this differs from dialectics: that they do not ask about the validity of their principles, but about conclusions. Only a universal science can ask questions about the most general principles. Dialectics is universal but when it asks about the principles, it does not function as a science, but as an art. Metaphysics considers first principles of demonstration as a universal science. This is why metaphysics is called “First Philosophy.” Although it is impossible to prove such first principles precisely because they are first, yet it is possible to lead adversaries’ arguments *ad absurdum*.

Aquinas says that metaphysics is the first philosophy but he says also that it presupposes the conclusions of natural science.⁷² Here the distinction in methods about which we were talking in sections 1.1 and 4.1 proves helpful in explaining this seeming contradiction. Metaphysics reflects on all the lower sciences *in via resolutionis*, although uses the conclusions of natural science, because these are better known to us *in via inventionis*.⁷³ Natural science reasons from sensible qualities, which are always some effects of substances which cause them. The reasoning from effect to cause is always a reasoning of some discovery: through an effect we are looking for a proper cause. Such reasoning is proper to natural science. Metaphysics is the first philosophy because of the highest intelligibility of its subject, but our knowledge of this subject is mediated by sensory cognition of material being, and thus in relation to our cognitive capacities, the subject of metaphysics is the most obscure. In this perspective metaphysics is the last, and it should be taught after all other sciences.⁷⁴ Metaphysics uses many things settled in natural science, but St. Thomas says:

there is not necessarily a vicious circle because metaphysics presupposes conclusions proved in the other sciences while it itself proves their principles. For the principles

⁷² “Scientie que habent ordinem ad inuicem hoc modo se habent quod una potest uti principiis alterius, sicut scientie posteriores utuntur principiis scientiarum priorum, siue sint superiores siue inferiores; unde metaphisica, que est omnibus superior, utitur his que in aliis scientiis sunt probata. Et similiter theologia, cum omnes alie scientie sint huic quasi famulantes et preambule in uia generationis, quamuis sint dignitate posteriores, potest uti principiis omnium aliarum scientiarum” (*In Boet. De Trin.*, 2, 3 ad 7). Cf. *In Boet. De Trin.*, 5, 1 ad 9.

⁷³ Cf. Jan A. Aertsen, “Method and Metaphysics: The *via resolutionis* in Thomas Aquinas,” *American Catholic Philosophical Quarterly* 63 (1989): 405-418.

⁷⁴ “Philosophi enim, qui naturalis cognitionis ordinem sequuntur, preordinant scientiam de creaturis scientie diuine, scilicet naturalem metaphisice, set apud theologos proceditur e converso, ut creatoris consideratio considerationem preueniat creature” (*In Boet. De Trin.*, proem.). “Theologia, id est scientia diuina ... que alio nomine dicitur metaphisica, id est trans phisicam, quia post phisicam discenda occurrit nobis, quibus ex sensibilibus oportet in insensibilia deuenire” (*In Boet. De Trin.*, 5, 1).

that another science (such as natural philosophy) takes from first philosophy do not prove the points which the first philosopher takes from the natural philosopher, but they are proved through other self-evident principles. Similarly the first philosopher does not prove the principles he gives the natural philosopher by principles he receives from him, but by other self-evident principles. So there is no vicious circle in their definitions. Moreover, the sensible effects on which the demonstrations of natural science are based are more evident to us in the beginning. But when we come to know the first causes through them, these causes will reveal to us the reason for the effects, from which they were proved by a demonstration *quia*. In this way natural science also contributes something to divine science, and nevertheless it is divine science that explains its principles.⁷⁵

In the Aristotelian philosophy that Aquinas espouses, every first principle must be grounded in our sensory experience which has the character of evidence to which we can refer our judgments and reasonings. Our understanding of terms in first principles is necessarily related to sensory cognition of material being, and if first principles are used in arguments about something other than material, as is the case in metaphysics, there always remains some analogical reference to what is better known to us.⁷⁶ If this reference in metaphysics to the immediate sensory experience is lacking in somebody's thinking, he is said to repeat words and formulas without knowing what he is talking about.⁷⁷

We can now identify the singularity of Aquinas's approach to metaphysics. He considers this "first philosophy" as a science profoundly and inextricably dependent on

⁷⁵ "Nec tamen oportet quod sit circulus quia ipsa supponit ea que in aliis probantur cum ipsa aliarum principia probet, quia principia que accipit alia scientia, scilicet naturalis, a prima philosophia, non probant ea que item philosophus primus accipit a naturali, set probantur per alia principia per se nota; et similiter philosophus primus non probat principia que tradit naturali per principia que ab eo accipit, set per alia principia per se nota; et sic non est aliquis circulus in diffinitione. Et preterea, effectus sensibiles, ex quibus procedunt demonstrationes naturales, sunt notiores quoad nos in principio, set cum per eos peruenerimus ad cognitionem causarum primarum, ex eis apparebit nobis propter quid illorum effectuum ex quibus probantur demonstratione quia; et sic et scientia naturalis aliquid tradit scientie diuinae et tamen per eam sua principia notificantur" (*In Boet. De Trin.*, 5, 1 ad 9).

⁷⁶ Weisheipl, after a careful analysis of early medieval writings and representative thirteen-century predecessors of Albert the Great and Aquinas, in this way summarizes his survey: "In the view of Albertus Magnus and Thomas Aquinas each science is granted autonomy within its own field of inquiry; particular sciences are not absorbed into more universal sciences, such as metaphysics; and all the mathematical sciences are considered subordinate to natural philosophy, which is the point of departure for metaphysics. This view may be considered authentically Aristotelian. According to the other view which was predominant in the thirteen century the classification of the sciences corresponds to the hierarchy of forms in nature: natural science is subalternated to the four mathematical sciences, and mathematics is subalternated to metaphysics. Each science is resolved into a higher and more universal science, and mathematics is the key which unlocks both nature and metaphysics. This view, although contaminated with the doctrine of universal hylemorphism, may be considered representatively Platonic" (idem, *Nature and Motion in the Middle Ages*, 237 [essay ix: "Classification of the Sciences in Medieval Thought"]).

⁷⁷ "Non attingunt mente, licet ea dicant ore" (*In Eth.*, VI, 7 [Leon. 47/2, p. 358, lin. 191-192]).

the earlier analysis of natural science. The character of human cognition necessitates this order. Therefore, from St. Thomas's perspective, any attempt to loosen the bonds between metaphysics and natural science amounts to dooming metaphysics to empty arbitrariness. Such a loosened metaphysics will appear to say no more about being and reality than does poetry. In our search for the "is" that governs ethics, we understand the importance played by natural science. To arrive at an understanding of "is," metaphysics is dependent upon its discoveries.

5.4. Which science should consider human being?

On the basis of the previous division we can say already that we may describe human being (construct the "is" of human being), or at least *something of* human being, within the scope of these three sciences but in different ways.

In metaphysics as a discipline what is said about being as being, one and many, potency and act, substance and accident, truth and goodness – all these we can validly, although analogically, apply to human being. There is even an undisputable advantage of metaphysics over other sciences regarding the explanation of human being, that to metaphysics belongs to explain the beginning of the human soul.⁷⁸ A metaphysical explanation would be according to the highest causes, so proper to wisdom in the absolute sense.⁷⁹ It is known that the higher a cause is, the more it causes. Transposing

⁷⁸ But only the beginning because – as Aquinas shows – creation is not a motion (cf. e.g. *STh*, I, 45, 2 ad 2; *De pot.*, 3, 2). Yet "consideratio de anima pertinet ad naturalem. Et hoc ex modo diffiniendi concludit. ... Probat autem propositum hoc modo. Operationes anime et passionis sunt operationes corporis et passionis, ut ostensum est. Omnis autem passio cum diffinitur oportet quod habeat in sui diffinitione illud cuius est passio. Nam subiectum semper cadit in diffinitione passionis. Si ergo passionis huiusmodi non sunt tantum anime, set etiam corporis, de necessitate oportet quod in diffinitione ipsarum ponatur corpus. Set omne in quo est corpus seu materia pertinet ad naturalem. Ergo et passionis huiusmodi pertinent ad naturalem. Set cuius est considerare passionis, eius est considerare subiectum ipsarum. Et ideo *iam phisici est considerare de anima aut omni*, simpliciter, *aut huiusmodi*, scilicet de ea que est affixa corpori; et hoc dicit quia reliquerat sub dubio utrum intellectus sit potencia affixa corpori" (*In De an.*, I, 2 [Leon. 45/1, p. 11, lin. 139-160]).

⁷⁹ Cf. *CG*, I, 94, n. 792-793; *In Poster.*, I, 44 (Leon. 1*/2, p. 170, lin. 290-291). "Causa autem altissima dupliciter accipi potest, vel simpliciter, vel in aliquo genere. Ille igitur qui cognoscit causam altissimam in aliquo genere et per eam potest de omnibus quae sunt illius generis iudicare et ordinare, dicitur esse sapiens in illo genere, ut in medicina vel architectura ... Ille autem qui cognoscit causam altissimam simpliciter, quae est Deus, dicitur sapiens simpliciter, inquantum per regulas divinas omnia potest iudicare et ordinare" (*STh*, II-II, 45, 1 c.). "Circa naturales substantias et generabiles necesse est sic versari, si quis recte consideret causas, ut scilicet omnes assignentur et proximae. Et hoc est

this rule into the realm of knowledge, it can be said that the higher the known cause is, the more things it explains.⁸⁰

Yet there is a fundamental disadvantage to the metaphysical knowledge of human being, if it be taken in the sense of a self-sufficient discipline that obviates the need for considerations proper to natural science. Such a metaphysical explanation would be too general to perceive the specificity of human being with the whole problematic related to our bodily condition. If we content ourselves with metaphysical knowledge of human being, without a previous study of human being in natural science, we would still have a *universal* knowledge as opposed to a *specific* knowledge (see section 4.1). Thus, our knowledge of human being would be simply imperfect, because our knowledge attains perfection only when we know *specifically* all that can be known in this way.⁸¹ From such universal and imperfect knowledge, it is true, not much would follow for our moral life. Moreover, metaphysical considerations leave aside the *becoming* of material beings (*fieri* or *divenire*). Taking metaphysics as the science for the construction of the human “is” may result in providing a perfectly static, a-historic, lifeless, and ossified image of human being. In this case it is easier to admit that from such a human being nothing could be required to do from the fact that he is what he is. To apply a metaphysical explanation to something to which we have a more direct cognitive access, leaving aside the science that properly considers things to which we have such an access, would be perhaps valid in some cases, but does not seem valid when we think about human being and what we ought or ought not do. This will become clearer from our further explanations.

Mathematics can also be useful in describing human being, insofar as human being is a quantitative being. St. Thomas acknowledges that mathematics fulfills to the highest degree the scientific necessity condition. But any attempt to establish mathematical certainty in non-mathematical matters, in Aquinas’s account, would have to rest upon an utter misunderstanding of what science is and what our cognitive capacities are. Mathematical being is entirely unchangeable because it is abstracted

necesse, ex eo quod hae causae sunt tot, ut dictum est. Et oportet causas cognoscere ad hoc quod aliquid sciatur, quia scire est causam cognoscere” (*In Meta.*, VIII, 4, n. 1739).

⁸⁰ “Quanto aliqua causa est superior, tanto ad plura se extendit in causando” (*STh*, I, 65, 3 c.). “Quanto fuerit causa universalior, tanto ad plura se extendit et efficacius producit” (*CG*, II, 98, n. 1837).

⁸¹ Cf. *In Phys.*, I, 1, n. 7. “Non solum oportet assignare omnes causas, sed oportet etiam dicere causas proximas, ut incipiendo a causis primis perveniamus ad causas proximas. Per causas enim primas habetur cognitio de re aliqua solum in universali et imperfecte. Per causas autem proximas habetur cognitio rei et perfecta” (*In Meta.*, VIII, 4, n. 1738).

from sensible matter and considered as separate. As such mathematics requires in demonstration basically only formal cause. The material cause is not considered since, as was said, the subject is totally abstracted from sensible matter.⁸² Efficient and final cause are needed only where there is a motion or something understood only in reference to some kind of motion. Since motion is possible only where there is sensible matter and becoming, both causes are of no use in mathematical demonstration. Mathematical being is considered as motionless. Hence, striving to apply mathematical method to subjects that are changeable (and are changeable because in their definition sensible matter is contained), is to disregard in science all the realm which is demonstrated or explained according to material, efficient and final causality. A scientific explanation of a changing being, which limits itself basically only to formal causality is severely deficient, for it disregards what is proper to such a subject, namely, its changing character.⁸³ This approach explains only one and not the most important aspect of changing being.

To be sure, mathematical principles can be used in natural science, and Aquinas was a great proponent of such a methodological maneuver. But thanks to his exceptional methodological clarity, he would never allow to confuse natural science

⁸² In a sense one could say that mathematics demonstrates also from material cause, but it is material cause specifically understood, namely as the subject of quantity (“secundum quod materia est cognitionis principium” and not “principium fiendi” – cf. *In Meta.*, VIII, 4, n. 1733-1745). Aquinas comments on Aristotle’s text presenting the way of demonstrating from the material cause, and says that Aristotle “proponit exemplum in mathematicis. Nec est contra id quod dicitur in III Metaphisice, quod mathematice sciencie non demonstrant per causam materialem: mathematica enim abstrahit quidem a materia sensibili, non autem a materia intelligibili, ut dicitur in VIII Metaphisice, que quidem materia intelligibilis consideratur secundum quod aliquid diuisibile accipitur uel in numeris uel in continuis; et ideo, quandocunque in mathematicis aliquid demonstratur de toto per partes, uidetur esse demonstratio per causam materialem: partes enim se habent ad totum secundum rationem materie, ut habetur in II Phisicorum; et quia materia magis proprie dicitur in sensibilibus, propter hoc noluit eam nominare causam materialem, set causam necessitatis” (*In Poster.*, II, 9 [Leon. 1*/2, p. 206-207, lin. 70-86]).

⁸³ Yves Simon makes this remark against Russell’s claim that universal is a mathematical property: “we may not attribute to it a dynamism, a tendency to force its way in a world of becoming” (Yves Simon, *The Tradition of Natural Law* [New York: Fordham University Press, 1965], p. 44). Obviously, according to Aquinas we may not attribute to any universal a dynamism but only attribute a dynamism *on a universal level* to *things* signified through this universal. “Science is often portrayed as a knowledge so exact that it is mathematical in form. Tobias Dantzig has written, ‘Read your instruments and obey mathematics; for this is the whole duty of the scientist.’ The frequent restriction of the term science to mean exact and metrical knowledge has a history dating back at least as far as Isaac Newton. Like Galileo, who measured the effects of gravity but hesitated to investigate the nature of gravity itself, Newton, at least according to his own intentions, confined his science of nature to mathematical laws concerning ‘properties.’ ... Such apparent descriptions of mere ‘properties’ without pushing on to ‘causes’ have led to the view which strongly emphasizes that correlations and measurements are the very essence of science” (Smith, *The General Science of Nature*, p. 2).

with mathematical science. Already Aristotle proposed, and St. Thomas developed the idea of so-called mixed sciences (*scientia mediae*), i.e. sciences which are between mathematics and natural science.⁸⁴ In them mathematical principles are applied to motion, time, and physical dimensions, yet this application touches only the quantitative aspects of physical reality, and not the sensible, or natural, aspects.⁸⁵ Thus, mere mathematical principles cannot provide sufficient tools to explain the production of natural effects.⁸⁶ The explanation of natural effects must be supplemented by employing the tools of natural science. Despite the fact that these *scientiae mediae* proceed from mathematical principles, since their consideration ends up with natural matter, they are said to be more natural than mathematical.⁸⁷

Since human being cannot be properly defined without sensible matter, because we are evidently material and changing, we conclude that natural science emerges as the most fitting of the speculative sciences to create an integral description and explanation of human being.

According to Aquinas, natural science can be divided in a way similar to the speculative sciences as a whole, namely, in keeping with the diverse manners of separation from matter. In the case of natural science only the first kind of abstraction is

⁸⁴ “In his analysis of *scientiae mediae* Aquinas went further than Albert or any of his predecessors” (James A. Weisheipl, *Nature and Motion in the Middle Ages*, ed. by William E. Carroll [Washington, D.C.: The Catholic University of America Press, 1985], p. 235 (in essay IX: “Classification of the Sciences in Medieval Thought”). Cf. B. L. Mullahy, “Subalternation and Mathematical Physics,” *Laval Théologique et Philosophique*, 2 (1946): 89-107.

⁸⁵ Cf. *In Boet. De Trin.*, 5, 3 ad 5-8. Mixed sciences are subordinated to arithmetic or geometry and take from them principles demonstrated strictly (*propter quid*) as true, and apply these principles to their own subjects, which results in demonstrating through a remote cause (*demonstratio quia per causam remotam*). There are differences in relation between demonstration *quia* and *propter quid* when considered in the same science, or in two subordinated sciences, or in two nonsubordinated sciences – cf. *In Poster.*, I, 23-25 (Leon. 1*/2, p. 84-92). “The mathematical principles used in astronomy, optics, and mechanics can indeed demonstrate the quantitative characteristics measured, but they can only describe, and not demonstrate *propter quid*, the production of natural effects” (Weisheipl, *Nature and Motion*, p. 236).

⁸⁶ “*Scientiae mediae ... accipiunt principia abstracta a scientiis pure mathematicis, et applicant ad materiam sensibilem; sicut perspectiva applicat ad lineam visualem ea quae demonstrantur a geometria circa lineam abstractam; et harmonica, idest musica, applicat ad sonos ea quae arithmeticus considerat circa proportionem numerorum; et astrologia considerationem geometriae et arithmeticae applicat ad caelum et ad partes eius. Huiusmodi autem scientiae, licet sint mediae inter scientiam naturalem et mathematicam, tamen dicuntur hic a philosopho esse magis naturales quam mathematicae, quia unumquodque denominatur et speciem habet a termino: unde, quia harum scientiarum consideratio terminatur ad materiam naturalem, licet per principia mathematica procedant, magis sunt naturales quam mathematicae*” (*In Phys.*, II, 3, n. 8). Cf. also *In Poster.*, I, 41 (Leon. 1*/2, p. 151-152, lin. 31-48).

⁸⁷ Cf. *In Phys.*, II, 3, 8.

concerned, but still in our cognition, we abstract forms of things that are common to every changeable being (for example, we perceive what change is – as this form which is the most common for changeable being – or what body is) or forms that are more particular (for example, what vegetative or intellectual life are). The more particular forms are related to those that are more universal in that they share in the same nature *per modum concretionis sive applicationis*.⁸⁸ Universal forms, therefore, function as common principles to what participates in their distinctive character. Because of this it is important to keep the order of learning also within natural science. The parts of natural science that treat the more common features of changeable being should be taught first so as to avoid useless repetition in those parts that treat particular aspects of changeable being common only to certain groups of such beings.⁸⁹

Thus, natural science begins with what is the most common to all natural things – motion and principles of motion.⁹⁰ St. Thomas observes that Aristotle covered this in the *Physics*. Since every other part of natural science considers more concrete issues, the *Physics* is presupposed in them all. The conclusions of this foundational study are used afterwards but treated as already manifest and are not repeated.⁹¹ The second part of natural science considers the most perfect kind of motion common to all bodies, namely, local motion. This question Aristotle elaborated in *On the Heavens*.⁹² The next kind of motion, mutual transmutation of elements, as well as generation and corruption, is treated in *On Generation and Corruption*, which constitutes the third part of natural

⁸⁸ Cf. *Sententia De sensu*, I, 1 (Leon. 45/2, p. 4, lin. 31-37). Cf. also paper by Marie George, “Aristotle and Aquinas on the Division of Natural Philosophy,” presented during The University of Notre Dame Thomistic Institute July 14-21, 2000 (<http://www2.nd.edu/Departments/Maritain/ti00/george.htm>) and especially Benedict M. Ashley, “Aristotle’s *De sensu et sensato* and *De memoria et reminescentia* as Thomistic Sources,” (<http://www2.nd.edu/Departments/Maritain/ti00/ashley.htm>).

⁸⁹ Cf. *In De generatione*, prooem., n. 2.

⁹⁰ Cf. *Sententia De sensu*, I, 1 (Leon. 45/2, p. 4, lin. 31-37).

⁹¹ “*Illa igitur que dicta sunt de anima subiiciantur uel supponantur, idest utamur ipsis in sequentibus tanquam suppositionibus iam manifestis, de reliquis autem dicamus, et primum de primis, id est primo de communibus et postea de propriis: iste enim est debitus ordo sciencie naturali, ut determinatum est in principio libri Physicorum*” (ibid. [p. 7, lin. 154-160]).

⁹² “*Et ideo post considerationem motuum et mobilium in communi, quae fuit tradita in libro Physicorum, primo oportuit quod tractaretur de corporibus secundum quod moventur motu locali, in libro de Caelo; quae est secunda pars scientiae naturalis*” (*In De generatione*, prooem., n. 1).

science.⁹³ In the fourth part, Aristotle discusses the different species of the transmutations of elements, as is seen in his *On Meteorology*.⁹⁴

These four parts of natural science are followed by books concerning living bodies, which constitute a distinctive class of mobile being. This class is divided into three according to the level of generality with which living bodies are considered. Firstly, the most common principle of all living bodies is treated, namely, the soul. Aristotle devoted to this topic his *On the Soul*. Secondly, Aquinas says that Aristotle wrote several books in which he applied these most general considerations contained in *On the Soul* to more concrete questions or beings but still on some level of generality. In these books he discusses some special issues that belong commonly to all animals or to many genera of animals or else to all living beings. To this set pertain for example *On Sense and the Sensible*, *On Memory and Recollection*, *On the Motion of Animals*, etc.⁹⁵ Thirdly, all these considerations are applied to singular species of animals and plants according to what is distinctive to particular species.⁹⁶

Within these broad divisions almost the whole natural science is contained. St. Thomas underlines this “almost” because, as he remarks, “not all natural things can be known by man.”⁹⁷ Aquinas wrote commentaries only to some of Aristotle’s works in natural science. First he commented on *On the Soul*. Right after that he commented on

⁹³ “Est autem considerandum quod de unoquoque quod in pluribus invenitur, prius est considerandum in communi, quam ad species descendere: alioquin oporteret idem dicere multoties, ita scilicet quod in singulis id quod est commune repeteretur, sicut probat Philosophus in I *de Partibus Animalium*. Et ideo prius oportuit de generatione et corruptione in communi determinare, quam ad partes eius descendere. Similiter etiam considerare oportet quod, si in aliquo genere aliquod primum invenitur quod sit causa aliorum, eiusdem considerationis est commune genus et id quod est primum in genere illo: quia illud primum est causa totius generis, oportet autem eum qui considerat genus aliquod, causas totius generis considerare. ... Sunt autem in genere generabilium et corruptibilium quaedam prima principia, scilicet elementa, quae sunt causa generationis et corruptionis et alterationis in omnibus aliis corporibus. Et inde est quod Aristoteles in hoc libro, qui est tertia pars scientiae naturalis, determinat non solum de generatione et corruptione in communi et aliis motibus consequentibus, sed etiam de generatione et corruptione elementorum” (*In De generatione*, prooem., n. 2).

⁹⁴ “Quia igitur Aristoteles in libro *de Generatione* determinavit de transmutationibus elementorum in communi, necessarium fuit ad complementum scientiae naturalis, determinare de speciebus transmutationum quae accidunt circa elementa: et de his determinat in hoc libro, qui intitulatur *Meteorologicorum*. Est igitur intentio eius in hoc libro determinare de transmutationibus quae accidunt circa elementa, secundum singulas species” (*In Meteor.*, I, 1, n. 2).

⁹⁵ Benedict Ashley remarks that the order of the division of natural science differs significantly from that presented by Aristotle (whom Aquinas’s teacher, St. Albert, followed faithfully). Ashley suggests that it may be partly explained by the fact that “while Aristotle follows the *via inventionis* or order of investigation, Aquinas follows the *via doctrinae* or order of demonstration” (Ashley, “Aristotle’s *De sensu et sensato*”).

⁹⁶ Cf. *Sententia De sensu*, I, 1 (Leon. 45/2, p. 4, lin. 44-47).

⁹⁷ Cf. *In Meteor.*, I, 1, n. 9.

On Sense and the Sensible and *On Memory and Recollection*. It is said that simultaneously with these three he commented on the *Physics*. We have also his unfinished commentaries on *On Meteorology*, *On the Heavens*, and *On Generation and Corruption* (Aquinas died before finishing the last two works). Noteworthy is the fact that St. Thomas started writing his commentaries on Aristotle's books of natural science relatively late, in 1267, and he was working on them intensively until his death.⁹⁸ Yet his knowledge of the material contained in these books is impressive already in his early works, especially in *In Sententiarum* and in *De Veritate*.

Contrary to his teacher, St. Albert the Great, Aquinas did not write a *Summa de homine* and we do not know how it would look like in his synthesis. This fact introduces some difficulty in presenting St. Thomas's science of man or anthropology. His *Summa theologiae* is a theological text that presents some anthropological questions from this special, theological point of view and using a theological method.⁹⁹ An essay of extracting the philosophical content from this work may furnish only a fragmentary picture of Aquinas's anthropology. In doing this we should remember that anthropology is for St. Thomas a subjective part of natural science,¹⁰⁰ because human being is for him a species of an animal, albeit the most noble, but still a species of animal. Thus, anthropology constitutes a subjective part of natural science. According to the division related above, anthropology should be placed at the end, as one of the most specific sciences about one species. As such, anthropology presupposes many things that are

⁹⁸ St. Thomas's concern with the natural science is clearly visible throughout his writings: "The fact that he turned from his *Summa theologiae* toward the end of his life to write commentaries on the *Physics*, the *De caelo*, the *De generatione et corruptione*, and the *Meteorology* indeed attests to the importance he attached to natural philosophy, and this not only in its most general part dealing with *ens mobile in communi* but also with its special disciplines that treat of the phenomena of nature in all their specific detail" (Wallace, "A Thomistic Philosophy of Nature," p. 30).

⁹⁹ "Deinde considerandum est de potentiis animae in speciali. Ad considerationem autem theologi pertinet inquirere specialiter solum de potentiis intellectivis et appetitivis, in quibus virtutes inveniuntur. Sed quia cognitio harum potentiarum quodammodo dependet ex aliis, ideo nostra consideratio de potentiis animae in speciali erit tripartita, primo namque considerandum est de his quae sunt praeambula ad intellectum; secundo, de potentiis intellectivis; tertio, de potentiis appetitivis" (*STh*, I, 78 pr.). Ashley notes that "the utterly absurd opinion still current among scientists that Aristotle had a 'deductive not an inductive' conception of science" has been intensified by the fact that Aquinas's anthropology "is often presented from his theological expositions whose methodology is necessarily quite different from that of natural science, proceeding as it does from revelation and primarily in view of the spiritual aspect of humanity rather than from what can be learned about humanity from sensory experience" (Ashley, "Aristotle's *De sensu et sensato*").

¹⁰⁰ "Triplex est pars, scilicet integralis, ut paries, tectum et fundamentum sunt partes domus; subiectiva, sicut bos et leo sunt partes animalis; et potentialis, sicut nutritivum et sensitivum sunt partes animae" (*STh*, II-II, 48 c.).

more general than the science about man. As was indicated, these more general things are considered earlier, and therefore in anthropology they are not repeated but are treated as already manifest.

* * *

This chapter makes a transition from the logical part of this dissertation to the part which shows Aquinas's way of constructing the human "is." We asked therefore about available possibilities of saying scientifically what there is. St. Thomas's explanation of the division of sciences reveals on the one hand his mastery of Aristotle's epistemology and methodology as we find it in the *Posterior Analytics* and, on the other hand, it reveals his determination to find appropriate tools with which to disclose the reality of things to our capacity for scientific knowledge. This division presupposes both that things have natures and that we are capable of gaining a certain knowledge of them through abstraction. Another interesting presupposition related to this division (related because it is based as well on the genuine doctrine of abstraction) consists in a clear non-separating distinction between objects of cognitive faculties and things: one thing or one kind of things may be seen as several objects according to diverse aspects under which the thing is considered. In other words, for Aquinas our distinct perceptions are not necessarily distinct existences.¹⁰¹ Within this framework of different objects and diverse methodologies, science remains nonetheless as one perfecting the quality of the mind.

Inscribed explicitly into an epistemology the unity of science creates the need for the order of learning. The limits of our cognitive powers, which bring to the fore those objects more obvious *quoad nos*, require that natural science precedes (not only pedagogically but also epistemologically) metaphysics. To be a universal *science*, metaphysics must presuppose natural science, whereas metaphysics understood as *wisdom* must include the results of natural science. Following the lead of St. Thomas in looking for a science that could construct an adequate human "is" as the basis for ethics, we conclude that natural science should be chosen as the most fitting for this task.

¹⁰¹ Cf. section 0.1.

Now we will consider more closely what follows from the specificity of the object of natural science on the level of the mode of scientific explanation. We will refer also to mathematical and metaphysical methods as they can help in describing *something of* human being, but not human being properly speaking.

6. Explanation in Natural Science

In the previous chapter we saw the division of speculative sciences according to the differences in the object of speculative faculty. Differences in objects result in differences in particular methods of explanation. St. Thomas soberly observes that:

the method followed in investigation must be appropriate both to things and to us: for unless it is appropriate to the things studied, these could not be grasped, and unless it is appropriate for us, we could not comprehend.¹

We saw briefly in Chapter 4 what Aquinas means by “science” and what his general scientific method was. This general method should be analogically applied to every particular science in order to meet the requirements of types of things considered and our cognitive capacities in relation to these things.

Before we start the description of the method of natural science we should underline that according to St. Thomas it is in the specification of knowledge that science obtains its perfection. He compares science, which achieves only universal and not specific knowledge, to something between pure potency and ultimate end: it is truly a science that contains some degree of actual knowledge, but since in its generality it does not attain to specific topics, it remains in potency relative to these specific topics.²

¹ “Modus quo aliqua discutuntur, debet congruere et rebus et nobis: nisi enim rebus congrueret, res intelligi non possent, nisi uero congrueret nobis, nos capere non possemus” (*In Boet. De Trin.*, expos. cap. II).

² “Innatum est nobis ut procedamus cognoscendo ab iis quae sunt nobis magis nota, in ea quae sunt magis nota naturae; sed ea quae sunt nobis magis nota, sunt confusa, qualia sunt universalialia; ergo oportet nos ab universalibus ad singularia procedere” (*In Phys.*, I, 1, n. 6). “Sciendum est quod *confusa* hic dicuntur quae continent in se aliqua in potentia et indistincte. Et quia cognoscere aliquid

This makes natural science, in a sense, more difficult than mathematics and metaphysics, because “whenever there are many factors to be considered in order to know something, knowledge is more difficult.”³ However, general remarks concerning the subject and proper method of natural science are indispensable if we want to have a proper understanding of the more specific issues contained in particular sciences that constitute subjective parts of natural science. Subjective parts are treated as species specifying subject-genus and determining general principles established in the foundational consideration.⁴ Thus, these general considerations on mobile being and its principles are all presupposed and *not repeated* in the science on animals as well as in the science on one of the species of animals: human being.⁵

indistincte, medium est inter puram potentiam et actum perfectum, ideo, dum intellectus noster procedit de potentia in actum, primo occurrit sibi confusum quam distinctum; sed tunc est scientia completa in actu, quando pervenitur per resolutionem ad distinctam cognitionem principiorum et elementorum. Et haec est ratio quare confusa sunt primo nobis nota quam distincta. Quod autem universalia sint confusa manifestum est, quia universalia continent in se suas species in potentia, et qui scit aliquid in universali scit illud indistincte; tunc autem distinguitur eius cognitio, quando unumquodque eorum quae continentur potentia in universali, actu cognoscitur: qui enim scit animal, non scit rationale nisi in potentia. Prius autem est scire aliquid in potentia quam in actu: secundum igitur hunc ordinem addiscendi quo procedimus de potentia in actum, prius quoad nos est scire animal quam hominem” (ibid., n. 7). Cf. *In Meteor.*, I, 1, n. 1.

³ “Ubi cumque autem ad aliquid cognoscendum oportet plura considerare, est difficilior cognitio” (*In Boet. De Trin.* 6, 1).

⁴ There were some attempts to interpret Aquinas’s natural science as separate from particular sciences, which treat more specific problems, so as to speak rather about the philosophy of nature as opposed to natural sciences. This manner of reading St. Thomas was undertaken probably in order to get rid of “discredited physics of Aristotle” present in Aquinas’s writings without detriment to other valuable theories and analysis. William Wallace opposes this interpretation, namely that philosophy of nature should be understood as something essentially different than science of nature. He says: “For St. Thomas there is no distinction between *philosophia naturalis* and *scientia naturalis*: both *philosophia* and *scientia* are for him *cognitio certa per causas*, and the essential difference between the *Physics* and the remaining natural treatises lies only in the fact that the former is concerned with a general analysis of nature and change whereas the latter are more specific and concrete in the subjects of their consideration” (Wallace, “A Thomistic Philosophy of Nature” as Essay II in *From a Realist Point of View*, p. 32). Cf. id., “Defining the Philosophy of Science” as Essay I in ibid., p. 1-21; Charles De Koninck, “The Unity and Diversity of Natural Science,” in *The Philosophy of Physics*, edited by V. E. Smith (Jamaica, N.Y.: St. John’s University Press, 1961), p. 5-24; and especially Michael Augros, “Reconciling Science with Natural Philosophy,” *The Thomist* 68 (2004): 105-141.

⁵ Cf. *In De an.*, I, 1 (Leon. 45/1, p. 4, lin. 1-10). “Sed quia ea quae consequuntur aliquod commune, prius et seorsum determinanda sunt, ne oporteat ea multoties pertractando omnes partes illius communis repetere; necessarium fuit quod praemitteretur in scientia naturali unus liber, in quo tractaretur de iis quae consequuntur ens mobile in communi” (*In Phys.*, I, 1, n. 4). Aquinas adds here that it is similar with metaphysics as regards every other science: “sicut omnibus scientiis praemittitur philosophia prima, in qua determinatur de iis quae sunt communia enti in quantum est ens” (ibid.), yet from what was written above about metaphysics it should be clear that the foundational part of natural science is presupposed in particular parts of natural science in a different way than metaphysical considerations. Metaphysics in the order of learning is presupposed according to the principle: “discentis oportet credere,” whereas the foundational part of natural science should be actually learned before any particular part.

The mode of procedure in natural science corresponds to the typical manner in which the rational soul operates, thus it can be considered as the closest to our human way of knowing. In other words, it is most in conformity with the natural operation of the human mind:

it seems to belong to the nature of every man to advance from the imperfect knowledge which covers a good description of things to a perfect knowledge of them by filling in the details. This he does by investigating first one part and then another. For it belongs to man's nature to use reason in order to know the truth. Reason has this peculiar characteristic that it proceeds from one thing to another ... Thus to man belongs to progress in the knowledge of the truth little by little.⁶

In this man is contrasted with angels, intellectual substances, who at once, without any inquiry or reasoning grasp the truth. Like the rational soul receives its intelligible species from sensible things, so also does natural science proceed from what is more known *quoad nos* and less known *secundum naturam*. In addition, as it is proper to reason to obtain some knowledge about one thing from the knowledge of another, so it is proper to natural science to prove some thing through another, which can be completely exterior.⁷

⁶ "Ad naturam cuiuslibet hominis pertinere videtur ut ea quae bene continent descriptionem alicuius rei perducatur, scilicet de imperfecto ad perfectum, et particulatim disponatur, primo scilicet unam partem et postea aliam investigando. Ad hominis enim naturam pertinet ratione uti ad veritatis cognitionem; rationis autem proprium est ab uno in aliud procedere ... et ideo ad hominem pertinet paulatim in cognitione veritatis proficiat" (*In Eth.*, I, 11 [Leon. 47/1, p. 39, lin. 28-33]).

⁷ "In scientiis enim mathematicis proceditur per ea tantum quae sunt de essentia rei, cum demonstrent solum per causam formalem, et ideo non demonstratur in eis aliquid de una re per aliam rem, sed per propriam diffinitionem illius rei. ... Set in scientia naturali, in qua fit demonstratio per causas extrinsecas, probatur aliquid de una re per aliam rem omnino extrinsecam; et ita modus rationis maxime in scientia naturali observatur, et propter hoc scientia naturalis inter alias est maxime hominis intellectui conformis" (*In Boet. De Trin.*, 6, 1 ad 1am). Cf. also *In Boet. De Trin.*, 6, 1 ad 1am ad 3. Wallace says that natural philosopher "normally proceeds in his reasoning from one thing to another that is really distinct from it. Sometimes the second thing is completely extrinsic to the first as when he reasons from the moved to the mover, in demonstrating *propter quid* that whatever is moved is moved by another (cf. *In Phys.*, VII, 1, n. 6). This need not always be the case, however, for he frequently reasons from one thing to another which is within the same composite, but is really distinct from the first. For instance, he thus reasons from substantial form to prime matter, and from motion to its proper subject, the thing moved, both of which are really distinct from each other, but found within the same composite. And even in this case, he is not always limited to this type of process: he can treat of things that are only rationally distinct, as for instance, when he reasons from motion to action or to passion, both of which, while really distinct from each other, are distinguished from motion by a mere distinction of reason (cf. *In Phys.*, III, 5, n. 10)" (William A. Wallace, *The Role of Demonstration in Moral Theology. A Study of Methodology in St. Thomas Aquinas* [Washington, D.C.: The Thomist Press, 1962], p. 30).

6.1. *The principles of mobile being – basichylomorphism*

In St. Thomas's interpretation, Aristotle in Book I of the *Physics* treats the principles of natural *things*, whereas in Book II he considers the principles of natural *science*.⁸ In Book I Aristotle discusses with his predecessors, on the one hand, manifested deficiencies of their theories, which aimed to account for changing being, and on the other hand, dialectically shows that his solution corresponds better to our ordinary experience of changing being. We should examine briefly the principles of natural things in order to appreciate the genuineness of the Aristotelian solution of this foundational part of natural science. Aquinas fully embraced it and it will help us in solving the problem of this dissertation.

Aristotelian solution consists in distinguishing three principles of changing being: form, matter, and privation. Most generally speaking, form gives the actuality to matter, thus it is that because of which and toward which the change occurs. Matter is the subject of change and signifies some being in potency. This being in potency can be already somehow actualized by a substantial form, and thus change which occurs in such a subject is an accidental change (potency of coming to be such), or it can be not actualized at all, and thus the change is substantial (potency of coming to be).⁹ In strict terms matter is: 1) the first subject from which a thing comes to be *per se*, and not *per accidens*, and 2) is in the thing after it has come to be. These two elements of the definition of matter distinguish it from privation. For privation is that from which a thing comes to be *per accidens*, and is that which is not in the thing after it has come to be.¹⁰ Sometimes in order to distinguish the subject of becoming *per se*, the term “prime matter” is used as opposed to “matter” which imprecisely can be used for both

⁸ “Postquam philosophus in primo libro determinavit de principiis rerum naturalium, hic determinat de principiis scientiae naturalis” (*In Phys.*, II, 1, n. 1).

⁹ “Materia que est in potentia ad esse substantiale dicitur materia ex qua, que autem est in potentia ad esse accidentale dicitur materia in qua. Item proprie loquendo quod est in potentia ad esse accidentale dicitur subiectum, quod uero est in potentia ad esse substantiale dicitur proprie materia” (*De principiis naturae*, 1 [Leon. 43, p. 39, lin. 16-23]).

¹⁰ “Hoc enim dicimus materiam, primum subiectum ex quo aliquid fit per se et non secundum accidens, et inest rei iam factae (et utrumque eorum ponitur ad differentiam privationis, ex qua fit aliquid per accidens, et non inest rei factae) (*In Phys.*, I, 15, n. 11). Obviously, privation is not in the thing in the sense of privation of this already existing form, but nonetheless “materia a priuatione non denudatur; in quantum enim est sub una forma, habet priuationem alterius et e conuerso.” This means that “priuatio est principium in fieri et non in esse” (*De principiis naturae*, 2 [Leon. 43, p. 40, lin. 20-22 and 44-45]).

kinds of change.¹¹ Prime matter is known only by analogy to the subject of accidental change: prime matter is related to substantial form as the subject of accidental change is related to accidental form. Prime matter is thus an element of a theory which helps to conceive of unqualified coming to be and ceasing to be in nature. It is knowable only in relation to form “since everything which is known is known through its form”¹² and never exists or can exist separately. Prime matter is therefore a concept signifying the subject of substantial change, a pure potentiality,¹³ a being in potency.¹⁴ As such this concept is inferred from our immediate experience of subjects of accidental change and from the fact that things come into being and die away. Neither form nor prime matter but only something composed from matter and substantial form (*compositum*) may become or be destroyed (*generari vel corrumpi*).¹⁵

¹¹ “Ipsa autem materia que intelligitur sine qualibet forma et priuatione, sed subiecta forme et priuationi, dicitur materia prima, propter hoc quod ante ipsam non est alia materia” (ibid., 2 [p. 41, lin. 74-78]).

¹² “Natura quae primo subiicitur mutationi, idest materia prima, non potest sciri per seipsam, cum omne quod cognoscitur, cognoscatur per suam formam; materia autem prima consideratur subiecta omni formae. Sed scitur *secundum analogiam*, idest secundum proportionem” (*In Phys.*, I, 13, n. 9).

¹³ “Materia prima, quae est potentia pura, sicut Deus est actus purus...” (*STh*, I, 115, 1 ad 2).

¹⁴ “Materia prima que est ens in potencia” (*In De an.*, II, 1 [Leon. 45/1, p. 70, lin. 213]). “Actualitas potentialitati repugnat” (*STh*, I, 54, 1). As is well known, the doctrine of pure potentiality of prime matter (theologically speaking it means that it is impossible for God even miraculously to create matter without form), as well as related to that the doctrine of the necessity for a substance to have only one substantial form, were condemned in Paris by bishop Tempier in 1277. This could be a reason why some younger thinkers than Aquinas believed the contrary (e.g. Duns Scotus). On historical and contemporary difficulties in understanding the pure potentiality of prime matter see Christopher Byrne, “Prime Matter and Actuality,” *Journal of the History of Philosophy* 33 (1995): 197-224. After quoting several Thomistic interpretations the author rejects the doctrine of pure potentiality of prime matter and says that his position is similar to that of Robert Sokolowski, “Matter, Elements and Substance in Aristotle,” *The Journal of the History of Philosophy* 8 (1970): 263-288. Steven Baldner in this way summarizes their argument: “In order that prime matter be real, it must have some role to perform. A role that matter can have is that of being quantified in three dimensions, in place, in time, etc. But in order for matter to have the role of being thus quantified, it must be actual. A purely potential prime matter, however, is not actual. It thus cannot be quantified and can have no role to perform. If prime matter as pure potentiality has no role to perform, it cannot be real” (Steven Baldner, “Matter, Prime Matter, Elements” a paper delivered at the Notre Dame University Maritain Center Thomistic Institute, 24 July, 1998, www.nd.edu/Departments/Maritain/ti98/baldner.htm). Subsequently, distinguishing prime matter from matter and from elements, Baldner explains Aquinas’s teaching and in what consists common misunderstanding. On the nature of prime matter see also the very learned and insightful work of John F. Wippel, *The Metaphysical Thought of Thomas Aquinas: From Finite Being to Uncreated Being* (Washington, D.C.: The Catholic University of America Press, 2000), p. 312-327.

¹⁵ Cf. *In Phys.*, I, 15, n. 11; *In De generatione*, I, 6, n. 7-10. Aquinas notes that many failed to see form and matter as principles of being, because they considered forms in the way substances are to be considered. Whereas according to him “sicut esse non est formae, sed subiecti per formam, ita nec fieri, quod terminatur ad esse, est formae, sed subiecti” (*De virtutibus*, I, 11 c.). A well known latter example of such confusion gave Suarez who regarded form and matter as imperfect or incomplete substances, therefore not as principles of being but rather as beings in their own right; see David M. Knight, “Suarez’s Approach to Substantial Form,” *Modern Schoolman* 39 (1962): 219-239.

Privation is the opposite of form, i.e. the lack of a form in subject, which allows us to perceive a change happening from some qualified potency toward the actuality of some form in matter. Privation is thus the same with matter if considered as a subject of change, yet conceptually there is an essential difference between them (*sunt unum subiecto sed differunt ratione*).¹⁶ Namely, matter is a cause of becoming in receiving form, whereas privation as a negation of form is not a cause, that is, is not a constitutive element of any becoming being, but rather signifies a non-being. Matter, in receiving form, is itself actualized and becomes a constitutive element of a real material being. Privation, with the advent of form, simply disappears, because it is a property of uninformed matter.¹⁷ Privation, as a lack of form, is thus merely a being of reason seen only in relation to some already existent, but not fully actualized, compositum of matter and form. This being of reason, privation, allows us to perceive an accidental change.¹⁸

Thus, form and matter are principles *per se* of changing being, while privation is a principle only *per accidens*. Yet matter and privation are distinctive principles for “transmutable being” (*sunt principia entis transmutabilis*), which is the subject of natural science.¹⁹ In this point matter and privation are opposed to form, which is generally treated in metaphysics: “because form is a principle of being, and being as such is the subject of First Philosophy.”²⁰ Nonetheless, form is considered initially in natural science, insofar as it happens to exist also (and happens to be known to us principally) as existing in natural and corruptible things.²¹ In such things it is crucial to remember that form is of two kinds:

¹⁶ Cf. *In Phys.*, I, 15, n. 5. Let us remark that in the nominalist approach it is impossible to make this distinction.

¹⁷ Cf. *In Phys.*, I, 15, n. 8. “Materia est non ens secundum accidens, sed privatio est non ens per se” (ibid., n. 4). “Materia est *prope rem*, et est aliquantulum, quia est in potentia ad rem, et est aliquantulum substantia rei, quia intrat in constitutionem substantiae: sed hoc de privatione dici non potest” (ibid.).

¹⁸ “Ista natura quae subiicitur, scilicet materia, simul cum forma est causa eorum quae fiunt secundum naturam, ad modum matris: sicut enim mater est causa generationis in recipiendo, ita et materia. Sed si quis accipiat ... privationem, protendens intellectum circa ipsam, imaginabitur ipsam non ad constitutionem rei pertinere, sed magis ad quoddam malum rei: quia est penitus non ens, cum privatio nihil aliud sit quam negatio formae in subiecto, et est extra totum ens: ut sic in privatione locum habeat ratio Parmenidis, quidquid est praeter ens est non ens; non autem in materia, ut dicebant Platonici” (*In Phys.*, I, 15, n. 7).

¹⁹ Cf. *In Phys.*, I, 15, n. 12.

²⁰ “De principio formali, utrum sit unum vel plura, et quot et quae sint, pertinet determinare ad philosophiam primam, et usque ad illud tempus reservetur: quia forma est principium essendi, et ens inquantum huiusmodi est subiectum primae philosophiae” (*In Phys.*, I, 15, n. 12).

²¹ “Medicus enim non considerat de nervo inquantum est nervus, hoc enim pertinet ad naturalem, sed inquantum est subiectum sanitatis Et similiter naturalis non considerat de forma inquantum est forma, sed inquantum est in materia” (*In Phys.*, II, 4, n. 10).

one is perfect and completes the species of a natural thing, as in the case of the form of fire or water or man or plant; the other is an incomplete form which neither perfects any natural species nor is the end of the intention of nature, but is something on the road of generation and corruption. For it is plain in the generation of composites, for example, of an animal, that between the principle of generation, which is the seed, and the ultimate form of the complete animal, there are many intermediate generations (as Avicenna says in his *Sufficiency*) which have to be terminated to certain forms, none of which makes the being complete in species, but rather an incomplete being which is the road to a certain species. Likewise, on the side of corruption there are many intermediate forms that are incomplete: for the body of an animal is not, as soon as the soul is separated, immediately resolved into the elements; rather this takes place by means of many intermediate corruptions in which many imperfect forms succeed one another in the matter, such as the form of a dead body, then the form of a putrefied body, and so on.²²

Thus the fact that things are changing may imply some difficulties in identifying what is the perfect form of a thing.

Moreover, form is not directly given to our sense experience because form belongs to the order of the intellectual apprehension. Form determines what a thing is. It is apprehended when we grasp the nature of a thing and try to define it. This can occur only through sensorily perceived accidents. Hence, although form is not immediately given in sense experience, nonetheless, it is derivable from it. This means that form is not *given to* our sense experience, but nonetheless it is *contained* as codified in our sense experience from which the intellect reads off what the form is.²³ The extended consideration of form, a consideration which could be indifferently applied to material and immaterial beings, needs to be postponed until the time for metaphysics comes.²⁴

²² “Duplex est forma: una quidem perfecta, quae complet speciem alicuius rei naturalis, sicut forma ignis vel aquae aut hominis aut plantae; alia autem est forma incompleta, quae neque perficit aliquam speciem naturalem, neque est finis intentionis naturae, sed se habet in via generationis vel corruptionis. Manifestum est enim in generatione compositorum, puta animalis, quod inter principium generationis, quod est semen, et ultimam formam animalis completi, sunt multae generationes mediae, ut Avicenna dicit in sua *Sufficiencia*; quas necesse est terminari ad aliquas formas, quarum nulla facit ens completum secundum speciem, sed ens incompletum, quod est via ad speciem aliquam. Similiter etiam ex parte corruptionis sunt multae formae mediae, quae sunt formae incompletae: non enim, separata anima, corpus animalis statim resolvitur in elementa; sed hoc fit per multas corruptiones medias, succedentibus sibi in materia multis formis imperfectis, sicut est forma corporis mortui, et postmodum putrefacti, et sic inde” (*In De generatione*, I, 8, n. 3).

²³ “Differentiae substantiales, quia sunt ignotae, per differentias accidentales manifestantur: et ideo multoties utimur differentiis accidentalibus loco substantialium. ... Omnes enim formae substantiales differunt secundum magis et minus perfectum ... Potest etiam dubitari de hoc quod dicit, quod cuius differentiae magis significant hoc aliquid, magis est substantia: cum tamen dicatur in praedicamentis quod substantia non suscipit magis et minus. Sed dicendum quod per hoc non intendit significare intensionem et remissionem substantiae in praedicamento substantiae; sed maiorem vel minorem perfectionem in speciebus substantiae, secundum dictam formarum differentiam” (*In De generatione*, I, 8, n. 5). Cf. Wallace, *The Modeling of Nature: Philosophy of Science and Philosophy of Nature in Synthesis* (Washington, D.C.: The Catholic University of America, 1996), p. 10.

²⁴ Cf. *In Phys.*, I, 15, n. 12.

Yet it is good to remember that the essential characteristic contained in the concept of form as understood in natural science, i.e. its giving actuality to matter, is transferred from our perception of proper operations in things.²⁵

Aquinas stresses the importance of Aristotle's distinction between matter and privation, opposing it to the position of the Platonists. The Platonists also held a certain duality on the part of matter, but they distinguished instead between the great and the small (*magnum et parvum*), without mentioning privation. Privation, since not clearly distinguished from matter, was either omitted altogether by them or included into the great and the small. Thus they had other three principles of changing being: form, the great, and the small.²⁶ This solution allowed them to consider changing being exclusively mathematically, because the great and the small are related to quantity and as such are considered primarily in mathematics.²⁷

Surprisingly, Aristotle, stressing the necessity for a clear distinction between matter and privation in natural things and processes, speaks about form as something divine, and the best, and desirable. Aquinas comments on it saying that form is something divine:

because every form is some participation in the likeness of the divine being, which is pure act. Since each thing is in act, insofar as it has form. Form is the best because act is the perfection of potency and is its good; and from this it follows as a consequence that form is desirable, because every thing desires its own perfection. Privation, on the other hand, is opposed to form, since it is nothing other than the removal of form.

²⁵ "Sicut videtur ex communi hominum intellectu, nomen actus primo fuit attributum operationi; sic enim quasi omnes intelligunt actum; secundo autem exinde fuit translatus ad formam, in quantum forma est principium operationis et finis" (*De pot.*, I, 1). Steven Brock remarks that "Neglect of the point about form as act ... seems to play a part in the rather sophomoric criticism sometimes directed against 'classical' metaphysics for being 'substance-based' and, therefore, for promoting a view of reality as fundamentally 'static', which is to say, lifeless, inert, merely 'given'. Moreover, Aquinas's treatment of form as sharing in the nature of act, 'insofar as it is a principle and end of operation', reflects important elements in his analysis of operation itself" (Stephen L. Brock, *Action and Conduct: Thomas Aquinas and the Theory of Action* [Edinburgh: T&T Clark, 1997], p. 10-11).

²⁶ Cf. *In Phys.*, I, 15, n. 5. One of reasons why they do not distinguish matter from privation, Aquinas says, was this: "quia videbatur eis quod id quod est numero unum vel subiecto, sit etiam ratione unum" (n. 2). Compare it with one of Hume's dogmas, which he could not render consistent but was unable to renounce, namely "that all our distinct perceptions are distinct existences" (cf. section 0.1).

²⁷ This might remind Descartes's identification of bodies with *res extensa*, cf. Edward Slowik, "Descartes's Physics," in *The Stanford Encyclopedia of Philosophy* (Fall 2005 Edition), edited by Edward N. Zalta, <http://plato.stanford.edu/archives/fall2005/entries/descartes-physics/>. Cf. also Daniel E. Flage and Clarence A. Bonen, "Descartes on Causation," *The Review of Metaphysics* 50 (1997): 841-872 – these authors show how Descartes reduces all causes only to a specifically understood formal cause (as we already know, explanation according to formal cause is proper to mathematics), which resulted in the practical elimination of traditional natural science.

Hence, because what is opposed to the good and removes it is evil, it is clear that privation pertains to evil.²⁸

It might seem at least inappropriate for today's scientists even to suggest such "unscientific" statements about natural things. Aquinas without any embarrassment follows Aristotle in this remark. Not only in the divine character of form,²⁹ but also in the insistence that form is the best and desirable. Note the scope of this statement: Aristotle is talking about everything that exists. Everything we know that exists is known through its form. And thus everything, insofar as it has an actualizing form, is in a way divine, the best, and desirable. Does he destroy in this one sweeping statement the chasm between fact and value? From where does he take it that everything desires its own perfection?

Already Avicenna argued against Aristotle, saying that matter cannot desire form. Yet St. Thomas replies that his objections are easy to solve. It suffices to understand properly the concepts used by Aristotle. He explains:

Natural appetite is nothing but the ordination of things to their end in accordance with their proper natures. Not only a being in act is ordered to its end by an active power, but also matter insofar as it is potency. For form is the end of matter. Therefore for matter to desire form is nothing other than matter being ordered to form as potency to act. And because matter still remains in potency to another form while it is under some form, there is always in it an appetite for form. ... [matter] is in potency to other forms while it has some form in act.³⁰

To be a potency towards substantial being, is plainly a necessary mark of matter. But one might ask: could we not understand matter without this essential tendency toward form? In other words, could we not create such a concept of matter that would have no essential tendency or would not be a potency? Of course we could. However, such a concept would have no correspondence to reality; it would be something similar to the

²⁸ "Forma est quoddam divinum et optimum et appetibile. Divinum quidem est, quia omnis forma est quaedam participatio similitudinis divini esse, quod est actus purus: unumquodque enim in tantum est actu in quantum habet formam. Optimum autem est, quia actus est perfectio potentiae et bonum eius: et per consequens sequitur quod sit appetibile, quia unumquodque appetit suam perfectionem. Privatio autem opponitur formae, cum non sit aliud quam remotio eius: unde cum id quod opponitur bono et removet ipsum, sit malum, manifestum est quod privatio pertinet ad malum" (*In Phys.*, I, 15, n. 7). Cf. Lawrence Dewan, *St. Thomas and Form as Something Divine in Things*, The Aquinas Lecture, 2007 (Milwaukee: Marquette University Press, 2007).

²⁹ Cf. *In Peryerm.*, I, 3 (Leon. 1*/1, p. 16, lin. 138-147).

³⁰ "Nihil est igitur aliud appetitus naturalis quam ordinatio aliquorum secundum propriam naturam in suum finem. Non solum autem aliquid ens in actu per virtutem activam ordinatur in suum finem, sed etiam materia secundum quod est in potentia; nam forma est finis materiae. Nihil igitur est aliud materiam appetere formam, quam eam ordinari ad formam ut potentia ad actum. Et quia sub quacumque forma sit, adhuc remanet in potentia ad aliam formam, inest ei semper appetitus formae: ... [materia] est in potentia ad alias formas, dum unam habet in actu" (*In Phys.*, I, 15, n. 10).

concept of Chimera – simply a false concept. In science we are not interested in such concepts because we want to know what things really are and not so much what things we could imagine. Matter is always for the sake of form (*materia est propter formam*)³¹ and form is always the aim of matter (*forma est finis materiae*).³² The tendency of matter towards form is nothing imposed from the outside of matter, it is its essential mode of being, and it is recognized as such through an analysis of changing being. It is not a tendency towards something grasped cognitively by matter beforehand as its good – it would be a sheer absurdity to claim something like that. In the signification of the term “matter” there is simply contained that it is necessarily something relational, something that is always tending towards form as its perfection. It is known exclusively in relation to form as something perfect. This is why everything desires its own perfection.

Obviously, there appears the topic of Creation, namely, that God made the world with this inherent structure in all changing beings. And so the tendency of matter would be, in this manner, imposed from the outside. Thus, there could arise a reluctance to accept anything like the tendency of matter toward form because it would lead to the acknowledgment of some cause for this tendency. Yet nothing is imposed from outside because this would suggest that there was already some matter to which the Creator added the characteristic of tending towards form. Matter is or is not, and if it is, one of its essential features is exactly the fact that it is tending. If we understand Creation as Aquinas understands it (i.e. that the divine causality in created things is radically different from the causality of secondary causes), God’s creative power is at work in everything that exists, giving to things their very existence, existence that is according to their natures established by God, and natures with proper operations.³³ Thus nothing is imposed but things are simply created as having such natures and operations. If these natures and proper operations are intelligible without any reference to God, why should we have any problems in understanding matter in this way? Moreover, in this initial analysis of motion there is nothing about God the Creator, nor does this analysis logically depend on the doctrine of Creation: this is only an endeavor to describe and analyze motion as something that appears most strongly in our simple experience. In

³¹ *In Poster.*, II, 8 (Leon. 1*/2, p. 202, lin. 31).

³² *In Phys.*, I, 15, n. 10.

³³ Cf. e.g. *De pot.*, 3, 5.

philosophy first we answer the question *an est* – in the case of motion in general it is obvious that it does exist. Then we try to describe it, find its qualities, and discern essential qualities from merely accidental in order to define it. Only at the end do we ask *propter quid*, that is, why the motion in general exists. Thus, for Aquinas we arrive at God the Creator in our natural reasoning later, thus the description of matter does not depend on our knowledge of the First Cause and its power.

The desire ascribed to matter – it is good to emphasize – is not a mental reality.³⁴ Only in the case of some animals it may be the domain of psyche and only in the case of human being it can be recognized as such. Rather it is in a way the most profound relation inhering in every changing and not yet fully actualized being, the deepest tendency or inclination (relation is often called *ad aliquid* in Aquinas's Latin and also matter is always from the outset *ad aliquid*, namely *ad formam*) of every becoming material being.³⁵ It is something belonging to the very dynamic constitution of material beings. Matter is identical with its potentiality and its relation to form. The "is" of material being is – independent of the subjective decision of individuals or of their state of consciousness – always tending, becoming, and changing. And in natural science the "is" of material being is recognized exactly in this condition. To neglect this aspect is to neglect the most profound character of material things. Therefore, it could be said that matter is most properly called a principle of changing being and is most properly treated in natural science, since form, another principle *per se*, exceeds the scope of natural science and is properly considered in metaphysics, and privation is only a principle *per accidens*.

³⁴ Wallace helps us to understand in what sense the term 'end' is used for teleology in nature by distinguishing three different meanings of this word: "The first and simplest meaning is that of end in the sense of terminus, the point at which a process stops. ... A second meaning of end or goal adds to the idea of terminus the notion that it is somehow a perfection or good attained through the process. ... The third meaning of end is more specialized still, for it adds to the notion of termination and perfection that of intention or aim. ... Much of the difficulty with teleology in nature arises from conceiving all final causality as intentional or cognitive and not sufficiently differentiating the cognitive from the terminative and the perfective" (Wallace, *The Modeling of Nature*, p. 16-17).

³⁵ Obviously, we should not think that matter is simply in the category of relation, rather it has a relational character due to its essential ordering to form: "materia est de numero eorum quae sunt ad aliquid, quia dicitur ad formam. Quod non ideo dicitur quasi ipsa materia sit in genere relationis, sed quia cuilibet formae determinatur propria materia" (*In Phys.*, II, 4, n. 9). Some authors have called this special kind of relation between matter and form a 'transcendental relation'. John Wippel notes (*The Metaphysical Thought*, p. 320, n. 96) that A. Krempel, in his *La doctrine de la relation chez saint Thomas: exposé historique et systématique* (Paris, 1952) was trying to abolish this line of interpretation by saying that there is only a logical relation between individual matter and its substantial form, as well as only an accidental relation between the body and the soul. Wippel disagrees with him and quotes other critics.

The understanding of matter in this essentially dynamic perspective,³⁶ and also as clearly distinguished from privation, results in the need for other than mathematical method of inquiry. For although mathematical principles can be applied to physical reality in order to describe something of it, namely its quantitative aspects, still a vast range of non-quantitative aspects remains scientifically untouched. For Aquinas, such non-quantitative aspects would include precisely potency, besides also actuality, form, finality, causality, and existence.³⁷ In Platonic approach, since matter is not distinguished from privation, non-being is attributed to matter, and thus such a relational and dynamic vision of matter is not so present.

Let us note also that such a positive understanding of matter was for Aquinas an exquisite tool in integrating the effects of natural reasoning about material things with his sound theological treatment of the goodness of created things, the goodness of the work of the Only Good, the God Creator. It is well known that this question was vital for St. Thomas because of multiform errors of his contemporaries, errors stemming from the same source, imbued with Neo-Platonism Manichaeism.

6.2. *The principles of natural science*

Now we turn from principles of natural *things*, treated in the previous section, to the principles of natural *science*. Thus, following St. Thomas's texts, I will recall the

³⁶ William Wallace writes about Aristotle's understanding of prime matter as "a type of conservation principle that persists through all natural changes in the universe" and then he adds: "Surprisingly, scientists have come to develop a similar conception in recent years. No longer do they attempt to identify one final substance, a single super-quark, for example, that is the ultimate building block of the universe. Instead their emphasis is on delineating factors that are conserved in all the transformations that take place in the world of nature. ... They have been successively formulated as the conservation of matter, energy, mass, and finally, after Einstein's discovery of mass-energy equivalence ($E = mc^2$), mass-energy. Perhaps the last named, mass-energy, comes the closest to conveying the Aristotelian idea of protomatter as the basic stuff of the universe. ... matter, as a basic constituent of all natural entities, is no longer seen as the passive and inert component it was previously thought to be. Rather it is a powerful and potential principle that lies at the base of the most cataclysmic upheavals taking place on our planet" (Wallace, *The Modeling of Nature*, p. 8-9). Wallace quotes also Werner Heisenberg who suggests that "the matter of Aristotle, which is mere 'potentia,' should be compared to our concept of energy" (ibid., p. 9).

³⁷ Weisheipl describes how in the fourteenth century the area of phenomena considered capable of mathematization was extended and how this process developed until Galileo. Cf. Weisheipl, "The Evolution of Scientific Method" [as essay X in *Nature and Motion*...], p. 239-260. In this line see also William Wallace, "Quantification in Sixteenth-Century Natural Philosophy" in: *Recovering Nature: Essays in Natural Philosophy, Ethics, and Metaphysics in Honor of Ralph McInerny*, ed. by Thomas Hibbs and John O'Callaghan (Notre Dame, Ind.: University of Notre Dame Press, 1999), p. 11-24.

most general principles of science and apply it to natural science. Then, I will distinguish natural things or processes from all other things or processes. Next, I will define nature and characterize it briefly in order to narrow down the scope of perceivable principles and causes only to those treated in natural science. Finally, I will show how causes as principles of natural science emerge from a simple analysis of natural motion.

As was said, for Aquinas, in every science what must first be known are its subject and the medium by which it demonstrates.³⁸ The medium is the formal object of science.³⁹ The formal object of science, in turn, is the definition of the formal subject (i.e. the definition of the aspect of the real being which is considered in a given science).⁴⁰ Accordingly, it is already known that the subject of natural science is manifested through the senses because it was said that natural science considers such *speculabilia* that contain in their definition sensible matter. This means that natural science generally treats the whole reality of material and sensible being. This is its material subject. The formal subject of natural science is motion or change. It is taken as a common property of every material being, which defines the nature of the sensible world on the most general level. It can be taken as a descriptive definition of the subject: changeable or mobile being.

Among changeable or mobile beings we can distinguish between those that come from nature and those which come from other causes.⁴¹ The main difference between things becoming from nature (*naturalia*) and every other thing, is that natural things seem to have in themselves some principle of change and rest⁴² (either according to place, or according to increase and decrease [i.e. according to quantity], or according to alteration [i.e. according to quality]).⁴³ Other things do not have such interior principle, except *per accidens*, that is, insofar as non-natural things are made from

³⁸ “Ea autem quae primo oportet cognoscere in aliqua scientia, sunt *subiectum* ipsius, et *medium* per quod demonstrat” (*In Phys.*, II, 1, n. 1).

³⁹ Cf. *STh*, II-II, 1, 1.

⁴⁰ For a longer explanation see Melvin A. Glutz, *The Manner of Demonstrating in Natural Philosophy*, River Forest, Ill., 1956, p. 43-51.

⁴¹ “Inter omnia entia, quaedam esse dicimus a natura; quaedam vero ab aliis causis, puta ab arte vel a casu” (*In Phys.*, I, 1, n. 2).

⁴² “Naturalis enim philosophia de naturalibus est; naturalia autem sunt quorum principium est natura; natura autem est principium motus et quietis in eo in quo est; de his igitur quae habent in se principium motus, est scientia naturalis” (ibid., n. 3).

⁴³ Secundum locum, secundum augmentum et decrementum, secundum alterationem – cf. ibid., II, 1, n. 2.

natural ones.⁴⁴ That things have in themselves some principle of change and rest is observed on the basis of some regularity of occurrences. Such motions which occur regularly are susceptible to scientific treatment.⁴⁵ In natural science changes are studied in order to discover the inner constitution of things that undergo these changes. Singular or random changes do not provide us with appropriate means to discover the proper causes of the bodies to which these changes happen. Thus such changes as the result of violence and artificially imposed action, chance and fortune, strictly speaking do not fall within the ambit of natural science. And only natural motion or natural change, which is characterized by regularity and some determination, gives us a sufficient basis to attain a scientific knowledge of the inner constitution of things. Other kinds of motion may provide some kind of knowledge about things; nonetheless in science we do not seek any cognition but a certain cognition.⁴⁶

This inner principle in natural things is called “nature” and it is defined as “the principle of change and rest in the thing in which it is primarily and *per se* and not *per accidens*.”⁴⁷ Thus nature is perfectly distinguished from every other principles of motion.⁴⁸ Nature, in the sense of principle, refers both to matter and form because they

⁴⁴ “In quantum scilicet materia et substantia corporum artificiatorum sunt res naturales” (ibid.).

⁴⁵ “Etiam fortuna et casus computantur inter causas, cum multa dicantur fieri vel esse etiam propter fortunam et casum” (*In Phys.*, II, 7, n. 1). Cf. *In Meta.*, XI, 8, n. 2284-88.

⁴⁶ “In scientiis non quaeritur qualiscumque cognitio, sed cognitionis certitudo” (*In Phys.*, I, 1, n. 7).

⁴⁷ “Natura nihil aliud est quam *principium motus et quietis in eo in quo est primo et per se et non secundum accidens*” (ibid., I, n. 5). In *STh*, III, 2, 1 Aquinas explains that this name “nature” comes from our observation of living things, but its signification is extended to include every principle of change specified in quoted before definition: “quia principium generationis in rebus viventibus est intrinsecum, ulterius derivatum est nomen naturae ad significandum quodlibet principium intrinsecum motus, secundum quod Philosophus dicit *Phys. II.*” Cf. *STh*, I, 29, 1 ad 4; 115, 2 c; *CG*, IV, 35, n. 3729 and 41, n. 3788. If somebody has any doubts whether Aquinas took this definition of Aristotle as his own or perhaps only relates what Aristotle said, keeping his own reserves for himself, it is good to see how St. Thomas literally derides those who wanted to correct this definition: “Unde deridendi sunt qui volentes definitionem Aristotelis corrigere, naturam per aliquid absolutum definire conati sunt, dicentes quod natura est vis insita rebus, vel aliquid huiusmodi” (*In Phys.*, II, 1, n. 5). Cf. ibid., n. 8. James A. Weisheipl in the article “The Concept of Nature” (in *Nature and Motion in the Middle Ages*, 1-23) identifies those who tried to define nature not in relative terms but in absolute terms: among them was John Philoponus, St. Albert and Roger Bacon (17, notes 67-69). He notes also that in fifteenth and sixteenth centuries there was the same tendency to the point that “Aristotelians of the seventeenth century referred to ‘nature’ as a *virtue* or as an *occult specific quality*” (ibid.).

⁴⁸ In order to find a proper definition, it is distinguished from *casus* and *fortuna*: cf. *In Phys.*, II, 10, n. 9-10. *Casus* and *fortuna* are causes *per accidens*. *Casus* is what happens *per se frustra* or *vanum* or else *inane*. This is why St. Thomas treats the principle *natura nihil facit frustra* as an evident consequence of a proper understanding of the term *natura* (cf. “frustra est, quod ordinatur ad finem, quem non attingit” [*STh*, I, 25, 2 ad 2]; “frustra enim est, quod non sequitur finem, ad quem est” [*In Meta.*, II, 1, n. 286]; “frustra est quod est ad aliquem finem quem non potest attingere” [*De pot.*, I, 2 ad 1]). In this way Aquinas explains this principle in *In Polit.*, I, 1/b (Leon. 48 A, p. 78, lin. 115-120), : “Dicimus enim quod natura nichil facit frustra, quia semper operatur ad finem determinatum; unde, si natura

are *per se* constitutive principles of things and according to the diversity of forms and corresponding to them matters, there is a diversity of natures. So natural science should consider both matter and form. But nature is said differently about matter than about form: nature said about matter means that nature is a subject, whereas nature said about form means that nature is *in* the subject.⁴⁹ Aquinas remarks also that we should not think that since nature is said about matter and form, so compositum can be called nature, just as substance is said about form, and matter, and compositum. “Compositum from matter and form, e.g. man, is not nature itself, but is something *from nature*, because nature is understood as principle, while compositum as being principled.”⁵⁰ Thus, it is important to regard nature in singulars as something *inhering* in a subject.

For Aristotle and Aquinas the existence of natural motion, and therefore the existence of nature, is simply evident to our senses. We see it in every instance of something happening always or almost always (i.e. for the most part, *sicut frequenter*, or *ut in pluribus*). E.g. that man is born with two eyes – it is natural, and we rightly expect that man be born with two eyes and not with three or one. If man is not born with two eyes, we say that it happened by chance, because usually it is otherwise and in human affairs we call it an ill fortune or misfortune. But the regularity of normal occurrences is expected and we do not say that what is normal happened by chance but rather that it is natural. That something happens by chance is equivalent to something happening in minority of cases.⁵¹

These regularities are perceivable and their discovery discloses essential features of a thing which is the subject of such regular change. The evidence of sensory experience is sufficient for natural science and even it would be a sign of ignorance to try to demonstrate that natural changes occur.⁵² This is so because in demonstrating

attribuit alicui rei aliquid quod de se est ordinatum ad aliquem finem, sequitur quod ille finis detur illi rei a natura.” Cf. section 7.2, footnote 38.

⁴⁹ “Definit ea quae a natura dominantur. Et dicit quod habentia naturam sunt illa quae habent in seipsis principium sui motus. Et talia sunt omnia subiecta naturae: quia natura est subiectum, secundum quod natura dicitur materia; et est in subiecto, secundum quod natura dicitur forma” (*In Phys.*, II, 1, n. 6).

⁵⁰ “Posset autem aliquis credere quod quia materia dicitur natura et etiam forma, quod compositum possit dici natura; quia substantia dicitur de forma et materia et de composito. Sed hoc excludit dicens quod compositum ex materia et forma, ut homo, non est ipsa natura, sed est aliquid *a natura*; quia natura habet rationem principii, compositum autem habet rationem principii” (*ibid.*, 2, n. 4).

⁵¹ “Cum esse a fortuna et esse ut in paucioribus convertantur” (*ibid.*, 8, n. 2).

⁵² “We must admit that in each physical reality there is something ultimately *given* in experience, which is none other than the spontaneous manifestation of its characteristics and proper activities. There is nothing ‘behind’ this spontaneity, as far as the body is concerned; it is just ‘given’ in experience. ... Together with this spontaneity there are also certain receptivities for external influence, receptivities

anything we must have something more evident than what we want to demonstrate, and there is nothing more evident than our experience of natural changes, which could prove that some things happen always or in the majority of cases.⁵³

The change at issue here should be understood as not only concerning distinctive activities of things that are obvious for anybody but also their responses to some exterior factors, even artificially created, as it is often the case in research experimentations. It is often very laborious to discover such characteristics that distinguish some kind of things from all other kinds of things and captures in the most appropriate way what its exact nature in its specificity is. But through this kind of observation, comparison and analysis, the inner dimension of things can be revealed to us. It is important to understand nature as the inner dimension of things because it is not only what can be measured or pictured to the senses in some other way. Natures are those deepest structures of things through which, knowing them, we *thoroughly understand* things, i.e., through which things appear to us as causally explained. Initially we obviously have some understanding of things, which we experience, but we usually do not achieve at once distinct and comprehensive knowledge of natures of things. Instead, we grasp them in a general and unspecified manner, and then our vague understanding may be further developed and refined thanks to our more abundant experience and reasoning.⁵⁴

which are compatible with the spontaneous characteristic of each body. To both of these intrinsic sources, the spontaneous and the receptive, Aristotle gives the name *nature* ... Aristotle's point is that if we wish to understand natural phenomena, we must admit an internal spontaneity (nature) within concrete Bodies for their characteristic behavior. He is not appealing to an abstraction, nor to anything outside the acting body. He is insisting that we see spontaneous activity and all we can say is that it *is* spontaneous; the source of characteristic spontaneity he calls 'nature.' Therefore he says, *that* such a reality exists is obvious, and it would be absurd to attempt any 'proof'" (Weisheipl, "The Concept of Nature," p. 10-11).

⁵³ "Excludit praesumptionem quorundam volentium demonstrare quod natura sit. Et dicit quod ridiculum est quod aliquis tentet demonstrare quod natura sit, cum manifestum sit secundum sensum quod multa sunt a natura, quae habent principium sui motus in se. Velle autem demonstrare manifestum per non manifestum, est hominis qui non potest iudicare quid est notum propter se, et quid non est notum propter se: quia dum vult demonstrare id quod est notum propter se, utitur eo quasi non propter se noto. ... Naturam autem esse, est per se notum, inquantum naturalia sunt manifesta sensui. Sed quid sit uniuscuiusque rei natura, vel quod principium motus, hoc non est manifestum. Unde patet per hoc quod irrationabiliter Avicenna conatus est improbare Aristotelis dictum, volens quod naturam esse possit demonstrari, sed non a naturali, quia nulla scientia probat sua principia. Sed ignorantia principiorum moventium non impedit quin naturam esse sit per se notum, ut dictum est" (*In Phys.*, II, 1, n. 8). "Natura consequitur suum effectum vel semper vel ut in pluribus" (*STh*, I, 63, 9 c). "Natura non deficit nisi in paucioribus" (*CG*, III, 85, n. 2602).

⁵⁴ Cf. Wallace, *The Modeling of Nature*, p. 4-5. Cf. also Benedict M. Ashley, "The Anthropological Foundations of the Natural Law: A Thomistic Engagement with Modern Science," in *St. Thomas Aquinas and the Natural Law Tradition: Contemporary Perspectives*, edited by J. Goyette, M. S. Latkovic, and R. S. Myers (Washington, D.C.: The Catholic University Press, 2004), p. 3-16.

While logic and metaphysics speak about quiddities and essences, natural science tends to speak rather about natures, meaning sometimes almost the same, although the term “nature” adds this aforementioned dynamic characteristic to what is meant by the quiddity or essence of a thing. When the term “nature” is used in the static sense as “the essence, which the definition signifies,”⁵⁵ that is in the sense of the substance, it is not its principal sense but rather a transferred one, *secundum quamdam metaphoram et nominis extensionem*.⁵⁶ Nature is the principle of some change, thus using this term in natural science we mean that we do not consider fruits of the activity of mind, nor anything petrified in perfect immobility, nor any mysterious entities from the heaven of ideas. We consider primarily what things are in their material, changing condition, in their processes of becoming and deteriorating, in their multiple dependencies and relations with other such things and states. The term “nature” suggests also that what a thing is is only progressively disclosed to us and even that possibly it is never exhaustively understood.⁵⁷ Wherefore this term connotes a constant openness to the experience which deepens our understanding of what something is.

We were talking about matter and form as *per se* and inner principles of changeable being. Matter and form taken as nature are distinct causes of the thing which is composed of them. Since in Aristotelian science we look for causes of things, matter and form are obviously treated at length in natural science and they constitute the first principles of natural science as principles for understanding things in the order of becoming and in the order of being.⁵⁸ Yet these two causes are not sufficient to account scientifically for natural being or natural motion according to the conditions in which we experience them. If we understand “cause” as signifying “that upon which something depends in being or becoming”⁵⁹ (as in the question: what is the cause that

⁵⁵ “Extensum est nomen naturae ad significandum essentiam cuiuscumque rei in natura existentis: ut sic natura alicuius rei dicatur essentia, quam significat definitio” (CG, IV, 35, n. 3729). Cf. *In Phys.*, II, 2, n. 151.

⁵⁶ *In Meta.*, V, 5, n. 823. In this lectio 5 St. Thomas comments on the Aristotle’s list of 5 principal significations of the word “nature” and 2 transferred significations. Aquinas remarks that although to consider the term “nature” “non videatur ad primum philosophum, sed magis ad naturalem pertinere,” such a treatment can be justified in metaphysics “quia natura secundum sui quamdam acceptionem de omni substantia dicitur” (n. 808). Cf. James A. Weisheipl, “The Concept of Nature” (Essay I in his *Nature and Motion in the Middle Ages*, 1-23), p. 5-8.

⁵⁷ Cf. *In Meteor.*, I, 1, n. 9.

⁵⁸ “Quaelibet scientia debet inquirere principia et causas sui subjecti, quae sunt ejus in quantum hujusmodi” (*In Meta.*, VI, 1, n. 1145).

⁵⁹ “Causae autem dicuntur ex quibus aliqua dependent secundum suum esse vel fieri” (*In Phys.*, I, 1, n. 5).

this something is? or what is the cause that this stuff is this something?), form appears as that through which absolutely speaking something is an existent. Matter is that from which a being in act is reduced from being in potency. Now, natural being comes into being from matter and form but neither matter can act on its own nor form, but only some already actualized compositum.⁶⁰ Only what is actualized in being can act, and nothing unactualized can act. Hence, another agent is needed to reduce potency to act because form as active principle of natural being is not an efficient cause or a mover.⁶¹ Thus, in order to explain a natural process, we need to see what comes into being (through formal cause), and what makes this something to come into being (efficient cause), and what is the subject of this coming into being (material cause).⁶²

Apart from that it is essential to remark that the act of efficient cause is directed to cause something. Every efficient cause causes something and it is thereby defined by the effect. The cause which does not cause is not a cause (except in potency, but then also an order to the effect is needed to call it a cause). However, in St. Thomas's approach, in science (including whole philosophy) we do not consider potential being but actual and potential only insofar as it illuminates what is actual. Thus, when we are talking about causes in science, we are talking principally about actual causes which are determined to actual effects and not only about potential causes which can be determined to this or that, according to the imagination or futuristic visions.

No motion can come about without efficient cause, and no efficient cause operates except for some end. Every singular action is somehow determined and one of the principal determinations is its direction, i.e. its end.⁶³ In the line of this simple observation Aquinas repeats many times in his writings that *omne agens agit propter finem*. The end or aim of the agent is not necessarily chosen or known by the agent – to know the end is necessary only in such agents of which actions are not determined, that

⁶⁰ “Quod enim est in potentia non potest se reducere ad actum, sicut cuprum quod est potentia ydolum non facit se ydolum, sed indiget operante qui formam ydoli extrahat de potentia in actum. Forma etiam non extraheret se de potentia in actum: et loquor de forma generati, quam diximus esse terminum generationis; forma enim non est nisi in facto esse, quod autem operatur est in fieri, id est dum res fit. Oportet ergo preter materiam et formam esse aliquod principium quod agat, et hoc dicitur esse efficiens, uel mouens, uel agens, uel unde est principium motus” (*De principiis naturae*, c. 3 [Leon. 43, p. 41-42, lin. 3-15]). This is the fundamental root of the principle “omne quod movetur ab alio movetur” – cf. section 7.2.

⁶¹ Cf. *In De caelo*, III, 7, n. 8-9; *In Phys.*, II, 1, n. 4; 5, n. 5; *De ver.*, 22, 3; *De pot.*, 3, 7.

⁶² Cf. *In Phys.*, II, 11, n. 5.

⁶³ “Omne quod agit non agit nisi intendendo aliquid” (*De principiis naturae*, 3 [Leon. 43, p. 42, lin. 17]). Cf. *In Meta.*, II, 4, n. 319.

is in voluntary agents.⁶⁴ Yet this adage is not about some mental process, but only about the general truth that every observable motion has its direction toward something. Otherwise motion would not be observable and, in fact, it would not be a motion. Nor does this adage specify what the end is. Therefore, the direction of efficient cause to its effect belongs to the very signification of the term “efficient cause.” In science efficient cause is analyzable insofar as it is characterized by a *determined* direction. If it were not determined to any concrete direction, it could be only an abstract notion of efficiency or action. In mind we can conceive an efficient cause or action as undetermined. In reality if something acts, this real action is always somehow determined. We can know that something is capable of acting haphazardly, without any determination, and that to act it must be determined by itself or something other. Yet every concrete action is perceived thanks to its determination. To know an undetermined efficient cause is to know a cause in potency, yet without a specific determination it is useless for scientific consideration because of the lack of necessity.⁶⁵ This determined directiveness of efficient cause or its acting for an end distinguishes another reason that should be taken into consideration in accounting for natural being or natural motion. Aristotle and Aquinas warn us that if we do not take into account the fact that nature acts for the sake of something, or that nature acts towards something, we will destroy the notion of nature and what is according to nature: “it is against the notion of nature to claim that nature does not act for the sake of something.”⁶⁶ This reason, for the sake of which an agent acts, is called “final cause.” Final cause is “that toward which the action of the agent tends.”⁶⁷ In other words, it is

⁶⁴ “Omne agens, tam naturale quam uoluntarium, intendit finem; non tamen sequitur quod omne agens cognoscat finem, uel deliberet de fine. Cognoscere enim finem est necessarium in hiis quorum actiones non sunt determinate, sed se habent ad opposita, sicut se habent agentia uoluntaria; et ideo oportet quod cognoscat finem per quem suas actiones determinent. Sed in agentibus naturalibus sunt actiones determinate, unde non est necessarium eligere ea que sunt ad finem. ... possibile est agens naturale sine deliberatione intendere finem. Et hoc intendere nichil aliud erat quam habere naturalem inclinationem ad aliquid” (*De principiis naturae*, c. 3 [Leon. 43, p. 42, lin. 20-30 and 38-41]).

⁶⁵ “Omne agens agit propter finem, alioquin ex actione agentis non magis sequeretur hoc quam illud, nisi a casu” (*STh*, I, 44, 4). Cf. *CG*, III, 2.

⁶⁶ “Ille qui sic dicit, naturam scilicet non agere propter aliquid, destruit naturam et ea quae sunt secundum naturam. ... contra rationem naturae est, dicere quod natura non agat propter aliquid ... epilogando dicit, manifestum esse quod natura sit causa, et quod agat propter aliquid” (*In Phys.*, II, 14, n. 8). According to this indication we should not wonder why “nature” became mysterious and problematic in moral discourse once final causality was rejected from scientific discourse.

⁶⁷ *In Phys.*, II, 10, n. 15. “Cuius causa fit [est] de ratione finis” (*In Phys.*, II, 4, n. 8; cf., 5, n. 6; *In De caelo*, II, 18, n. 4). “Finis nihil aliud est, quam illud, cuius gratia alia fiunt” (*In Eth.*, I, 9 [Leon. 47/1, p. 31, lin. 40-41]). “Hoc dicimus esse finem, in quod tendit impetus agentis” (*CG*, III, 2, n. 1869). “Finis est, in quo quiescit appetitus agentis vel moventis et eius, quod movetur” (*ibid.* 3, n. 1880; cf. 16, n. 1985-1987). “Causalitas finis in hoc consistit, quod propter ipsum alia desiderantur” (*CG*, I, 75, n. 64). “Sicut autem influere causae efficientis est agere, ita influere causae finalis est appeti et

that for the sake of which something is done: the goal or purpose of a being or an operation. It is a determination to act always this or this rather than that.

One may ask: why should we take into consideration another distinct cause if the directiveness is inscribed into the very signification of efficient cause? Do we not consider what signifies final cause by already thinking about the efficient cause? The answer is: in a way we do, in a way we do not. Generally speaking, we do consider the signification of final cause when we are thinking about efficient cause because these two causes are correlative and their proper understanding is conditioned by each other. Nonetheless, when we consider real things these causes are distinct and constitute different tools in science. Efficient cause is often simply insufficient in scientific explanation as we will see it better in the next section.

But it is right also to ask in what consists the difference between formal and final cause, because we said before that form as a principle of natural thing is that because of which and toward which the change occurs. Indeed, in natural things formal and final cause often coincide numerically. However, applying it to a scientific consideration, we may encounter much difficulty in discovering the formal cause with precision; and often by proceeding from the final cause, it is possible to reveal what something is according to its form. Yet a distinction should be introduced here: the final cause that coincides with the formal cause is the cause of generation (*finis cuius*) and not of the thing which is generated (*finis quo*). Thus, form which is the end of

desiderari” (*De ver.*, 22, 2 c.). “Finis dicitur trahere” (*In Phys.*, VII, 3 n. 7). “All natural science explanations through law-like efficient causality must also be through final causality, that is, they must be teleological (or ‘teleonomic’). As a matter of plain fact, therefore, in current natural science, explanation through final causality is not only actually used covertly (under such other terminology as ‘directedness,’ ‘function,’ ‘adaptation’), but it is always the *ultimate* mode of explanation” (Ashley, *The Way toward Wisdom*, p. 324). For a survey of contemporary philosophical examples of return to the teleological explanation see e.g. Mark Perlman, “The Modern Philosophical Resurrection of Teleology,” *The Monist* 87 (2004): 3-51. He writes: “By the twentieth century, analytic philosophers were positively allergic to any mention of teleology or teleological function. It was seen as an insidious metaphysical notion that was to be tossed out with the rest of metaphysics. ... while it is perhaps not so surprising that philosophers would go against common sense in rejecting teleology (indeed some take it as an essential part of philosophy to oppose common sense), it is surprising that analytic philosophers, with their strong focus on science, would reject a notion that is so central to some areas of science, most notably, biology and engineering sciences. Of course, the Positivists would have said that biology’s reliance on teleology jeopardized its standing as a science at all, and certainly prevented it from being a basic natural science. They were similarly suspicious of sociology and psychology. The Logical Behaviorists even sought to sanitize psychology of all such metaphysically polluted terms. Indeed, Logical Positivists had ambitions to sanitize all of science from metaphysics. But these projects failed to find anything to adequately fill the important role teleological functions play, particularly in biology and psychology. So began the modern philosophical movement to legitimize teleology” (p. 4-5) – and further he develops “a taxonomy of teleological theories” of present-day philosophers.

generation (call it objective or internal end) is that toward which every imperfect being aims. Then, we can perceive that a thing may also act for an end that is not the form of the thing (subjective or external end).⁶⁸ Aquinas explains this in the following example: “The aim of human generation is human form; whereas the aim of human is not his form but through his form he is able to act towards the aim.”⁶⁹ Thus, natural science should consider not only form as form but also form as end, purpose, or aim.⁷⁰

Form as end is manifestly always something good, as was said about form in relation to matter in describing principles of natural things, that it is something divine, perfect and desirable. It is good because it is the perfection toward which the potentiality of the compositum necessarily aims, and goodness, in turn, is defined as *quod omnia appetunt*. This definition of goodness caused some problems during the history of philosophy: one example of this was exemplified in section 0.2. We will say more later, in Chapter 8, about the analyzability of goodness, but now let it suffice to say that “good” is a basic and primary concept and we should not expect to have a definition of such a primary concept in terms of something more basic or more known than that. Similarly, when we want to define being or explain what being is, we cannot define it properly speaking, because we cannot indicate the causes, that is, something simpler than being itself. Again, as was already said, for Aristotle and Aquinas it would be a sign of ignorance to explain something more known by something which is less known. Being and goodness are rather indicated than defined, indicated or elucidated indirectly, namely, through something consequent, a proper effect. Goodness is

⁶⁸ “Natura rei, quae est finis generationis, ulterius etiam ordinatur ad alium finem, qui vel est operatio, vel aliquod operatum, ad quod quis pervenit per operationem” (*STh*, I-II, 49, 4 ad 1).

⁶⁹ “Multoties contingit quod tres causae concurrunt in unam, ita quod causa formalis et finalis sint una secundum numerum. Et hoc intelligendum est de causa finali generationis, non autem de causa finali rei generatae. Finis enim generationis hominis est forma humana; non tamen finis hominis est forma eius, sed per formam suam convenit sibi operari ad finem. Sed causa movens est eadem secundum speciem utrique earum. Et hoc praecipue in agentibus univocis, in quibus agens facit sibi simile secundum speciem, sicut homo generat hominem. In his enim forma generantis, quae est principium generationis, est idem specie cum forma generati, quae est generationis finis. ... Non igitur agens semper est idem specie cum forma, quae est finis generationis: nec iterum omnis finis est forma: et propter hoc signanter apposuit *multoties*. Materia vero non est nec idem specie nec idem numero cum aliis causis; quia materia in quantum huiusmodi est ens in potentia, agens vero est ens in actu in quantum huiusmodi, forma vero vel finis est actus vel perfectio” (*In Phys.*, II, 11, n. 2). Cf. *ibid.*, 4, n. 8.

⁷⁰ “Ostendit quod naturalis considerat etiam finem. Et dicit quod etiam forma et quod quid est pertinet ad considerationem naturalis, secundum quod etiam finis est et cuius causa fit generatio. Dictum est enim supra quod forma et finis coincidunt in idem; et quia natura operatur propter aliquid, ut infra probabitur, necesse est quod ad naturalem pertineat considerare formam non solum in quantum est forma, sed etiam in quantum est finis. Si autem natura non ageret propter aliquid, consideraret quidem naturalis de forma in quantum est forma, sed non in quantum est finis” (*ibid.*, II, 11, n. 6).

indicated by an inclination, tendency, desire, appetite or something of this sort, and in the case of such a term it suffices to have it indicated in this way that it could function in any scientific consideration in the Aristotelian sense of science. It is not that something is good because and insofar as it is desired, but rather the opposite. The appetite or desire is the effect that points at the cause – the essence of good. Those who disagree with this manner of indicating goodness are not to be disputed within the scope of natural science but in metaphysics, because a consideration of goodness treats not only natural science but also ethics. For the moment we content ourselves to say that *appetitus naturalis* discloses the goodness appropriate to the nature in which is this tendency.

In the cases of ends of things generated we rightly may say that it is not true that they are always good because we know from our own experience that it happens quite often that people choose to do wrong rather than good. However, the term “good” as used in this context contains not only an objectively true good but also what subjectively seems to be good but, in fact, is not (*bonum apparens*). Aristotle and Aquinas claim that the proper object of the human will is goodness and thus every human being always follows what is recognized as goodness, although it happens that something objectively wrong is actually recognized as good.⁷¹ Nothing would move to action except under the aspect of good. Therefore, the cause *per se* of acting (what moves the agent) is goodness, whereas *per accidens* it happens that there occurs an error through an incorrect or defective evaluation or estimation.⁷²

Hence, there is no obstacle for Aquinas to say that *finis habet rationem boni*, or the other way round, that *bonum habet rationem finis*, because both are contained mutually in their significations. And these both in turn signify cause: *finis vel bonum habet rationem causae*. Thus, final cause is, on the one hand, what is desired or first in intention (intention broadly speaking, as that for the sake of which a change occurs), and, on the other hand, it is the end or goal of motion (and as such is correlated with or opposite to the source of motion, which is the efficient cause).⁷³ Such a twofold final

⁷¹ Cf. *CG*, III, 1, n. 1863.

⁷² “Quandoque in his quae agunt per electionem contingit finem esse malum; ideo ad hanc dubitationem tollendam, dicit quod nihil differt utrum causa finalis sit vere bona vel apparens bona, quia quod apparet bonum non movet nisi sub ratione boni. Et sic ultimo concludit tot esse species causarum quot dictae sunt” (*In Phys.*, II, 5, n. 11).

⁷³ “Sic igitur causam finalem per tria notificat; scilicet quia est terminus motus, et per hoc opponitur principio motus, quod est causa efficiens: et quia est primum in intentione, ratione cuius dicitur cuius causa: et quia est per se appetibile, ratione cuius dicitur bonum. Nam bonum est quod omnia appetunt.

cause is an exquisite tool in explaining natural processes. Since a cause *per se* which moves the mover is goodness, goodness of form on the level of intrinsic causes or goodness of action as an extrinsic cause correlated with efficient cause, the final cause is said to be the strongest among other causes (*potissima*) and the cause of causes (*causa causarum*).⁷⁴ This is so because:

it is evident in things that have four causes that one cause is in some way the cause of another. Matter is because of form, and not the other way around; so the definition that is taken from formal cause is the cause of the definition taken from the material cause of the same thing. Likewise, because the thing generated attains its form through the action of the generator, it follows that the agent is in some way the cause of the form, and is the definition of the definition. Furthermore, every agent acts because of the end; hence the definition taken from the end is somehow the cause of the definition taken from the agent cause. We cannot proceed further in kinds of causes: hence it is said that the end is the cause of causes.⁷⁵

Therefore, there are neither more nor less than four causes that should be taken into account in natural science: material and formal causes are intrinsic causes and efficient and final causes are external causes of natural things. Since form is that through which absolutely speaking something is an existent, and three other causes are considered insofar as something receives existence, in immobile things only formal cause is considered.⁷⁶ But natural science considers all four causes, because natural things can be explained in the light of them all and a perfect explanation contains them all.⁷⁷

Unde exponens quo modo causa finalis efficienti opponatur, dicit quod est finis generationis et motus, quorum principium est causa efficiens. Per quae duo videtur duplicem finem insinuare. Nam finis generationis est forma ipsa, quae est pars rei. Finis autem motus est aliquid quaesitum extra rem quae movetur” (*In Meta.*, I, 4, n. 71).

⁷⁴ “Finis vel bonum habet rationem causae. Et haec species causae potissima est inter alias causas: est enim causa finalis aliarum causarum causa” (*In Phys.*, II, 5, n. 11). “Finis inter alias causas primum obtinet” (*CG*, III, 17, n. 1997); “Finis est causa causarum” (*STh*, I, 5, 2 ad 1). Cf. *ibid.*, 4 c.; 105, 5 c.; I-II, 1, 2 c.; *Super I Sent.*, 8, 1, 3 sol.; *In Meta.*, III, 4, n. 377; *In Meta.*, V, 3, n. 782.

⁷⁵ “Manifestum est enim in rebus habentibus quatuor causas, quod una causa est quodam modo causa alterius: quia enim materia est propter formam et non e converso, ... diffinitio que sumitur ex causa formali est causa diffinitionis que sumitur ex causa materiali eiusdem rei; et quia generatum consequitur formam per actionem generantis, consequens est quod agens sit quodam modo causa forme et diffinitio diffinitionis; ulterius autem omne agens agit propter finem, unde et diffinitio que a fine sumitur est quodam modo causa diffinitionis que sumitur a causa agente; ulterius autem non est procedere in generibus causarum, unde dicitur quod finis est causa causarum” (*In Poster.*, II, 8 [Leon. 1*2, p. 202, lin. 28-43]). “Efficiens autem est ratio forme, quia enim agens agit sibi simile, oportet quod secundum modum agentis sit etiam modus forme que ex actione consequitur; ex fine autem sumitur ratio efficientis, nam omne agens agit propter finem. Oportet ergo quod diffinitio que sumitur a fine, sit ratio et causa probatiua aliarum diffinitionum que sumuntur ex aliis causis” (*ibid.*, I, 16 [p. 61, lin. 67-74]). Cf. *De Principiis Naturae*, n. 10; *In Meta.*, V, 3, n. 782.

⁷⁶ “Necesse est autem quatuor esse causas. Quia cum causa sit ad quam sequitur esse alterius, esse eius quod habet causam, potest considerari dupliciter: uno modo absolute, et sic causa essendi est forma per quam aliquid est in actu; alio modo secundum quod de potentia ente fit actu ens. Et quia omne quod est in potentia, reducitur ad actum per id quod est actu ens; ex hoc necesse est esse duas alias causas, scilicet materiam, et agentem qui reducit materiam de potentia in actum. Actio autem agentis ad

Since causes are said in many ways, it happens that one and the same thing has many causes per se, and not per accidens ... Thus sometimes to one thing many definitions are assigned according to the diversity of causes, but a perfect definition contains all causes.⁷⁸

In Aristotelian philosophy efficient cause is necessarily coupled with final cause. As matter is inconceivable without form, so efficient cause in scientific consideration is inconceivable without final cause. Random or undetermined efficiency does not contribute much to scientific efficiency. In other words, random and undetermined changes, contingent or chance events, are really caused and as something real are obviously taken into account in scientific reasoning, yet such causes are useless in any demonstration. They shape scientific inquiry because their possibility excludes some demonstrations concerning contingent things. Such demonstrations could be valid if chance or fortune did not interfere. But exactly in these cases the correlative of efficient cause, final cause is manifested as truly distinct and very helpful in gaining scientific knowledge. Now we turn to the section which shows the application of aforementioned principles into the manner of demonstrating in natural science.

aliquid determinatum tendit, sicut ab aliquo determinato principio procedit: nam omne agens agit quod est sibi conveniens; id autem ad quod tendit actio agentis, dicitur causa finalis. Sic igitur necesse est esse causas quatuor. Sed quia forma est causa essendi absolute, aliae vero tres sunt causae essendi secundum quod aliquid accipit esse; inde est quod in immobilibus non considerantur aliae tres causae, sed solum causa formalis” (*In Phys.*, II, 10, n. 15).

⁷⁷ Benedict Ashley, in his historical survey of opposed theologies of the body, writes about Galileo as the one who “not only added something to the Aristotelian notion of science, he also made a very significant subtraction. His concern to formulate his theories mathematically led him to abandon Aristotelian teleology, and to retain only arguments based on material, formal, and agent causes. The effect of this was that as physics developed in the seventeenth century it rapidly became *mechanistic*, reverting to the Democritean type of science which Plato had in part accepted, but Aristotle vigorously rejected, and seeking to explain phenomena in terms of goal-less forces acting on inert particles in empty space. ... Now in the seventeenth century this effort was renewed by René Descartes ..., who early in life made a fundamental mathematical invention, namely analytical geometry, took mathematics as the model for all thought because of its wonderful deductive clarity and certitude. In fact he abandoned the Aristotelian concept of truth as the *correspondence* between theory and sense experience for a *consistency* theory based on logical coherence with self-evident axioms derived not from sense experience but from innate ideas” (Ashley, *Theologies of the Body: Humanist and Christian* [Braintree, Massachusetts: The Pope John XXIII Center, 1985], p. 207). In this context see Aquinas’s pertinent remark from which we can see that modern problems with natural science echo an old Platonic error concerning universals: “species, quas ipsi [i.e. Platonici] ponebant, non tangunt causam finalem, quod tamen videmus in aliquibus scientiis, quae demonstrant per causam finalem, et propter quam causam omne agens per intellectum et agens per naturam operatur, ut secundo *Physicorum* ostensum est. Et sicut ponendo species non tangunt causam quae dicitur finis, ita nec causam quae dicitur principium, scilicet efficientem, quae fini quasi opponitur. Sed Platonici praetermittentibus huiusmodi causas facta sunt naturalia, ac si essent mathematica sine motu, dum principium et finem motus praetermittebant” (*In Meta.*, I, 17, n. 259).

⁷⁸ “Cum causae dicantur multipliciter, contingit unius et eiusdem esse multas causas per se et non per accidens ... Et inde est quod aliquando unius rei assignantur plures definitiones secundum diversas causas; sed perfecta definitio omnes causas complectitur” (*In Phys.*, II, 5, n. 7).

6.3. *The method of natural science*

The possibility of an occurrence of a cause *per accidens* which would hinder the causal force of some cause *per se* in the world of nature, introduces some complications in the way of demonstrating in natural science. This is so because causes which are first in becoming or generation (i.e. matter and mover) only in some cases cause something necessarily. For example, from the fact that something is generated from contraries, it necessarily undergoes corruption, or when the sun approaches the North Pole, the days necessarily are longer for those who live near to this pole. When something follows from necessity from matter or mover, it is possible to use such material or efficient cause as the middle term in a demonstration. But in many instances matter or mover do not cause with necessity.⁷⁹ It is a platitude to say that nature's necessity is far from absolute. The fact that nature does not act absolutely necessarily is due precisely to the efficient and material causes. Since these causes sometimes fail in natural processes (i.e. their natural effects do not occur because of chance and fortune), we should be vigilant against taking such causes which may fail as the principles of demonstration. There can be no demonstration from cause to effect in the case of causes that can be impeded. Otherwise the demonstration would lack in the condition of necessity. For example, it is not necessary that from properly accomplished insemination a healthy animal will be born – usually it is born healthy, but not always because there could appear some factor which interferes with the causal process so that it is not perfectly achieved or it is thwarted altogether.⁸⁰ Whenever such causal force⁸¹ of matter or mover might fail, these causes are unfitted to the usage in demonstration.

⁷⁹ “Non omnia quae sunt ex materia, habent ex materia necessitatem” (*In Poster.*, II, 9 [Leon. 1*/2, p. 206, lin. 63-64]).

⁸⁰ “Ostendit quomodo naturalis demonstrat per omnes causas. Et primo quomodo demonstrat *per materiam et moventem*, quae sunt causae priores in generatione; ... in naturalibus reddendum est propter quid *penitus*, idest secundum quodlibet genus causae: ut, quia hoc praecessit, sive illud sit materia sive movens, necesse est hoc esse consequenter; ut si aliquid generatum est ex contrariis, necesse est illud corrumpi, et si sol appropinquat ad polum Septentrionalem, necesse est fieri dies longiores et frigus diminui et calorem augeri apud eos qui habitant in parte Septentrionali. Sed tamen considerandum est quod non semper ex praecedente materia vel movente necesse est aliquid subsequi; sed quandoque subsequitur aliquid *simpliciter*, idest ut semper, ut in his quae dicta sunt; quandoque autem ut frequenter, ut ex semine humano et movente in generatione, ut frequentius sequitur generatum habere duos oculos, quod tamen aliquando deficit. Et similiter ex hoc quod materia sic est disposita in corpore humano, accidit generari febrem propter putrefactionem ut frequentius; quandoque tamen impeditur” (*In Phys.*, II, 11, n. 7).

In these cases, in order to fulfill the necessity condition, demonstration should begin from what is later in becoming or generation; that is from what should be the effect. This demonstration would have this pattern: *if something is to become, such and such things are required*, or, put it differently: *this must be so, if that is to be so*. Aquinas gives an example: if a human being is to be born, it is necessary that human semen be active in generation.⁸² This example would not follow backwards: from the fact that human semen is active in generation, it does not follow that a human being will be born. So we cannot proceed conversely in such demonstration. Demonstrating according to this pattern employs a formal cause, usually called “what something is” (*quod quid est*). But because of taking this cause in a suppositional manner in the order of final cause to be attained (we were already talking about the possibility of the coincidence of these two causes), this formal cause is called in this context “what something was to be” (*quod quid erat esse*). In this suppositional manner from final cause other causes may also be demonstrated, because in things having four causes the efficient takes its *ratio* from final, formal from efficient and material from formal cause, as we read in the quotation above.⁸³ Aquinas notes that in natural science (as also even more so in ethics) explanation often must be made *ex suppositione finis*.⁸⁴

On the logical level in natural science the conclusion follows necessarily from premises when the demonstration is properly constructed (i.e. when the demonstration respects the rules of particular methodology of natural science). If it did not follow necessarily, there would be no demonstration, and consequently, there would be no science. Yet this particular methodology tells us that necessity is usually suppositional as regards things signified by terms, namely, that what is signified by the conclusion occurs necessarily if nature attains its end. Thus, the necessity of things demonstrated in natural science is not an absolute necessity (*necessitas absoluta* or *necessitas consequentis*) but a hypothetical necessity (*necessitas sub conditione* or *conditionata* or *necessitas consequentiae*), that is, the conclusion of the reasoning follows necessarily but all things signified by the terms of the reasoning do not necessarily follow in the

⁸¹ I am talking about causal force confident that by now it is plain to the reader that it does not signify any mysterious powers bubbling in some stuff but rather it signifies an intellectual grasp of the real order of changing things in their diverse dependencies.

⁸² Cf. *In Phys.*, II, 11, n. 8.

⁸³ That is: *In Poster.*, II, 8 (Leon. 1*/2, p. 202, lin. 28-43).

⁸⁴ Cf. *ibid.*, I, 16 (p. 61, lin. 61-96); II, 7 (p. 198, lin. 27-92); II, 9 (p. 208-209, lin. 233-266); *In Phys.*, II, 15, n. 2.

same way.⁸⁵ From such a demonstration we know that things follow under the condition that the nature attains its end. Yet due to the contingent character of natural things, i.e. due to the possibility of an interference from chance or fortune, nature attains its end either always or in majority of cases.⁸⁶

In fact, the whole of natural science presupposes on the one hand that nature itself acts for an end, and on the other hand that nature's ends will be achieved regularly and for the most part, even if not with the mathematical necessity that would guarantee their absolute occurrence. It is a basic *suppositio finis*⁸⁷ that is present throughout this science because this science treats natural motion, which implies some regularity of the attainment of end.⁸⁸ Things exist and act in typical and regular pattern because they are

⁸⁵ "Non ita interrogatur de premissis contingentibus quasi conclusio sit necessaria absolute *propter interrogata*, id est propter premissa contingentia, *set* quia *necesse est* premissa *dicenti* conclusionem *dicere*, et *dicere uera* in conclusione, *si ueraciter sunt* que premissa *sunt*. Quasi dicat quod, licet ex premissis contingentibus non sequatur conclusio necessaria necessitate absoluta, *set* quot est ibi necessitas consequencie tantum secundum quod conclusio sequitur ex praemissis" (*In Poster.*, I, 14 [Leon. 1*/2, p. 54, lin. 83-92]). "Et notandum quod duplex est necessitas: scilicet necessitas absoluta et necessitas conditionalis. Necessitas quidem absoluta est que procedit a causis prioribus in uiam generationis, que sunt materia et efficiens: sicut necessitas mortis que prouenit ex materia et ex dispositione contrariorum componentium: et hec dicitur absoluta quia non habet impedimentum; hec etiam dicitur necessitas materiae. Necessitas autem conditionalis procedit a causis posterioribus in generatione, scilicet a forma et fine: sicut dicimus quod necessarium est esse conceptionem si debeat generari homo; et ista est conditionalis, quia hanc mulierem concipere non est necessarium simpliciter, sed sub conditione: si debeat generari homo. Et haec dicitur necessitas finis" (*De principiis naturae*, c. 4 [Leon. 43, p. 44, lin. 79-94]). Cf. *CG*, I, 67, n. 565; *De ver.*, 24, 1 ad 13; *Super I Sent.*, 38, 1, 5 obj. 4 and ad 4.

⁸⁶ "Est autem considerandum quod de hiis quidem que sunt sicut frequenter contingit esse demonstrationem, in quantum in eis est aliquid necessitatis." (*In Poster.*, I, 42 [Leon. 1*/2, p. 158, lin. 46-49]).

⁸⁷ Wallace analyzed St. Albert's writings on natural science and compared them with St. Thomas's texts. It is clear that Aquinas followed Albert's awareness of tight dependency between Aristotle's *Posterior Analytics* and his *Physics*. Aquinas even "introduces the Latin equivalent of Aristotle's expression from the *Physics*, *ex hypotheseos*, in fact, into his exposition of the *Posterior Analytics*, explaining there that in cases like these [i.e. natural processes admitting a possibility of defective agents, non-eternal occurrences, and temporal intervals between cause and effect] demonstrations must be made *ex suppositione finis* – essentially the same doctrine contained in Albert the Great's physical writings" (Wallace, "A Thomistic Philosophy of Nature," p. 31). Cf. William Wallace, "Albertus Magnus and Suppositional Necessity in the Natural Sciences," in *Albertus Magnus and the Sciences*, edited by James A. Weisheipl (Toronto: Pontifical Institute of Mediaeval Studies, 1980), p. 103-128.

⁸⁸ Aquinas indicates that both motion and nature must be "supposed" (*est necessarium motum et naturam supponi*) before one can formulate a *scientia naturalis* – see *In Phys.*, I, 2, n. 7 and cf. *ibid.*, II, 1, n. 8. "For him [Aquinas], therefore, all of natural philosophy can be scientific only *ex suppositione*, that is, *ex suppositione naturae*, on the supposition of there being nature, of there being natural kinds with all their properties and established laws of operation. St. Thomas's way of conceiving the *scientiae naturales* was therefore 'scientific' without being absolutist in any sense, and on that account could pose no threat whatever to theology. But Bishop Tempier and others saw his science as a metaphysics that would place rational limits on God and on the divine power. And unfortunately in our own day there are many who try to make natural philosophy into a metaphysics once again, this time not to the detriment of theology, but to the more serious detriment of the special sciences that contribute so abundantly to our understanding of nature" (Wallace, *From a Realist*, p. 43).

so determined by their natures. The nature of a thing is the reason why such regularity occurs. Thus, natures are evidenced by the regularity of occurrence. This determination of natural factors in producing regular effects is called “finality in nature.”⁸⁹

Therefore, true demonstrations in natural science are certain, if we understand by “certain” “firmness of adherence of a knowing power to what it knows.”⁹⁰ In this sense conclusions of physical demonstrations can be used as the principles for other sciences without any risk of incurring a lack of necessity which obviates the possibility of constructing a science. However, St. Thomas says that there is another signification of the term “physical certitude”:

Names that pertain to the order of knowledge are transferred to natural operations, as when it is said that nature operates wisely, and infallibly; and thus there is said to be certitude in nature’s tending to an end.⁹¹

This is a transferred sense, for as there is a certitude of order or tendency in nature, so the certitude of nature’s *operation* is not absolute, since nature can be impeded in its operation. Hence, any attempt of re-transferring this derivative sense of certitude back to the order of knowledge, results in spurious reasoning based on equivocation.⁹²

The fact that natural science is concerned with *naturalia*, which act for an *end* determined by nature, and so that it most properly demonstrates through the final cause,⁹³ is the most distinguishing mark of natural science in comparison with

⁸⁹ For an exhaustive explanation why it is said that nature acts for an end see *In Phys.*, II, 12-14; *De Ver.*, 5, 2; 22, 2; *CG*, III, 2. “In this post-modernist era we have of course become much less judgmental and chauvinistic when studying the values and achievements of other cultures and eras. Nevertheless, there still exists a strong if implicit tendency to view ... Aristotelian teleology as illegitimate anthropomorphizations of fundamentally lifeless and mindless natural processes. In practically any book on the subject, one will sooner or later come across passages which reveal this lingering modernist bias. The imputation of anthropomorphic projection ultimately derives from the doctrine of René Descartes, which puts Mind and Nature into separate compartments. Although Descartes’ infamous duality is very much out of fashion, it still appears to be deeply ingrained. This would only be expected, given that the Scientific Revolution, with its explicit rejection of soul as *natural* explanatory principle, was founded on the Cartesian duality. And *the* dominating force within our civilization – both intellectually and materially – is surely still the science and technology made possible by the Scientific Revolution” (Edward Engelmann, “Aristotelian Teleology, Presocratic Hylozoism, and 20th Century Interpretations,” *American Catholic Philosophical Quarterly* 64 [1990], p. 298).

⁹⁰ “Certitudo proprie dicitur firmitas adhaesionis virtutis cognitivae in suum cognoscibile” (*Super III Sent.*, 26, 2, 4).

⁹¹ “Nomina quae ad cognitionem pertinent, ad naturales operationes transferuntur; sicut dicitur quod natura sagaciter operatur et infallibiliter; et sic etiam dicitur certitudo in natura tendente in finem” (*Super III Sent.*, 26, 2, 4 sol.).

⁹² Cf. Wallace, *The Role of Demonstration*, p. 52-53.

⁹³ “Naturalis quidem assignare debet utramque causam, scilicet materialem et finalem, sed magis finalem, quia finis est causa materiae, sed non e converso. Non enim finis est talis quia materia est talis: sed potius materia est talis quia finis est talis, ut dictum est” (*In Phys.*, II, 15, n. 5).

mathematics and metaphysics. Mathematical being does not act, does not become, does not tend, is not inclined to anything – it is perfectly motionless. Hence, there is no need and even no possibility to explain anything according to efficient or final cause. Erroneous mathematization of natural science would result (and in fact history testifies that it did result) in the rejection of final causality⁹⁴ and huge problems with efficient cause as an explanative factor. Metaphysical consideration leaves aside becoming, as was indicated in a previous chapter (section 5.3). If we surrendered the temptation to neglect learning natural science and started with metaphysics in our search of the basis for ethics, there would arise a serious inconvenience. This inconvenience would consist in the fact that without a proper understanding of becoming or motion, we simply do not understand what nature is: *ignorato motu, ignoratur natura*.⁹⁵ Therefore, if we content ourselves with such a motionless essence of human being, as was already said, nothing would follow from that for ethics.

* * *

It does not belong to my task in this work to present an elaborated Thomistic anthropology as a science on which ethics could repose. From what is said so far about the foundational treatise of natural science it should be clearer that the specificity of consideration in such an anthropology creates a necessary framework for ethics. Try only to remove from Aquinas's ethics or from his whole theology the hylomorphic structure of his thought. It is impossible. This structure, elaborated in natural science, is one of the deepest structures of his reflection. Apart from that, causal explanation common to every science also originates in analysis of this basic part of natural science. (As we noted in section 4.1, even logic in St. Thomas's interpretation refers to this analysis as to something foundational.) The explanation of human being according to formal, material, efficient and final cause, contains already not only the information about what is, but also what ought to be because of the existence of the nature shared by constantly changing individuals.

⁹⁴ Cf. *Finalité et Intentionnalité. Doctrine Thomiste et Perspectives Modernes. Actes du colloque de Louvain-la-Neuve et Louvain, 21-23. Mai 1990*, ed. by Fellon, J. and McEvoy, J., (Louvain-la-Neuve: Éditions de L'Institut Supérieur de Philosophie, 1992).

⁹⁵ "Circa primum utitur tali ratione *natura est principium motus et mutationis*, ut ex definitione in secundo posita patet (quomodo autem differant motus et mutatio, in quinto ostendetur): et sic patet quod ignorato motu, ignoratur natura, cum in eius definitione ponatur. Cum ergo nos intendamus tradere scientiam de natura, necesse est notificare motum" (*In Phys.*, III, 1, n. 2).

The philosophical science of human being, along the lines of Aristotelian natural science, takes also into account the necessarily dynamic dimension of human existence, indicated even in the primary signification of the term “nature.” It is further developed in the hylomorphic analysis of the source of human development and activity. Such an approach to what human being is could not neglect as well the necessarily relational character of man in the multitude of orders constituting him. These orders exist within man himself (natural but without precluding supernatural), in the interpersonal space (human but, again, without precluding divine), and finally in the realm of things. This kind of anthropology searches for the highest and most universal cause of man. Such an aspiration to find the highest and most universal causes is not an exclusive property of metaphysics. Natural science also seeks to explain according to the highest causes; that is, as far as it is possible for the human intellect and within the framework of this discipline:

it is necessary to seek in natural things the supreme cause of each thing ... Hence in natural things we should proceed to the supreme cause. This is so because the effect is not known unless the cause is known. Hence if the cause of an effect is also the effect of some other cause, then it cannot be known unless its cause is known, and so on until we arrive at a first cause.⁹⁶

In the next chapter I will emphasize three issues considered by Aquinas in natural science which need to be understood properly in order to grasp the originality and attractiveness of his approach. Because we wonder how an explanation of human nature might supply the basis for “ought” judgments, we should follow St. Thomas’s general account of motion in order to see the deeply relational character of natural beings. This relational character of natural beings, or beings-in-motion, supplies basic descriptive tools in accounting for more specific areas of natural science, such as for example anthropology. These descriptive tools require that in the treatment of human being we include also diverse orders. I will also touch upon the question of our knowledge of God in natural science, as well as some questions concerning our sensory experience. These lessons from natural science will help us to see in what sense Aquinas’s ethics can and should be “naturalistic.”

⁹⁶ “In naturalibus oportet semper supremam causam uniuscuiusque requirere... Et ideo oportet in rebus naturalibus procedere usque ad causam supremam. Et hoc ideo est, quia effectus nescitur nisi sciatur causa; unde si alicuius effectus causa sit etiam alterius causae effectus, sciri non poterit nisi causa eius sciatur; et sic quousque perveniatur ad primam causam” (*In Phys.*, II, 6, n. 10).

7. Some Lessons from Natural Science

In this chapter, three themes from the domain of natural science will be underlined in order to clarify the basis for claiming that Aquinas justified the transition from “is” to “ought.” I do not attempt to present exhaustively these three topics but only to indicate some salient directions of St. Thomas’s thought which differ significantly from the thought that makes the transition from “is” to “ought” problematic. Firstly, the notion of motion will be considered along the lines of Aquinas’s *Commentary on the Physics* so as to show how this analysis influences our understanding of nature as profoundly relational. Secondly, I will offer some remarks about the theistic context of St. Thomas’s ethics. Thirdly, I will emphasize the importance of Aquinas’s teaching on the cogitative power as a teaching that deals with the “internalist assumption” issue.

7.1. Motion, relations, and nature

We are considering what kind of human “is” could possibly furnish the basis for inferring an “ought.” Since man is obviously material and changeable, we should first see what man shares with the whole of changeable being at the most universal level. St. Thomas repeats that this is the proper order of considering things: first what is the most common, then what is specific. The initial analysis of changeable being and its principles from Book I of Aristotle’s *Physics*, in St. Thomas’s interpretation, resulted in thehylomorphic schemata of matter, form, and privation (section 6.1). This initial analysis was restrained in Book II to a special kind of motion, characterized by regular

occurrence, that is, to motion proper to natural things. We learned that nature is the inner principle of motion and rest and that nature is not a subject of motion, but it *inheres* in a subject that undergoes a motion (section 6.2). In order to analyze closer such a special regular motion, four aspects were specified which accompany every instantiation of natural change. In this manner, an analysis of regular motion developed into four main principles of natural science, namely, into material, formal, efficient, and final cause.

In the beginning of his commentary to the Book III of the *Physics*, St. Thomas underlines the importance of the analysis of motion in the foundational part of natural science, remarking that motion is in the definition of nature. Thus, a simple conclusion follows: *ignoratu motu, ignoratur natura*.¹ After the centuries of the history of philosophy that separate us from Aquinas, we might develop this statement by saying that the deficient accounts of motion result in a deficient understanding of nature. And from such deficient understanding of nature nothing would follow for the moral life or ethics.² We should ask, therefore, what is so important in the Aristotelian account of motion, as interpreted by Aquinas, that it might improve our understanding of nature?³

¹ “Circa primum utitur tali ratione *natura est principium motus et mutationis*, ut ex definitione in secundo posita patet (quomodo autem differant motus et mutatio, in quinto ostendetur): et sic patet quod ignorato motu, ignoratur natura, cum in eius definitione ponatur. Cum ergo nos intendamus tradere scientiam de natura, necesse est notificare motum” (*In Phys.*, III, 1, n. 2).

² Interestingly, Hans Jonas also postulates a revision of the notion of ‘nature’: “Ontology as the ground of ethics was the original tenet of philosophy. Their divorce, which is the divorce of the ‘objective’ and ‘subjective’ realms, is the modern destiny. Their reunion can be effected, if at all, only from the ‘objective’ end, that is to say, through a revision of the idea of nature. And it is becoming rather than abiding nature which would hold out any such promise” (Hans Jonas, “Epilogue” to *The Phenomenon of Life*, on “Nature and Ethics” [New York: Harper, 1966], p. 283). “When G. E. Moore tells us that ‘there is no evidence for supposing Nature to be on the side of the Good,’ we may wonder exactly what notion of ‘Nature’ stands before his mind; but we may be certain that it is not the Aristotelian notion of a fundamental natural unit with a constitutional relation to action, operation, movement, growth, development, and the realization generally of its richest potentialities” (John Deely, “Evolution and Ethics,” *Proceedings of the American Catholic Philosophical Association* 43 [1969], p. 177). Cf. also Giuseppe Tanzella-Nitti, “The Aristotelian-Thomistic Concept of Nature and the Contemporary Debate on the Meaning of Natural Laws,” *Acta Philosophica* 6 (1997): 237-264.

³ The Aristotelian account of motion improves not only our understanding of nature but also our understanding of agency and finality in human action. Aquinas says that the most unqualified sense of the term “action” is attributed to voluntary agents or rational substances, which are not merely operated, as the other substances are, but operate on their own: “[Substantiae rationales] non solum aguntur, sicut alia, sed per se agunt” (*STh*, I, 29, 1). Cf. *STh*, I, 60, 1 obj. 2 and ad 2; *CG*, II, 47, n. 1238. There is a difference between *se agere* of non-rational beings (which have their own nature as the inner *principium motus*) and *agere per se* of rational agents. The difference between rational and non-rational substances lies in the ability of grasping distinctly the purpose and the possible resources, a grasping which is proper to reason and intellect “cuius est cognoscere proportionem finis et eius quod est ad finem, et unum ordinare in alterum” (*STh*, I, 18, 3). Cf. *STh*, I-II, 6, 2. Yet, a consideration of action only in its primary signification runs the risk of treating it as though it were unique or incommensurable with other instances. St. Thomas uses the term “action” analogically, and for him the

First, and somehow in advance, because of our historical context, we should know that for St. Thomas it is false that no event can consist in something that entails a relation.⁴ For him the alternative that statements are either expressions of a matter of fact or expressions of a relation of ideas is insufficient. This is the case because some events or matters of fact *are* relations. That a relation could be called “real,” i.e. numbered among real beings, three conditions must be met: the terms of this relation must be 1) beings, 2) really existing entities, and 3) able to be ordered one to another. By fulfilling these three conditions, a relation may be a really existing characteristic of the extramental realm. The dependence of an effect upon its cause, understood as an effect’s existing due to the cause, is a real relation. A description of such realities as family relations or social relations or relations to God asks for a category that grasps these real features of our world and ordinary experience. Obviously, talking about relations and things that are able to be ordered one to another, we should remember that it is only the intellect that can grasp relations and orders. My relation to my sister is not grasped in the same way as the colour of her eyes or the temperature of her hand, although these data are not irrelevant in the actual constitution of this relation. Yet this relation is something more than sense experience and I rightly recognize it as something real, belonging to this real world, a matter of fact, not a relation of ideas.⁵

general notion of action is broader than that of human or ethical action. Even if ‘action’ primarily signifies free action, it is obvious that there is much more to the signification of ‘action’ than only its freedom. Besides freedom, there are some essential elements that should be considered in the analysis of action. Especially notions of agency and finality seem to be logically primary and independent from the notion of free agency. Due to the complexity and difficulty of the problem of free agency it is advantageous to analyze first less complex examples of agency found in non-rational agents. The fact that the general notion of action is broader than that of human action, should thus influence our analysis of action because some features that are more obvious in secondary instances of the signification of ‘action’ may illuminate what is less visible but nonetheless essential in its primary instance. And this is Aquinas’s way of dealing with action, which is clearly seen already in his *Commentary to Physics* as well as in his other writings. His procedure may nonetheless escape the awareness of the reader who is prone to separate disciplines too much without bothering about the order of learning. I will not develop the aspect of the dependency of our understanding of moral action upon the understanding of physical action because this part of Aquinas’s teaching is already splendidly presented by Stephen Brock in his *Action and Conduct: Thomas Aquinas and the Theory of Action* (Edinburgh: T&T Clark, 1998). He explains at length in this book why we should resist the tendency to treat the human domain of action as a separate world, conceptually self-enclosed and incommensurable with the rest.

⁴ In advance, because it is proper to metaphysics to refute such claims as this. This claim is, of course, true for Hume because of his sharp division into statements that express either a relation of ideas or express a matter of fact or existence: since no impression has a relation for its subject, therefore no matter of fact or existence can consist in a relation.

⁵ As we remember this solution is precluded in Hume’s semantics and epistemology especially because of the second of his nominalist dogmas: “there are two principles, which I cannot render consistent; nor is it in my power to renounce either of them, viz. *That all our distinct perceptions are distinct*

Moreover, the division of statements into expressions of “matter of fact” (that could be also relations) or expressions of a relation of ideas would be, nevertheless, even now insufficient for St. Thomas. He says that there is still something in between. Namely, there are relations that are not real beings but which are not mere relations of ideas. These relations, however, reason can apprehend. When logical relations were considered (section 2.2, esp. footnote 79) it was said that logical relations are these non-real relations (beings of reason) which follow from our mode of understanding of real things but are founded on things *as known*. These non-real relations, based remotely upon our understanding of this real world, were called “second intentions.” Yet, there are still such non-real relations (beings of reason) that follow from our mode of understanding and are founded on things *as they really exist*. Relations like this between an actually existent and a future thing (or between two future things), or a relation of identity, or a relation between a relation and the subject of that relation, or a relation of a natural thing, which happens to be known, to the human knowledge of this thing – such relations do not constitute the subject of logic, they belong to first intentions, they belong to what is apprehended from the real world and help to explain our experience of this world. Such relations ask for their due place in the world in the philosophical discourse about analogically existent things.

Why am I writing about relations, and specifically about these relations that are not real beings, if I am supposed to write about motion? Because according to Aquinas, a proper account of motion should include precisely this kind of relation. For example, imagine an object O in motion. How do you see it right now? What is seen is O in a certain place. To say that it is in motion it must be added that this motion is from some point A to some point B (this works not only for local motion but also for a qualitative and quantitative change). But what you see actually is O, A, and B. How do you join them in order to see a real motion? O may be stopped still in this place between A and B and my actual experience of O in a certain place will no longer be an experience of O in motion. How to account for O’s motion? Aristotle’s solution, in Aquinas’s interpretation, consists in pointing at three characteristics we should include in the description of O, in order to account for our experience of its motion. When O was in the point A and not yet moved toward B, it was or it was not evident that O *could* move from A toward B. The possibility of being moved from A to B belongs, therefore, to the

existences, and that the mind never perceives any real connexion among distinct existences” (Treatise, Appendix, p. 636). Cf. section 0.1.

description of O. In scholastic language this possibility is called *potentia*. It is, in other words, a receptivity in O of the new feature of being-in-point-B. O's potency to be moved is the first characteristic that should be included in order to account for O's motion.

Potentia is necessarily correlated with *actus*, that is, the term of this possibility to be moved. In this case it is identified with O's achievement of point B. For O's potency is correlated with B as O's act. The act is the second characteristic that should be included in the description of O in order to account for its motion.

Moreover, O's potency and act that belong to O's description are inconceivable without A and B. It is impossible to talk about O's potency and act without mentioning any point of reference for O's motion. A and B, therefore, must also enter into the description of O as some points of reference to the actual state of O as moving. The description of O in motion gains in this way the third needed characteristic: O is in some relation to A and B. O is able to receive this new state without ceasing to be O but ceasing to be O-in-point-A. O loses its state of being-in-point-A when it realizes the possibility of becoming O-in-point-B. O is removed from A and moved toward B. Being-in-point-A and being-in-point-B are thus for O contraries.

Now, what is the ontological status of O's achievement of point B when O is still in the point A or somewhere in between A and B? Is it a being? Actually, it is not. Perhaps it *will* be when O achieves B but now it is not. Say, it is a future being. But a future being is not a real being. In Aristotelian philosophy future beings are only beings of reason.

Here already it should be plain why I am insisting on Aquinas's teaching about non-real relations that are not logical relations. The relation between O-in-point-A and O-in-point-B is a non-real relation. However, it is not a relation of ideas and it does not constitute the subject of logic. This relation belongs rather to our experience of this real, changing world. When you see O somewhere between A and B, try to remove the relation of O to B – it suffices only to imagine that O has the potency to move only to this point between A and B. What you have is O having accomplished its potency to move to this point. You have O's *act* and no longer its motion. You see O's completed or perfected motion. To perceive its *motion* toward B a relation or order toward B is needed. This relation or order indicates (or is indicated by) O's potency.

Describing motion as O's being somewhere between A and B with the order to B, it should be said that its potency is already to some extent realized which means that

O is to some extent in act although this act is not yet fully attained. This state in scholastic language is called *actus imperfectus*. The imperfect act belongs to O but in order to account for it we must include A and B. In other words, O in motion exists both in act and in potency: in act insofar as the potency to move from A to B is realized, and it exists in potency by comparison to point B, which is not yet achieved. This is why the definition of motion is simply: *actus existentis in potentia inquantum huiusmodi*.⁶ Motion as the act of something existing in potency “is neither *potentia existentis in potentia* or *actus existentis in actu*: the word *actus* designates an order of it to an anterior potency, and the expression *existentis in potentia* designates an order of it to a further act.”⁷ Motion is an event but an event that is intrinsically relational. It is the actuality of what is still in potency to that very actuality.

From this Aquinas concludes that:

the definition of motion is completed not only through what there is of motion in things existing outside of the human mind, but also through that which reason apprehends. For in things existing outside of the human mind there is only an incomplete act, which is a certain beginning of a complete act in that which is moved (as in that which is being whitened, something of whiteness already begins to exist). But in order that this something incomplete be understood as motion, it is further necessary that we understand it to be a sort of middle between two terms, of which the preceding is compared to it as potency to act (whence motion is said to be an act), and the subsequent is compared to it as perfect to imperfect or as act to potency (this is why it is called ‘the act of something in potency’, as was said above). Thus if something imperfect is taken as not tending toward something else which is perfect, it is called the term of a motion, and it will not be a motion according to which something is moved (as for example when something only begins to be whitened and the alteration is instantly interrupted).⁸

⁶ *In Phys.*, III, 2, n. 1-8 (“omnino impossibile est aliter definire motum per priora et notiora, nisi sicut philosophus hic definit” n. 3). Cf. *ibid.*, 3, n. 2; 4, n. 1. As is well known, Descartes rejected this definition as unintelligible and proposed his own which reduces motion only to the local motion, because – as he confessed – only with this kind of motion was he acquainted. On this see Sarah Byers “Life as ‘Self-Motion’: Descartes and ‘The Aristotelians’ on the Soul as the Life of the Body,” *The Review of Metaphysics* 59 (2006): 723-755. The author remarks that Descartes, reducing motion in this way, mistakenly interpreted the Aristotelian definition of life as self-motion (Aristotle meant the capacity for self-induced alteration, i.e. qualitative motion) and dispelled any need for a vegetative soul indicating that the living body can be considered as a self-propelled machine. Byers shows that this misunderstanding was common also to Gassendi, who attacked the Aristotelian view as well, and to the others who desired to defend this traditional view. This is, obviously, only one of consequences of this reductive account of motion in the whole of natural science but the influence it makes upon the understanding of the nature of living beings is radical.

⁷ “Sic igitur actus imperfectus habet rationem motus, et secundum quod comparatur ad ulteriorem actum ut potentia, et secundum quod comparatur ad aliquid imperfectius ut actus. Unde neque est potentia existentis in potentia, neque est actus existentis in actu, sed est actus existentis in potentia: ut per id quod dicitur actus, designetur ordo eius ad anteriorem potentiam, et per id quod dicitur in potentia existentis, designetur ordo eius ad ulteriorem actum” (*In Phys.*, III, 2, n. 3).

⁸ “Ratio motus completur non solum per id quod est de motu in rerum natura, sed etiam per id quod ratio apprehendit. De motu enim in rerum natura nihil aliud est quam actus imperfectus, qui est inchoatio quaedam actus perfecti in eo quod movetur: sicut in eo quod dealbatur, iam incipit esse aliquid

From what is apprehended from extramental things, if we precluded the existence of non-real relations, we would perceive things that are incomplete or imperfect, but not things in motion. Moreover, without non-real relations we might even have some difficulties in ascribing the feature of incompleteness or imperfection to these singular things. Relations are intrinsic to the event we call “motion,” but these relations, to repeat, are relations of reason, so we cannot say that O *has* such relations to A and B. These relations are included in the description of O’s moving because they make O’s *motion* intelligible. Motion itself is a characteristic of O moving from A to B. Therefore, the subject of motion is indispensable for motion’s intelligibility. Furthermore, A and B give species to O’s movement.⁹ Yet the fact that A and B never co-exist in motion either with each other or with the movement makes the relation that they set up non-real. The terms of this relation never co-exist because by definition they are contraries: one term is being in potency and another being in act – both with reference to the same form or disposition.¹⁰

Grasping motion as existing between two terms, as it was sketched above, implies already the notion of cause and effect, because the reduction of something from potency to act occurs only by some efficient cause. For the very intelligibility of efficacy also finality, as acting in a definite direction, must be included. Finality, in other words, is carrying an order toward one term and at the same time away from what is opposed to it. Now, looking at motion from this aspect, from the side of the subject of motion, motion is a real accident. The efficient cause and effect set the scope of two

albedinis. Sed ad hoc quod illud imperfectum habeat rationem motus, requiritur ulterius quod intelligamus ipsum quasi medium inter duo; quorum praecedens comparatur ad ipsum sicut potentia ad actum, unde motus dicitur actus; consequens vero comparatur ad ipsum sicut perfectum ad imperfectum vel actus ad potentiam, propter quod dicitur actus existentis in potentia, ut supra dictum est. Unde quodcumque imperfectum accipitur ut non in aliud perfectum tendens, dicitur terminus motus et non erit motus secundum quem aliquid moveatur; utpote si aliquid incipiat dealbari, et statim alteratio interrumpatur. Quantum igitur ad id quod in rerum natura est de motu, motus ponitur per reductionem in illo genere quod terminat motum, sicut imperfectum reducitur ad perfectum, ut supra dictum est. Sed quantum ad id quod ratio apprehendit circa motum, scilicet esse medium quoddam inter duos terminos, sic iam implicatur ratio causae et effectus: nam reduci aliquid de potentia in actum, non est nisi ab aliqua causa agente. Et secundum hoc motus pertinet ad praedicamentum actionis et passionis: haec enim duo praedicamenta accipiuntur secundum rationem causae agentis et effectus, ut dictum est” (*In Phys.*, III, 5, n. 17).

⁹ “Manifestum est enim quod ... motus localis, est motus unde et quo, id est a termino et ad terminum. Et sic oportet, quod specie diversificetur secundum diversitatem terminorum” (*In Eth.*, X, 5 [Leon. 47/2, p. 566, lin. 90-94]).

¹⁰ Cf. Brock, p. 77.

genera of real being enumerated in section 2.2, namely *action* and *passion*.¹¹ The origin of a removal from one disposition toward another is called *actio*. “Action, according to the first imposition of the name, implies an origin of motion ... motion, insofar as it begins from another and terminates in that which is moved, is called action.” Whereas “motion, insofar as it is *in* the mobile from something, is called *passio*.”¹² These two kinds of accidents are in the realm of real being and they involve a real relation which is the relation of dependence of an effect upon its cause. For Aquinas to predicate a causal relation between two real things is to predicate some characteristics as inhering in these things, characteristics that give rise to the causal relation. This relation belongs to these things and not to the operations of the mind or to the fruits of these operations. Hence, a description of motion involves a relation of reason but a description of causality which is intrinsic to the notion of motion (that is, motion considered from the aspect of action or passion) involves a real relation.

Why is causality a real relation? Because causality is a dependence in existence of one thing on another. Insofar as a real thing is *actually* dependent upon another, the relation is real. This actuality belongs to the actuality of being constituted by causal dependency. Things composed of matter and form, that is, changeable things that we experience in this world, are at the same time in potency and in act. Causality consists in reducing something from potency to act. A form of such composite, although it is an actualizing principle of matter, nonetheless, requires matter for its being as such form. Hence, the existence of form in the composite depends on matter without which such form does not exist.¹³ Also, the existence of matter of the composite depends on form because matter cannot exist by itself. Thus a composite is already internally correlated in dependencies of its principles. Perceiving a form which constitutes a composite of

¹¹ “Quantum ad it quod ratio apprehendit circa motum, scilicet esse medium quoddam inter duos terminos, sic iam implicatur ratio causae et effectus: nam reduci aliquid de potentia in actum, non est nisi ab aliqua causa agente. Et secundum hoc motus pertinet ad praedicamentum actionis et passionis: haec enim duo praedicamenta accipiuntur secundum rationem causae agentis et effectus” (*In Phys.*, III, 5, n. 17).

¹² “Primo coniicere potuimus originem alicuius ab alio, ex motu, quod enim aliqua res a sua dispositione removeretur per motum, manifestum fuit hoc ab aliqua causa accidere. Et ideo actio, secundum primam nominis impositionem, importat originem motus, sicut enim motus, prout est in mobili ab aliquo, dicitur passio; ita origo ipsius motus, secundum quod incipit ab alio et terminatur in id quod movetur, vocatur actio” (*STh*, I, 41, 1 ad 2). “Motus est actus existentis in potentia inquantum huiusmodi; existens autem in potentia inquantum huiusmodi, est mobile, non autem movens, quia movens inquantum huiusmodi est ens in actu” (*In Phys.*, III, 4, n. 1).

¹³ “Et licet materia non pertingat ad esse nisi per formam, forma tamen, in quantum est forma, non indiget materia ad suum esse, cum ipsam formam consequatur esse, set indiget materia cum sit talis forma que per se non subsistat” (*De anima*, 6 c.).

matter and form, the intellect is led by the impossibility of the self-actualization of form (form does not act but only a composite, thus form does not act before being in a composite, form is an actualizing principle but already *in* the composite, and before being a composite such form simply does not exist by itself) to search for an agent which actualizes the composite. It is even less possible for matter to be an agent introducing form into the composite since it is a potentiality that receives form as the act of the composite. We may know a quiddity with or without its external dependencies, because we can talk about a thing either according to its real existence (*in rerum natura*) or according to its existence in our consideration. The first way of treating a thing should include all its dependencies, dispositions and operations – as it really is in the world. In the second way we may take a thing without its dispositions because a consideration of quiddity or substance does not depend on its dispositions.¹⁴ The real existence of things really depends upon other things. Thus, the quiddity of a composite thing does not explain fully its real existence. It calls for an agent able to give form for its real existence. A thing that becomes must have a cause of its becoming because its internal elements do not explain its becoming. The internal elements make a thing intelligible in itself as a distinct entity, but its existence depends upon another, upon an agent which is able to give form. Moreover, an action of an agent is always correlated with final cause, which is the direction of its action, if only the agent is a cause *per se*. Since the action of an agent depends on a final cause, final causality is also a real relation and enters into the description of real being.

It is true that being an effect of another does not constitute a quiddity of any material thing but only an accident. This looking for an agent which is the source of a composite and the end toward which the action of the agent tends is thus, in a sense, accidental for our knowing the quiddity of the composite. Yet, to know a thing only in its mental existence (i.e., as existing in our consideration) is a very imperfect form of knowledge. To know a thing as it exists *in rerum natura*, we should include also the order of its origin and the order of its finality, along with other dispositions that –

¹⁴ “De re aliqua dupliciter loqui possumus: uno modo secundum quod est in rerum natura, alio modo secundum quod est in consideratione nostra; primo modo accipitur substantia rei cum omnibus suis dispositionibus et operationibus, quia sine hiis substantia non inuenitur in rerum natura; set secundo modo potest accipi substantia absque suis dispositionibus, quia consideratio substantie non dependet a consideratione suarum dispositionum” (*Quodl.*, 10, 2 c.). On this basis we can see that the error of those who accepted the nominalist principle “what is distinguishable, is separable” consisted in taking what is abstracted and exists only in consideration as if it was a thing existing *in rerum natura*. The irony is that this error happened to philosophers who fought against abstraction as something only postulated by the passion of systems.

although accidentally – nonetheless really constitute this thing. Quiddity of a natural thing simply does not exist without its accidental equipment. It may happen also that our knowledge of the quiddity may be imperfect to a lesser degree: we may know the quiddity and know that this quiddity in a really existing thing depends on another thing yet at the same time we may not know what this other thing is (this refers either to the source of nature or to its finality). The intellect can, however, perceive the quiddity of a really existing thing in its causal dependency, which is indispensable for its very being.

Applying what is said so far to the notion of nature, we see that its signification is astonishingly rich if considered most generally in natural, really existing things. Nature, as an inner principle of motion and rest in things in which it is *per se* and not *per accidens*, implies, for example, that natural beings are composed. They contain something in potency and something in act. Hence, the notion of cause is included even with a reference to an anterior agent able to introduce form and constitute the composite. The signification of “nature” implies, therefore, the order of the origin of natural things. Since nature is a principle of motion and rest, the direction of passing from potency to act is determined. This determination of natural motion indicates natural finality of natural things. Thus, “nature” implies also the order of finality. In natural motion something acts and something is acted upon, the natural action “bridges” the agent and the patient in the same subject of action. Moreover, the act of an agent is *in* the patient.¹⁵ This application of analysis of motion to the notion of nature admits or even calls for a causal explanation of nature. Such an explanation underlines even more intrinsically the relational character of natural being and becoming. These elements are disclosed in the analysis of motion and remain valid in the consideration of nature or works of nature.

In the sequence of considerations contained in the first three books of the *Physics* Aquinas underlines a wise procedure of going from what is more evident to us, that is, from what contains our sensory experience, (and by the same time general enough to include what is the most common in our experience) to what is less evident, that is, to a deeper structure of things and events. This way of thinking arms our account of these deeper structures with an assurance that nothing is gratuitously postulated but

¹⁵ “To assert that an action exists wholly in the agent is not only to deny that there is any event that consists in an action; it is also to deny the existence of any genuinely causal relation according to which an event may be truly *called* an action” (Brock, p. 81).

rather brought out from simple, down-to-earth experience. By discovering these deeper structures through a general consideration, we can proceed to the more specific. Yet we should remember this initial procedure when considering more specific things, since they are based on these deeper structures. We should also remember that these structures are revealed in our simple experience of changing bodies in order to retain the elements of basic analysis that reveal what something is. These elements include four causes in their necessarily relational character. Being mindful of this procedure preserves also an openness to a new input of information coming from experience that may modify our understanding of these structures. This is especially important because the main difficulty of determining the deep structure of a specific thing or event consists in distinguishing what is *per se* and what is *per accidens*. A mistake made on this general level of determining the nature of a thing or event may falsify more specific considerations.

“Nature” cut off from this initial analysis tends to become an ossified concept that is only slightly intelligible because, in the absence of this analysis, it begins to refer to a vague intuition of what something is. In this vague intuition a finality of things is hardly perceived and seems rather to be a religious pretension that is proposed in order to insert God and thereby manipulate societies in constructing inherently religious ethics. To avoid something that might appear as a religious pretense, some have built a secular ethics upon the autonomous character of the first practical principle and built upon it a secular and autonomous ethics. Yet, if one wants to present St. Thomas’s teaching, it is preferable rather to recover the initial analysis of what motion is and, consequently, what nature is. This reveals plainly that the finality of things is not as mysterious as it is presented by some authors; it is not a secret tie, not a secret energy, but a simple correlate of agency, without which agency itself is unintelligible.

God’s presence in Aquinas’s ethical discourse is considerable. In the next section I will emphasize some points which further explain why St. Thomas is not hesitant to refer to God in his philosophical discourse on human action.

7.2. The source of nature

Now we look into the question of the Author of nature. In this dissertation the main intention in explaining how Aquinas deals with the existence of a universal

efficient cause of mobile being is to show that, for a proper understanding of his philosophical notion of human nature (proper to natural science but used in ethics), we must also presuppose the Author of this nature. In the Aristotelian approach the very first application of the general considerations of motion is directed to the source of the whole and of every nature. Before even starting to consider specific topics of the subjective parts of natural science (including the science of man or anthropology), the analysis of what motion is in the foundational treatise on natural science serves to settle the question whether there is or is not the first universal cause of motion, called “God.” Again, it is regarded as a more universal consideration that is presupposed as manifest and not repeated later in more specific domains (see section 5.4). If God is to be included or presupposed in the philosophical anthropology (that is, in what constitutes the human “is”), we could now conjecture that this fact might in a way influence our knowledge of what man ought to do. It is thus good to see what kind of the knowledge of God students of natural science might have before entering into the study of human nature and the study of ethics. We remember that, in the order of learning, Aquinas – otherwise than some of his contemporaries – postpones the study of metaphysics until after ethics (see section 1.2).

Aquinas relates that in Book VII of the *Physics* Aristotle established the necessity of a first mobile thing, a first motion, and a first mover.¹⁶ This is the famous argument *ex motu*. Aristotle came to this conclusion after a long analysis of several topics. Finally he manifested that among movers essentially subordinated to each other there is no infinite series and evidenced the validity of the principle *omne quod movetur ab alio movetur*.¹⁷ St. Thomas opposes Averroes’s interpretation that the manifestation

¹⁶ Cf. *In Phys.*, VIII, 1, n. 6.

¹⁷ This principle has been very often misunderstood, resulting either in the complete rejection of Aristotelian natural science or in some substantial modifications on this basic level in the way of scientific explanation in natural science as well as in metaphysics (as it was, for example, in the case of Duns Scotus). Cf. James A. Weisheipl, “The Principle *Omne quod movetur ab alio movetur* in Medieval Physics,” in *Nature and Motion in the Middle Ages*, p. 75-97. He remarks that even “modern scholastics, while conceding the significance of the axiom, interpret it in a variety of ways, often diametrically opposed to one another” (p. 75). Having indicated that this principle is considered by Aquinas as *per se notum sapientibus*, i.e. by those who understand properly the terms used here and who are able to reduce them to simpler and commonly better-known terms, Weisheipl criticizes the attempt to read this principle as “whatever moves or whatever is in motion is moved by another.” He says: “A proposition such as this is neither self-evident nor true. It is not true to say that whatever moves (*omne movens*) is also moved, for clearly the *primum movens* is not moved ... Nor can one say that everything that is now in motion (*omne in motu*) is being moved here and now by something else. In the first place, this is contrary to the grammar of the text. In the second place, this proposition is not at all evident to the senses or to reason. St. Thomas never said, *Omne movens ab alio movetur*; nor did Aristotle. ... Nor did St. Thomas – or Aristotle, for that matter – ever maintain that everything that is

of this latter disputed premise is only a *quia* demonstration and openly considers it to be a demonstration *propter quid*.¹⁸ However, the argument *ex motu* remains still *a posteriori*.

In the beginning of Book VIII of the *Physics*, Aristotle refers to two opposed positions on the eternity of motion. For him this question was crucial not only in natural science but also in metaphysics, because, as Aquinas notes, both in Book VIII of the *Physics* and Book XII of the *Metaphysics*, the eternity of motion is used to prove a first principle.¹⁹ This is why to answer the question whether motion is eternal is so

in motion must be here and now moved by something, as some imagine. This interpretation is grammatically impossible and philosophically absurd” (p. 78). “In fact, the principle *Omne quod movetur ab alio movetur* is so fundamental and universal in Aristotelian natural philosophy that it must be recognized as one of the first principles of the entire science of nature. In the eyes of modern historians of science this was the most basic and most erroneous principle in Aristotelian physics. ... Modern historians are surprisingly at one in their interpretation and evaluation of Aristotelian physics. ... [they] interpret the Aristotelian principle to mean that everything that is moving must be moved by something here and now conjoined to the moving body” (p. 80). Yet the principle in this interpretation is simply not Aristotelian! Hence, it is not an Aristotelian principle that is rejected but a misreading of this principle. Further Weisheipl traces this erroneous understanding to Avicenna and Averroes with this conclusion: “Clearly the position attributed by modern historians to Aristotle is, in fact, the position of Averroes” (p. 88). Nonetheless “many schoolmen accepted the interpretation of Averroes. In particular it was accepted by Peter of Auvergne, Godfrey of Fontaines, Peter Olivi, Duns Scotus, and by the bulk of beginners’ manuals popular in the fourteenth and fifteenth centuries. However, Averroes’ interpretation was explicitly rejected on all essential points by St. Thomas Aquinas and to a lesser degree by Albertus Magnus and even by Siger of Brabant, the eminent founder of Latin Averroism” (p. 88-89). Finally Weisheipl explains that “for St. Thomas *movetur* refers exclusively to nature as a passive and material principle of motion and rest. It does not refer to nature as an active and formal principle of motion and rest, except in the sense that it too had ‘to be moved,’ generated, produced in the first place” (p. 95). And in the conclusion he suggests that “the principle *Omne quod movetur ab alio movetur*, understood as Aquinas understood it, is still philosophically correct today. Its philosophical validity in no way undermines modern laws of dynamics; on the other hand, its validity in no way validates those laws. But the Averroist interpretation, presented by modern historians of science as the ‘Aristotelian view,’ did not have to wait until the seventeenth century to be discredited; it was already discredited in the thirteenth on strictly Aristotelian grounds” (p. 97). Cf. also idem, “The Specter of *motor coniunctus* in Medieval Physics,” *ibid.*, p. 99-120 and Thomas J. McLaughlin, “Aristotelian Mover-Causality and the Principle of Inertia,” *International Philosophical Quarterly* 38 (1998): 137-151.

¹⁸ Cf. section 5.3. William Wallace in his “The Cosmological Argument: A Reappraisal” (as Essay XV in *From a Realist Point of View*, p. 309-323) establishes that Aquinas is correct in his assessment and that this demonstration *propter quid* is made not through efficient causality but rather through material causality. See also his “A Second Look at the ‘First Way’” (*ibid.*, p. 325-332). Although in *CG*, I, 13, n. 84-89 St. Thomas says that this proposition must be proved (*probanda* – see also *In Phys.*, VIII, 7, n. 4), Weisheipl suggests that it is rather an explanation of terms in their technical signification (especially that motion should be taken here as *primo et per se motus*), which renders this principle a self-evident proposition to the wise (cf. *In De ebd.*, I [Leon. 50, p. 269, lin. 119-185]; *In Poster.*, I, 5 [Leon. 1*/2, p. 25, lin. 116-152]) – cf. Weisheipl, “The Principle *Omne quod movetur*,” p. 78.

¹⁹ “Deinde cum dicit: considerandum igitur etc., ostendit utilitatem huius considerationis. Et dicit quod considerandum est quomodo se habeat veritas circa hanc quaestionem: quia scire veritatem huius quaestionis est *praeopere*, idest pernecessarium, non solum ad considerationem scientiae naturalis, sed etiam ad scientiam de primo principio: quia et hic in octavo et in *Metaphys.*, ad probandum primum principium, utitur aeternitate motus (*In Phys.*, VIII, 1, n. 6).

necessary. Yet a further remark of St. Thomas, where evidently he is not commenting on Aristotle's text but is adding his own position, might appear slightly startling:

This way of proving that a first principle exists is most effective and cannot be resisted. For if it is necessary to posit one first principle on the assumption that the world and motion are eternal, this is much more necessary if the eternity of these things is denied. For it is clear that every new thing needs some innovating principle. Therefore, only if things exist from eternity can it seem to be unnecessary to posit a first principle. And if it follows even from this assumption that a first principle exists, it is shown that it is absolutely necessary for a first principle to exist.²⁰

Aquinas's way of interpreting Aristotle's intention is to point out that the Philosopher took a more difficult way of proving the existence of a first principle of the world and motion. St. Thomas states that to prove a first mover with a supposition that the world had a temporal beginning is much easier because everything new requires an innovating principle. But another possibility (i.e. that the world had no temporal beginning), presents a more serious challenge to our reasoning and needs a more complex argument to show the necessity of a first mover. Aristotle took the more difficult hypothesis and achieved his proof successfully. If the more difficult hypothesis gives us the evidence that there is the necessity of a first mover, therefore, we have even greater assurance that the solution of the easier hypothesis is correct. Thus, this way of proving that a first principle exists "cannot be resisted."

Obviously, for Christians the temporal beginning of the world is an article of faith. In the time of Aquinas there were two parties in the academic world. On the one hand there were heterodox Aristotelians-Averroists who claimed that it is possible to demonstrate philosophically that the world had no temporal beginning. On the other hand there were hyperorthodox Augustinians who claimed that it is possible to demonstrate philosophically that the world had such a beginning. Aquinas distanced himself from both parties, saying that we can demonstrate philosophically the necessity of a first mover, but to establish whether the world began in time or from eternity does not belong to natural reason because there is no sufficient reason to claim in one way or another. We can believe on the grounds of faith that it was in time but cannot demonstrate it in philosophy.²¹ Philosophical demonstration remains open and

²⁰ "Haec enim via probandi primum principium esse, est efficacissima, cui resisti non potest. Si enim mundo et motu existente sempiterno, necesse est ponere unum primum principium; multo magis sempiternitate eorum sublata; quia manifestum est quod omne novum indiget aliquo principio innovante. Hoc ergo solo modo poterat videri quod non est necessarium ponere primum principium, si res sunt ab aeterno. Unde si etiam hoc posito sequitur primum principium esse, ostenditur omnino necessarium primum principium esse" (*In Phys.*, VIII, 1, n. 7).

²¹ Cf. *De pot.*, 3, 17.

indifferent to both solutions. In the same way, this proof does not require that the world be finite in duration.²²

There was an interpretation in the time of St. Thomas according to which Aristotle, undertaking this way of proving the first cause, namely, from eternity of the world, revealed his conviction that God is not the cause of the world in its being but is only the first mover, only the cause of motion of the world. Yet Aquinas excludes this interpretation on the basis of Aristotle's text, saying that it is clear that although he "held that the world is eternal, he did not believe that God is the cause only of the motion of the world and not its being."²³

Aquinas acknowledges that Book VIII of *Physics* is distinct from preceding books because Aristotle starts to apply his general analysis of motion to things.²⁴ In doing so Aristotle presupposes what was said before in order to answer the question about the general source of this changeable world; that is, whether there is a universal efficient cause of motion. One of the things that was established before and now is treated as a principle is one of the definitions of motion. The argument of Book III produced this definition: "motion is the act of a mobile insofar as it is mobile."²⁵ From this principle there appears an inevitable consequence, which also seems obvious for everybody, namely, that for the very existence of motion, things which can be moved are necessary. "For there cannot be act without a subject of the act."²⁶

Interestingly, St. Thomas notes that Averroes took from this the opportunity of speaking contrary to what we hold in faith about creation. And he goes on to present

²² Cf. *In Phys.*, VIII, 1-6; *De aeternitate.*, passim; *De pot.*, 3, 14 ad 8; *CG*, II, 33-38; *STh*, I, 46, 1.

²³ "Est autem valde notandum quod hic dicitur; quia ut in II Metaphys. habetur, eadem est dispositio rerum in esse et in veritate. Sicut igitur aliqua sunt semper vera et tamen habent causam suae veritatis, ita Aristoteles intellexit quod essent aliqua semper entia, scilicet corpora caelestia et substantiae separatae, et tamen haberent causam sui esse. Ex quo patet quod quamvis Aristoteles poneret mundum aeternum, non tamen creditur quod Deus non sit causa essendi ipsi mundo, sed causa motus eius tantum, ut quidam dixerunt" (*In Phys.*, VIII, 3, n. 6).

²⁴ Cf. *In Phys.*, VIII, 2, n. 2; 7, n. 1.

²⁵ "Motus est entelechia, idest actus existentis in potentia secundum quod huiusmodi" (*In Phys.*, III, 2, n. 3). "Postquam philosophus definivit motum, hic ostendit cuius actus sit motus, utrum scilicet mobilis vel moventis. Et potest dici quod hic ponit aliam definitionem motus, quae se habet ad praemissam ut materialis ad formalem, et conclusio ad principium. Et haec est definitio: *motus est actus mobilis inquantum est mobile*. Haec enim definitio concluditur ex praemissa. Quia enim motus est actus existentis in potentia inquantum huiusmodi; existens autem in potentia inquantum huiusmodi, est mobile, non autem movens, quia movens inquantum huiusmodi est ens in actu; sequitur quod motus sit actus mobilis inquantum huiusmodi" (*ibid.*, 4, n. 1).

²⁶ "Ad hoc quod sit motus, necesse est existere res quae possint moveri quocumque motu: quia non potest esse actus sine eo cuius est actus ... necesse est esse subiectum mobile, ad hoc quod sit motus" (*ibid.*, 2, n. 2).

Averroes's arguments and refutes them vigorously. Generally the main argument of Averroes goes like this: if to become is to be changed in some way, and every mutation requires a subject, it is necessary that everything which comes to be, comes to be from some subject. In this case an obvious conclusion imposes itself: it is impossible that something come to be from nothing. Thus, the venerable doctrine of the Church about the *creatio ex nihilo* does not seem to resist the contradicting force of reason. But Aquinas suggests a more precise reading of Aristotle's text:

But if one thinks correctly, he would realize that Averroes has been deceived by ... [his] consideration of particular beings. For it is clear that the active potency of a particular agent presupposes a matter which a more universal agent makes, for example, an artist uses the matter which nature provides. Therefore, from the fact that every particular agent presupposes a matter which it does not make, it is not necessary to think that the first universal agent, which is the active power of the whole of being, presupposes something which, as it were, is not caused by it.²⁷

Initially St. Thomas says that Averroes's interpretation forces Aristotle's text by an unjustified extrapolation. While the Philosopher's principle concerns particular changeable things of this world, Averroes applied the same principle to the most universal agent. He should not do so for several reasons.

First, Aquinas refers to the intention of the author, saying that it is impossible that Aristotle would allow for this extrapolation because he himself proved in his *Metaphysics* that "that which is most true and most being is the cause of being for all existing things."²⁸ Hence, even the very being of potency that belongs to primary matter takes its source from the first principle of all being. Therefore, it is not necessary to presuppose for its action something that has not been produced by it. Thus, from the fact that every motion requires a subject, "as Aristotle proves here, and is indeed true," it does not follow that the most universal agent should require such a subject. St. Thomas affirms that "the universal production of being by God is neither motion nor mutation, but a certain simple emanation" and so terms "to become" (*fieri*) and "to make" (*facere*) cannot refer univocally to particular productions of things and to the universal

²⁷ "Sed si quis recte consideret ... ipse deceptus fuit ex ... consideratione particularium entium. Manifestum est enim quod potentia activa particularis praesupponit materiam, quam agens universalis operatur; sicut artifex utitur materia quam natura facit. Ex hoc ergo quod omne particulare agens praesupponit materiam quam non agit, non oportet opinari quod primum agens universale, quod est activum totius entis, aliquid praesupponat, quasi non causatum ab ipso" (*In Phys.*, VIII, 2, n. 4).

²⁸ "Nec hoc etiam est secundum intentionem Aristotelis. Probat enim in II *Metaphys.*, quod id quod est maxime verum et maxime ens, est causa essendi omnibus existentibus" (*ibid.*).

production.²⁹ This is a simple consequence of the fact that the first principle of being is really first (this is a second reason why Averroes is wrong). It is also a simple consequence of Aristotle's general analysis of becoming contained in Book I of the *Physics* (this is a third reason why Averroes is wrong).³⁰ It makes no difference whether God produced things from eternity or after they were not – in both cases it is not necessary, even impossible (*immo impossibile*), to presuppose some subject of this universal production.

According to Aquinas, Averroes in his interpretation, which contradicts the doctrine of Catholic faith, regressed in this point to the level of the first philosophers who were unable to arrive at the first cause of the whole being but considered only the causes of particular mutations. At the beginning they considered only accidental mutations; later on some of them understood also substantial changes. Yet Plato and Aristotle “came to a knowledge of the principle of the whole of being.”³¹ When we take into consideration the consequences of the fact that we are talking about the principle of *the whole of being*, the principle that every motion requires a subject does not apply. Thus Aquinas may say that aforementioned Aristotelian demonstration is not contrary to the judgment of our faith.

Further in the same lesson there is another passage where St. Thomas compares Aristotle's teaching with the doctrine of Christian faith. This time the eternity of motion is concerned. Aristotle intended to prove that motion always was and never ceases. Aquinas says that this position partly conflicts with our faith, because for us only God has always existed, who is altogether immobile. For we can call God's understanding motion but only equivocally, whereas Aristotle considers here motion in its proper sense. The other part of Aristotle's position is in conformance with our faith because according to our faith the substance of the world began to be but will never cease. Our faith also posits that some kind of motion of man will last forever as incorruptible life, either miserable or blessed.³² Thus, the claim that motion will never cease is in accordance with Christian doctrine. St. Thomas takes seriously Aristotle's arguments

²⁹ “Et quia omnis motus indiget subiecto, ut hic Aristoteles probat et rei veritas habet, sequitur quod productio universalis entis a Deo non sit motus nec mutatio, sed sit quaedam simplex emanatio. Et sic fieri et facere aequivoce dicuntur in hac universali rerum productione, et in aliis productionibus” (*In Phys.*, VIII, 2, n. 4).

³⁰ Cf. *ibid.*, VIII, 2, n. 5 and I, 14, n. 6.

³¹ “Plato et Aristoteles, pervenerunt ad cognoscendum principium totius esse” (*ibid.*, VIII, 2, n. 5).

³² Cf. *ibid.*, VIII, 2, n. 16.

and treats them as proofs, yet a careful consideration reveals that his reasons cannot repudiate efficaciously the truth of faith. Aristotle's reasons prove that motion had no beginning *per viam naturae*, but are unable to prove that things were not produced anew by the first universal principle of things.³³ This is still, for Aquinas, a consequence of what was established about the universal cause of the whole of being, namely, that the production of the whole of being is not a motion but an emanation. No motion is required before the beginning of the existence of mobile thing or before motion itself if we consider the first principle of things.

However, St. Thomas notes that even considering the first principle of things there could appear a problem. If the first principle, "which is God" – as Aquinas pinpoints – is indifferently related to now and before, how is it that He decides in one moment things are to be produced? It seems obvious that the moment of God's decision to produce things in time is in this way already a motion before the production of the whole of being. St. Thomas answers that it could be a necessary conclusion if we agreed that there is no other possibility to act as only through nature. Yet Aristotle himself earlier discussed the difference between action through nature and action through intellect and will.³⁴ What he said there perfectly applies here also. If God acts through His will,

He is able through His eternal will to produce an effect which is not eternal, just as through His eternal intellect He can understand a thing which is not eternal. For a known thing is in a certain way the principle of action in agents who act through the will, just as a natural form is the principle of action in agents who act through nature.³⁵

³³ Cf. *In Phys.*, VIII, 2, n. 17. The method of harmonizing Aristotelian doctrine with the doctrine of the Church was suggested to Aquinas by Maimonides. In the interpretation of the VIII Book of Aristotle's *Physics* they both deny that Aristotle's argument from motion is a demonstration and proof of an eternal world. Whereas Maimonides's conclusion is that all Aristotle's arguments for the eternity of the world are not valid, and arguments for creation are not valid either, Aquinas deviates from Maimonides in insisting that creation can be demonstrated: "Respondeo quod creationem esse non tantum fides tenet, sed etiam ratio demonstrat" (*Super II Sent.*, 1, 1, 2 sol.). Cf. *STh*, I, 45, 2; *De pot.*, 3, 5. More specifically, for Aquinas creation as the origin of being can be demonstrated, but creation which implies limited duration must remain an article of faith: cf. *Quodl.*, 3, 31; *Super II Sent.*, 1, 1, 5; *In De caelo*, I, 29, n. 12; *Quodl.*, 12, 7; *STh*, I, 46, 2. See Lottie H. Kendzierski, "Maimonides' Interpretation of the 8th Book of Aristotle's *Physics*," *The New Scholasticism* 30 (1956): 37-48.

³⁴ Cf. *In Phys.*, VIII, 2, n. 7-8. "Omnis potentia quae non est in magnitudine, movet per intellectum ... Nulla autem potentia quae est in magnitudine, movet quasi intelligens ... Haec autem est differentia inter agens per intellectum et agens materiale, quia actio agentis materialis proportionatur naturae agentis; tanta enim procedit calefactio quantus est calor: sed actio agentis per intellectum, non proportionatur naturae ipsius, sed formae apprehensae" (*ibid.*, 21, n. 10).

³⁵ "Remanet quaestio de prima rerum productione. Si enim primum principium, quod est Deus, non aliter se habet nunc quam prius, non magis nunc res producit quam prius: si vero aliter se habet, saltem mutatio quae est ex parte eius, erit prior mutatione quae ponitur prima. Et quidem si esset agens per naturam tantum, et non per voluntatem et intellectum, ex necessitate concluderet ratio: sed quia agit

We should exclude here a rather habitual presupposition that every agent acts in time, because the universal agent produces not only mobile things and motion but also time which is, for Aristotle and Aquinas, a measure of motion. If there is no motion, there could be no measure of motion. Thus, the denial of the position that God produced all things eternally does not mean that there was an infinite time during which God did nothing and after that He began to produce things, but rather it means that God produced both things and time after they were not. And so the “before” of this production does not function as affirmation (like in the phrase “the beginning of youth is that before which there is no youth”), but as negation, since time is not measured by time and it is impossible that time had existed before its beginning.

It is not difficult to see that Aquinas exposes here what he personally thinks about Aristotle’s reasoning. He clearly shows that Aristotle went a bit further than his arguments allow and thus concluded something that is at best not necessary, if not wrong.³⁶ Aquinas corrected the conclusions of the Philosopher by limiting them slightly. He did it by using Aristotle’s own words, analysis and principles, bringing forth a position which is more coherent not only with what is said within the scope of natural science, but also coherent with metaphysics (not to mention Christian theology).

St. Thomas’s following remark might seem somehow out of place here, in his commentary to *Physics*:

If, however, one asks why He willed this, without doubt it must be said that He did this for His own sake. For just as He made things for His own sake so that a likeness of His goodness would be manifested in them, so He wills them not always to be so that His sufficiency would be manifested in this, that when all other things do not exist, He has within Himself every sufficiency of beatitude and of power for the production of things. This indeed may be said insofar as human reason can understand divine things. Nevertheless, the secrets of divine wisdom, which cannot be comprehended by us, are preserved.³⁷

per voluntatem, potest per voluntatem aeternam producere effectum non aeternum, sicut intellectu aeterno potest intelligere rem non aeternam: res enim intellecta est quodammodo principium actionis in agentibus per voluntatem, sicut forma naturalis in agentibus per naturam” (*In Phys.*, VIII, 2, n. 18).

³⁶ “Est autem sciendum quod hae rationes, quibus Aristoteles probare nititur primum motum esse perpetuum, non ex necessitate concludunt: potest enim contingere absque omni mutatione primi motoris, quod non semper moveat, sicut supra ostensum est in principio huius octavi” (*ibid.*, 13, n. 8).

³⁷ “Si autem quaeratur quare hoc voluit, sine dubio dicendum est quod propter seipsum. Sicut enim propter seipsum res fecit, ut in eis suae bonitatis similitudo manifestaretur; ita voluit eas non semper esse, ut sua sufficientia manifestaretur, in hoc quod omnibus aliis non existentibus, ipse in seipso omnem sufficientiam beatitudinis habuit, et virtutis ad rerum productionem. Et hoc quidem dici potest quantum humana ratio capere potest de divinis: salvo tamen secreto divinae sapientiae, quod a nobis comprehendere non potest” (*ibid.*, 2, n. 18).

This quotation might remind us what was said in Book I of the *Physics* about form: that it is something divine, and best, and perfect (see section 6.1). To this we could add as well the passage from Aquinas's commentary to Book II of the *Physics* where he explains that "nature is nothing but a *ratio* of a certain art (i.e., the divine art) implanted in things, by which these things are moved to a determinate end."³⁸ Here also this kind of wording and reference usually astonishes the contemporary reader. St. Thomas is talking about the goodness of the first cause of mobile being, which is God – as we are reminded again and again – about what God wanted, and about His beatitude. Are we still within the scope of natural science? Is it not a sheer metaphysics or, even worse, a theology under the guise of natural science? No, we are still in natural science, debating over the best way of answering the climactic questions of this science, namely, whether there is a source of all mobile being, and, if so, how to understand it. From what was said so far in natural science we know already that these subjects, that are principled by some natures, do not establish what belongs to their natures; they do not establish the direction of their natures. This direction is simply experienced as regularly occurring; therefore, it cannot be the domain of chance. This fact calls for a cause which establishes this direction. Finally, we attain the necessity of the first cause. This first cause, however, cannot itself from its nature establish the directions of other natures, because the nature of the first cause would call also for a cause that establishes its nature. That the first cause be really first, it must act not from the necessity of its own nature but freely, through the intellect.³⁹

³⁸ "Natura nihil est aliud quam ratio cuiusdam artis, scilicet divinae, indita rebus, qua ipsae res moventur ad finem determinatum" (*In Phys.*, II, 14, n. 8). Cf. *CG*, III, 100, n. 2761; *STh*, I, 91, 3; I-II, 13, 2 ad 3; III, 1, 1 ad 3.

³⁹ In section 6.2 footnote 47 we saw why the principle "natura nihil facit frustra" is treated as evident by Aquinas on the basis of the understanding of terms. Here it might be added that this principle holds because otherwise there would appear a serious inconvenience. God is the source of nature, "institutor naturae" (according to the demonstration in *In Phys.*, VIII, 1-6), and he makes the nature through his intellect (cf. *ibid.*, 2, n. 7-8 and 21, n. 10). In this way St. Thomas explains the principle many times, e.g.: "Omne quod est in natura, vel est a Deo, sicut primae res naturales; vel est a natura sicut a secunda causa, puta inferiores effectus. Sed Deus nihil facit frustra, quia, cum sit agens per intellectum, agit propter finem. Similiter etiam natura nihil facit frustra, quia agit sicut mota a Deo velut a primo movente; sicut sagitta non movetur frustra, inquantum emittitur a sagittante ad aliquid certum. Relinquitur ergo quod nihil in natura sit frustra" (*In De caelo*, I, 8 ; n. 14). "Naturalis autem inclinatio non potest esse frustra, quia Deus et natura nihil frustra faciunt" (*In De caelo*, I, 12, n. 4). "Natura autem nihil facit irrationabiliter neque frustra, quia tota naturae operatio est ordinata ab aliquo intellectu propter finem operante" (*In De caelo*, II, 16, n. 2). "In operibus Dei non est aliquid frustra, sicut nec in operibus naturae" (*CG*, III, 156, n. 3295). "Quod autem sit impossibile in finibus procedere in infinitum, probat tertia ratione quae est etiam ducens ad impossibile, hoc modo: si procedatur in infinitum in desiderio finium, ut scilicet semper unus finis desideretur propter alium in infinitum, nunquam erit devenire ad hoc quod homo consequatur fines desideratos; sed frustra et vane aliquis desiderat id quod non potest assequi; ergo desiderium finis esset frustra et vanum; sed hoc

Obviously, this discussion is assumed, restated again and better argued from several aspects in the science of metaphysics. Nonetheless, natural science lawfully discusses this topic, not as its own subject, however, but rather as its principle and goal. Note what is at stake: if there were no first mover (that is, if we decided that we could make an infinite regress), we would not have a sufficient explanation of the foundational question of the natural science and so we would not have a sufficient basis for the science itself which treats the most obvious feature of the world that we experience: motion. This is thus the very basis of the entire field of natural science. Also, we must recall what is said about causes in the initial consideration of natural science: it is final cause that causes an efficient cause to be efficient (see section 6.2). The question, therefore, why the most universal efficient cause causes the changeable world, is perfectly in place here.

It is good to read the text quoted above from the perspective of a student who is taught by a master, by a wise man, by an accomplished scientist-philosopher, who went through every discipline and acquired an excellence in these disciplines and a true wisdom that enables him to put everything in order. A student who knows for sure only what he learned so far, would have to utter such a statement with some hesitation, and he would treat it as more or less a probable opinion that is not yet sufficiently grounded to become a science. Aquinas, as a master, teaches us having in mind demonstrations that are proper to the science of metaphysics, and has this assurance as to say “*sine dubio dicendum est quod...*” If we would like to apply strict methodological rules, within the limits of natural science, as it is presented in his commentary to the *Physics*, we might treat it as an opinion which helps to appease the wonder excited by what is proper to natural science. Strictly speaking it does belong to metaphysics to treat why God created the world, but if somebody now asks, this light from a higher science is now given. Yet it is worth stressing that from what has been established so far in natural science we are allowed to achieve the conclusions summarized shortly by Aquinas in the quotation above. Thanks to the analysis of this science we are enabled to proceed further in our consideration so as to gain this knowledge about divine things.

desiderium est naturale, dictum enim est supra quod bonum est quod naturaliter omnia desiderant; ergo sequetur quod naturale desiderium sit inane et vacuum; sed hoc est impossibile, quia naturale desiderium nihil aliud est quam inclinatio inhaerens rebus ex ordinatione primi moventis, quae non potest esse supervacua; ergo impossibile est quod in finibus procedatur in infinitum” (*In Eth.*, I, 2 [Leon. 47/1, p. 8, lin. 33-48]).

We are still on the first stage of our formation in natural science and we are taught already that there is a first cause of the universe, that it is a universal cause of the whole of being and, by consequence, of every change, motion, mutation or action. In the scope of *scientia naturalis* we can manifest that the first mover is eternal,⁴⁰ immobile,⁴¹ one and unique,⁴² and simple or indivisible.⁴³ From this we know also that this first cause of the universe produces the whole of being *ex nihilo*. This production is neither motion nor mutation but “a certain simple emanation.” What is even more important, this first cause does not act through nature but rather through its intellect and will, and that it has an infinite power.⁴⁴ For us it is especially important to see this first cause as the cause of nature. Since we can see that nature is determined to some end which nature itself does not establish, we are led to acknowledge this intelligent cause of nature which establishes orders proper to every nature. Moreover, we are taught by St. Thomas in such a manner that we are encouraged to think about this first cause as the God of our Christian faith. Our teacher strives to explain that even in Aristotle’s texts there is no serious obstacle to this identification.

In the last sentence of his commentary to *Physics* Aquinas in this way expresses his conviction that what was said about the first cause of changeable being is applicable to the God in whom he believes:

And thus the Philosopher ends his general discussion of natural things with the first principle of the whole of nature, who is over all things, God, blessed forever, Amen.

One could object that in this way violence is done to the God of the Bible, that the God of Revelation is absolutely other than the God of *Physics* and cannot be compared. Yet such indignation might indicate at least two things. On the one hand, it is possible that the indignation comes from a deficiency of a solid reflection on mechanisms of our cognition, namely, how we come to understand the words of the Bible and the content of Revelation. On the other hand, it is highly probable that this indignation is one of the fruits of a methodological disorder. In the case of Aquinas we can observe his ease in relating different sciences, methods and discourses with each other, respecting however their due autonomy. He has no fear of treating the achievements of natural science as

⁴⁰ Cf. *In Phys.*, VIII, 12.

⁴¹ Cf. *ibid.*, 13.

⁴² Cf. *ibid.*, 23.

⁴³ Cf. *ibid.*, 21.

⁴⁴ Cf. *ibid.*, 21, n. 2-10; 23, n. 9.

reasons that have an ordering force in our life with the God of Revelation, or ordering force even within theological science.⁴⁵ He does this thanks to his extraordinary clarity in distinguishing dimensions and planes, and thanks to his excellence in using the instruments of logic.

Therefore, the explanation that God is so much present in St. Thomas's commentary on the *Ethics* by pointing at his religious profession (which made him partial), has a better alternative.⁴⁶ This alternative solution respects the order of learning and conforms with Aquinas's methodological presuppositions. If we would like to follow St. Thomas in his taking natural science as a necessary basis for moral science as a discipline, we may freely eschew the Enlightened superstition that there is no place for God in philosophy. In this perspective it is not *God* in St. Thomas's philosophical ethics that is problematic, but rather the *malaise* about God in ethics on the part of his interpreters. This malaise, however, is explicable by the study of the subsequent history of philosophy. It was later in time that God was unjustly banished from the realm of philosophy and science.⁴⁷ Interpreting Aquinas, nobody is forced to repeat this unjust banishment. If one wants to do so, it is not because of Aquinas's texts.

From St. Thomas's texts we conclude rather that every human being is inherently a religious being. This means that everybody, by the fact of simply being

⁴⁵ For example, to explain why the inhabitants of Sodom were by nature held responsible for their sin even if they did not have an explicit revelation as we now do: "Sicut ordo rationis rectae est ab homine, ita ordo naturae est ab ipso Deo. Et ideo in peccatis contra naturam, in quibus ipse ordo naturae violatur, fit iniuria ipsi Deo, ordinatori naturae" (*STh*, II-II, 154, 12 ad 1).

⁴⁶ Ralph McInerny in his *Aquinas on Human Action: A Theory of Practice* (Washington, D.C.: The Catholic University of America, 1992) gives a plausible argument against a too tendentious, as it seems, interpretation of St. Thomas's commentary on the *Ethics* proposed by a great Thomist scholar, René Antoine Gauthier (see Chapter 7: "Aristotle and Thomas: Père Gauthier", p. 161-177). McInerny shows that it is difficult to agree with Gauthier who says that the responsibility for a longstanding misreading of Aristotle's *Ethics* lies on "les théologiens, notamment un Thomas d'Aquin, précisément parce que, théologiens, ils ont dû faire violence à la sagesse grecque pour la faire tenir dans le lit de Procruste de leur système" and that Thomas's moral thought is "la négation de l'enseignement exprès de l'Aristote historique" (Aristote, *L'Ethique à Nicomaque*, introduction, traduction et commentaire, par René Antoine Gauthier et Jean Yves Jolif, deuxième édition avec une introduction nouvelle. Vol. 1, Introduction par René Antoine Gauthier [Louvain-Paris, 1970], p. 274-275). McInerny remarks that Gauthier simply "calls into question either the honesty or intelligence of St. Thomas. Knowingly to distort a text is a serious matter, and it will not do to say this was the literary custom of the time, surely a question-begging explanation. The truth seems rather to be that Thomas meant to say what Aristotle meant when he attributes a position to Aristotle. If he is systematically wrong about this, there is a word to describe such a deficiency. ... I think it is nonsense to state universally that these commentaries do not achieve what they clearly set out to achieve, but that somehow this does not matter" (McInerny, p. 163).

⁴⁷ Cf. Benedict Ashley, *Theologies of the Body*, p. 58-61 and especially Cornelio Fabro, *God in Exile: A Study of the Internal Dynamic of Modern Atheism from its Roots in the Cartesian Cogito* (Westminster, Md.: Newman Press, 1968).

human, is already oriented towards God, who is the adequate source of human nature in general, the adequate source of the human soul in every instantiation of human nature, and the adequate goal of man. Everybody is constituted in one's being also by the order towards God.⁴⁸ How a singular man responds to this fact – accepting, denying, or neglecting it – does not change the fact itself.⁴⁹

Accepting what should be presupposed in ethics as a discipline, according to the teaching of Aquinas, we might compare the endeavor of constructing a purely secular ethics to the endeavor of constructing optics without the notion of proportion. One may try to construct such an optics because some others might deny the existence of proportion or simply might not like this idea, but such an optics would lack its essential principle. We cannot act in ethics as if the truth about the existence of God as the first cause of the universe was not a truth. It does not belong to ethics to dispute this issue and Aquinas simply assumes this from a more basic science, namely, from natural science.

It is naïve to think that St. Thomas was so narrow-minded that it was inconceivable for him that God's existence or His relevance to ethics might be denied. In this naïve look, Enlightenment philosophers appear as saviours because they had this open-mindedness and courage to deny the relevance of God in ethical reflection, thus freeing ethics from religious oppression. For Aquinas, however, the claim that God does

⁴⁸ “In omnibus naturis ordinatis invenitur quod ad perfectionem naturae inferioris duo concurrunt, unum quidem quod est secundum proprium motum; aliud autem quod est secundum motum superioris naturae. ... Sola autem natura rationalis creata habet immediatum ordinem ad Deum. Quia ceterae creaturae non attingunt ad aliquid universale, sed solum ad aliquid particulare, participant divinam bonitatem vel in essendo tantum, sicut inanimata, vel etiam in vivendo et cognoscendo singularia, sicut plantae et animalia, natura autem rationalis, inquantum cognoscit universalem boni et entis rationem, habet immediatum ordinem ad universale essendi principium. Perfectio ergo rationalis creaturae non solum consistit in eo quod ei competit secundum suam naturam, sed etiam in eo quod ei attribuitur ex quadam supernaturali participatione divinae bonitatis. Unde et supra dictum est quod ultima beatitudo hominis consistit in quadam supernaturali Dei visione. Ad quam quidem visionem homo pertingere non potest nisi per modum addiscentis a Deo doctore ... Huius autem disciplinae fit homo particeps non statim, sed successive, secundum modum suae naturae. Omnis autem talis addiscens oportet quod credat, ad hoc quod ad perfectam scientiam perveniat, sicut etiam philosophus dicit quod oportet addiscentem credere” (*STh*, II-II, 2, 3 c.).

⁴⁹ Thus ‘religious’ here does not necessarily mean ‘religious in a Christian way’, but rather more broadly, in the sense of Eliade’s *homo religiosus* (cf. Mircea Eliade, *The Sacred and the Profane: The Nature of Religion*, trans. Willard R. Trask [New York: Harper Torchbooks, 1961]). Today’s sociologists of religion and specialists in comparative religion often define religion in terms of function. Especially useful for some of them is the definition proposed by a theologian, Paul Tillich, who says that “religion is ultimate concern.” This broad formula implies no particular metaphysical position but only indicates somebody’s concern which is religious in the sense that it is more important than anything else for this person. Thus it includes anyone’s world-view and value-system, whether these are theistic or atheistic, dogmatic or relativistic, wordly or mystical, sacral or secular in content (cf. Paul Tillich, *Systematic Theology* [Chicago: University of Chicago Press, 1951], vol. 1, p. 8-15). Cf. also Ashley, *Theologies of the Body*, p. 11-18.

not exist or that this fact has no consequences for ethics is simply the expression of erroneous reasoning. He writes that the existence of God is accessible to natural reason not because the Scripture says so or because such is the anti-fideist dogma of the Catholic Church (St. Thomas lived six centuries before the proclamation of this dogma) but because it is a truth of which he himself as a philosopher was certain on the basis of solid arguments. He also makes it plain that it belongs to justice to thank and revere God – religion is for him the most noble of moral virtues.⁵⁰

Aquinas's philosophical theism, assumed in ethics from natural science, is necessary for a non-reductivist description of the human "is." An honest description of human being leaves room for an inherently dramatic form of our existence. Man calls from within of his being and activity for more than can be supplied by everything observable around him. Philosophically we cannot say much about this "more" for which our human nature strives. We can say, however, enough to open a horizon for a profoundly human answer to what surpasses the limits of purely philosophical thinking. What we say philosophically about this "more" is sufficient as well to discover what constitutes the most rational goal for every singular and personal instantiation of human nature. On this discovery, according to St. Thomas, the whole of ethics hinges as on its first indemonstrable principle.⁵¹

⁵⁰ Cf. *In Eth.*, IV, 7 (Leon. 47/2, p. 222, lin. 16-32 and 116-122); 8 (p. 227, lin. 115-120); V, 1 (p. 266, lin. 163-178); *STh.*, II-II, 81, 6. Elisabeth Anscombe pointed out that Hume's "objection to passing from 'is' to 'ought' would apply equally to passing from 'is' to 'owes' or from 'is' to 'needs'" ("Modern Moral Philosophy," p. 27). She gives an example: "Suppose that I say to my grocer 'Truth consists in *either* relations of ideas, as that 20s. = £1, *or* matters of fact, as that I ordered potatoes, you supplied them, and you sent me a bill. So it doesn't apply to such a proposition as that I *owe* you such-and-such a sum'" (p. 28). She adds that owing money to somebody is a brute fact that contains a kind of "ought." Hence, what we *owe* to God comes from our recognition of Him and our *factual* relation to Him. This recognition is of an utmost importance for our moral life.

⁵¹ "Subiectum moralis philosophiae est operatio humana ordinata in finem, vel etiam homo prout est voluntarie agens propter finem" (*In Eth.*, I, 1 [Leon. 47/1, p. 4, lin. 51-54]). "Et sic necesse est esse aliquem ultimum finem propter quem omnia alia desiderantur et ipse non desideratur propter alia. Et ita necesse est esse aliquem optimum finem rerum humanarum" (ibid., 2 [p. 8, lin. 48-52]). "Tota humana vita oportet quod ordinetur in ultimum et optimum finem humanae vitae; ergo ad rectitudinem humanae vitae necesse est habere cognitionem de ultimo et optimo fine humanae vitae. Et huius ratio est, quia semper ratio eorum quae sunt ad finem, sumenda est ab ipso fine, ut etiam in II Physicorum probatur" (ibid. [lin. 67-73]). "Deinde ... ostendit quid circa istum finem sit cognoscendum. Et dicit quod ex quo sic est, quod cognitio optimi finis necessaria est ad vitam humanam: oportet accipere quis sit iste optimus finis ... Dicit autem quod tentandum est de his determinare ad insinuandum difficultatem quae est in accipiendo ultimum finem in humana vita sicut et in considerando omnes causas altissimas. Dicit autem quod oportet illud accipere figuraliter, id est verisimiliter, quia talis modus accipiendi convenit rebus humanis, ut infra dicitur. Horum autem duorum, primum quidem pertinet ad tractatum huius scientiae [i.e. moralis], quia talis consideratio est circa rem de qua haec scientia considerat" (ibid. [lin. 74-91]). "Ultimus enim finis est ultimus terminus motus desiderii naturalis" (ibid., 9 [p. 31, lin. 60-61]). "Unde rationabile est quod ultimus finis, scilicet felicitas, proveniat homini ex suprema omnium virtute, scilicet Dei summi" (ibid., 14 [p. 50, lin. 47-50]).

7.3. Cogitative power (*vis cogitativa*)

We should take one more lesson from natural science in order to explain how St. Thomas justifies the transition from “is” to “ought.” This lesson concerns one aspect of our sensory cognition that influences considerably the understanding of practical rationality. This is not the place to present the whole teaching of Aquinas on philosophical psychology. Only one topic, often underestimated, needs to be especially underlined here to point at the originality of his solution. This will indicate the direction of solving the main difficulty with the transition from the universality of theoretical conclusions and the singularity of human actions. *Actiones in singularibus sunt* – Aquinas often repeats, hence we should know how it occurs that universal conclusions about human nature or about the nature of certain acts (conclusions that we have from natural science or from moral science) may influence singular human actions. The goal of this section, therefore, is to provide an answer to the third layer of the “Is/Ought Thesis,” namely to the “internalist assumption.”

As was said already, for St. Thomas all our knowledge has its source in sense cognition. The five external senses, however, do not explain sufficiently our sensory experience. Some interior senses were already mentioned in this dissertation. When in section 4.3 we were talking about the first principles of sciences and arts (that they are taken from the sensory experience), memory was mentioned. Earlier, in section 3.1, when the first act of intellect was discussed, imagination was also mentioned. Apart from that there are two other interior senses, namely common sense (*sensus communis*) and estimative power (*vis aestimativa*; in human being it is called “discursive power” – *vis cogitativa*). Here, I will shortly present Aristotelian arguments for *perception* through interior senses as distinct from *sensation* of external senses and focus especially

“Videtur felicitas esse aliquid divinissimum, quia, cum sit praemium et finis virtutis, sequitur quod sit optimum et divinum aliquid et beatum. Non enim dicitur aliquid divinum propter hoc solum quia est a Deo, sed etiam quia nos Deo assimilatur propter excellentiam bonitatis” (ibid. [p. 50-51, lin. 71-76]). “Principium autem totius ordinis in moralibus est finis ultimus, qui ita se habet in operativis, sicut principium indemonstrabile in speculativis, ut dicitur in VII *Ethic.*” (*STh*, I, 72, 5c). “Primum autem principium in operativis, quorum est ratio practica, est finis ultimus” (*STh*, I-II, 90, 2 c.). “Sicut nihil constat firmiter secundum rationem speculativam nisi per resolutionem ad prima principia indemonstrabilia, ita firmiter nihil constat per rationem practicam nisi per ordinationem ad ultimum finem” (*STh*, I-II, 90, 2 ad 3).

on the discursive power.⁵² According to Aquinas, the teaching on the interior senses belongs to natural science, and is treated properly for the first time in the order of learning in the fifth part of natural science, which considers animated beings (in Aristotle's works commented by St. Thomas, first, in a general treatment in *De anima*, then in the more specific treatment, *De memoria et reminescentia*).⁵³

Why are our external senses insufficient to give an account of our sensory experience? As Aquinas relates, Aristotle gives two principal reasons. First, reason is taken from the fact that we perceive ourselves sensing, or, in other words, that we are conscious of our sensation. For example, I am conscious that I hear something. It is not through my hearing that I perceive myself hearing because I would not be able to perceive myself not hearing if my hearing were impeded. Second, reason is taken from the fact that we discern sensations of exterior senses. For example, we can discern through our sight white from black and through our taste sweet from bitter. But through what power do we discern white from sweet? It cannot be sight or taste because through sight it is impossible to sense tastes and through taste it is impossible to sense colours. There must be a power that is able to perceive both sensations and is able to compare them in one moment.⁵⁴ Obviously, we think about the intellect as a possible candidate for this task. Aquinas, however, commenting on Aristotle, says that it is proper to the intellect to grasp a conceptual difference, but to know the sensible as sensible according to diverse immutation of sense pertains of necessity to some sensory power.⁵⁵

⁵² George P. Klubertanz, in his study *The Discursive Power Sources and Doctrine of the "Vis Cogitativa" According to St. Thomas Aquinas* (St. Louis: The Modern Schoolman, 1952), shows that Aristotle does not have a clear theory of interior sensation. A significant development along the lines of Aristotle's thought brought Avicenna, and Aquinas, although taking some elements from other interpretations, for the most part follows him.

⁵³ See especially *In De an.*, II, 27-30 and III, 6-7 [Leon. 45/1, p. 182-200 and 229-237]; *In De sensu*, tr. 2, passim; *CG*, II, 60; 73; *STh*, I, 78, 4; *De ver.*, 10, 5.

⁵⁴ "Postquam Philosophus ostendit quod non sit alius sensus proprius preter quinque, procedit ad inquirendum utrum sit aliqua potencia sensitiva communis hiis quinque sensibus et hoc quidem inuestigat ex quibusdam actionibus que non uidentur alicuius sensus proprie esse, set uidentur exigere aliquam potenciam sensitivam communem; huiusmodi autem actiones sunt due: una est secundum quod nos percipimus actiones sensuum propriorum, puta quod sentimus nos uidere et audire; alia est secundum quod discernimus inter sensibilia propria diuersorum sensuum, puta quod aliud sit dulce et aliud album" (*In De an.*, II, 26 [Leon. 45/1, p. 178, lin. 1-14]).

⁵⁵ "Quia discernimus aliqua uirtute non solum album a nigro uel dulce ab amaro, set etiam album a dulci et unumquodque sensibile discernimus ab unoquoque, et sentimus quod differunt, oportet quod hoc sit per sensum, quia cognoscere sensibilia inquantum sunt sensibilia est sensus. Cognoscimus autem differentiam albi et dulcis non solum quantum ad quod quid est utriusque, quod pertinet ad intellectum, set etiam quantum ad diuersam immutationem sensus, et hoc non potest fieri nisi per sensum" (ibid., II, 27 [p. 183, lin. 41-51]).

The insufficiency of the external sensation is confirmed as well by a simple observation of animals that seem to be unable to think in an abstract manner (that is, they seem to not have an intellect like humans do), but nonetheless are in a way conscious. Moreover, they experience time and so have memory, and even have a capacity to act with a kind of hope or prudence. This is the basis for looking for a distinct cognitive power still belonging to the sensory cognition, which could explain the existence of phantasms and animal patterns of behaviour that are similar to human.

Thus, from this operation of our cognition through which we sense ourselves seeing or hearing, Aquinas follows Aristotle in looking for such a sensory power which would integrate information from the various exterior senses into one sensory perception.⁵⁶ Since powers of cognition are distinguished by their objects, another cognitive power should be distinguished in order to account for this aspect of our ordinary experience. This power, which integrates data coming from our sensation, that is, the power at which end immutations of all exterior senses, is called “common sense.”⁵⁷

Yet, we may experience also a kind of sensation even when the objects sensed by exterior senses are absent, as well as employ these sensations in creating some conscious appearances of the wholes or things that were never an object of our experience. Thus imagination or phantasia (which are the same) is distinguished as another interior sense.

Moreover, a simple observation of animals shows that there is also a sensory power through which they somehow know what is beneficial for them and what is harmful, what is useful for them and what is hurtful, what is to be followed and what is to be avoided. For example a lamb follows its mother, it “knows” how to feed itself, and that mother’s milk is something good for it. On the other hand, the same lamb flees when it sees a wolf – as it seems, without taking some special lessons on this topic –

⁵⁶ Cf. *In De an.*, II, 26 (Leon. 45/1, p. 182, lin. 1-17).

⁵⁷ “Sensus enim communis est quedam potencia ad quam terminantur immutationes omnium sensuum” (ibid., II, 13 [p. 119, lin. 94-96]). Eleonore Stump, discussing the difference between sensation and perception in Aquinas, gives an example from the field of today’s neurobiology the much-discussed phenomenon of blindsight: “A patient with blindsight has no defects in his eyes and no neurological defects in the lower-level processing of visual data; but he will still be unable to have conscious access to the processed visual data. He will therefore claim, sincerely, to be blind. On the other hand, when asked just to guess whether a yardstick in his field of vision is vertical or horizontal, he has a very high percentage of correct ‘guesses’. Shall we say that the blindsight patient perceives the yardstick? Here, although much of the patient’s visual system is functioning properly, most of us would be inclined to answer ‘no’” (Eleonore Stump, *Aquinas* [London-New York: Routledge, 2003], p. 246).

“knowing” by itself that its presence brings a danger. The lamb does not flee wolf because its colour or shape are ugly but because wolf is its natural enemy. Or a sparrow does not gather together straws because they are pleasant to its exterior senses but because they are useful for building its specific nest, specific to its species. Or else, a wild mother bear does not hurl herself ferociously at an approaching stranger whom she perceives as a danger to her cubs because she likes to do so or it is her hobby, but because protecting the offspring is for her a natural consequence of being a mother bear. There is, therefore, a sensory cognitive power which enables animals to act according to their natural instinct, that is, to refer the content of sensation to the sensing subject and to judge this content of sensation under the aspect of being beneficial or nocive. This power is called the “estimative power.” Since this power seems to be more developed in man and since it functions in the mood of a discourse in man, there are another names for this more developed form, namely “discursive power,” “cogitative power,” or even “particular reason.”

Note that through the activity of the estimative power something is perceived that is contained in sensation but is not sensed by exterior senses or any other interior sense. These are some *intentiones*, as Aquinas says, which may be translated as “individual” or “sensory intentions” or else as “instinctive references” because these are some references of what is sensed to the sensing subject under the aspect of usefulness or harmfulness. This element of sensory cognition is of great importance in the process of gaining experience – it was no mystery for Aristotle or Aquinas that animals may gain an extensive experience and learn many things on the sensory level. Because of this, another interior sense is distinguished, which stores such sensory intentions and is necessary for the experience of the past. This sensory power is called “memory”. Since these powers of cognition are sensory, they use a corporeal organ, namely, some parts of the brain.

Commenting upon Aristotle’s *Ethics* Aquinas compares prudence to the intellect understood as the habit of first principles.⁵⁸ Prudence is said to be receptive or in continuity or else coherent with the habit of first indemonstrable principles. This habit concerns some terms or ultimates from which principles are immediately grasped. These principles cannot be rationally demonstrated but are evident once one

⁵⁸ Cf. *In Eth.*, VI, 7 (Leon. 47/2, p. 359, lin. 234-255).

understands terms.⁵⁹ Prudence concerns also some ultimates but these ultimate terms in the case of prudence are some singular perceptions which play the role of principles in action. These perceptions must be singular because *actiones in singularibus sunt*. Since science concerns universals, there cannot be a science of these perceptions but only a sensory cognition.⁶⁰ We are talking about perception and not about sensation, thus to grasp these ultimate terms as indemonstrable principles in action belongs to one of the interior senses. The conclusion that follows may be surprising if we remember that prudence was enumerated as one of the intellectual virtues (section 1.2), because Aquinas says that “prudence pertains more to this interior sense which perfects particular reason to estimate properly about singular practicable intentions.”⁶¹ And right after this statement he adds that “also some brute animals, which have a good estimative natural power are said to participate in prudence.”⁶²

Above we singled out the estimative power as this power through which animals perceive some sensory intentions as usefulness and harmfulness, friendliness and unfriendliness, amity and enmity – intentions that are not perceived in exterior senses but sensorily experienced by humans and observable in the behaviour of some other animals. On the other hand, earlier we described prudence as an intellectual virtue of cognition that concerns such contingent things as our immanent actions (this makes it a *practical* virtue). Prudence enables us to judge these actions always according to the truth (this makes it a *virtue* of cognition) and thus morality is possible. How, therefore, prudence might pertain more to the estimative power? Aquinas seems to reconcile the intellectual virtue with the interior sense by underlining the importance of the latter: prudence is *more* in the domain of the estimative power. Should we thus conclude that our cognition of moral matters belongs to this interior sense which – as all interior

⁵⁹ “Intellectus est quorundam terminorum sive extremorum, id est principiorum indemonstrabilium, quorum non est ratio, quia non possunt per rationem probari, sed statim per se innotescunt” (ibid. [lin. 238-242]).

⁶⁰ “Prudentia est extremi, scilicet singularis operabilis, quod oportet accipere ut principium in agendis: cuius quidem extremi non est scientia, quia non probatur ratione, sed est eius sensus, quia aliquo sensu percipitur” (ibid. [lin. 243-247]).

⁶¹ “Et ad istum sensum, id est interiorem, magis pertinet prudentia, per quam perficitur ratio particularis ad recte aestimandum de singularibus intentionibus operabilium” (ibid. [lin. 255-258]).

⁶² “Unde et animalia bruta, quae habent bonam aestimativam naturalem dicuntur participare prudentia” (ibid. [lin. 258-260]).

senses – resides in one part of an animal (including human) brain? Was St. Thomas a proponent of a “moral organ”?⁶³

In another place Aquinas explains that it is common to the apprehensive and the appetitive part of the sensitive soul that there is in it something characteristic to the proper nature but there is also something through which this sensitive soul “has some small participation in rationality.” This participation is achieved in the highest level of the sensory life. According to St. Thomas this highest level of animal soul embodies the estimative power: “it inheres in the sensitive soul insofar as it participates something of rationality. Hence because of this estimative power some animals are said to have prudence.”⁶⁴

From several texts of Aquinas it must be concluded that it is through this interior sense that the intellect becomes properly practical.⁶⁵ The intellect in its function of

⁶³ Marc Hauser, who is professor of psychology, organismic and evolutionary biology, and biological anthropology, influenced by Chomsky’s theories of linguistics, suggests “that something about the human brain allows us to acquire a system of moral norms” (Marc D. Hauser, *Moral Minds: How Nature Designed Our Universal Sense of Right and Wrong* [New York: Ecco/Harper Collins, 2006], 165). He uses many contemporary findings from different disciplines showing that there is one special part of our brain that is responsible for the linking of our general moral knowledge with guiding of our singular actions. He finds especially useful the discoveries of the neuroscientist Antonio Damasio (cf. his *Descartes’ Error* [Boston: Norton, 1994], and *The Feeling of What Happens* [New York: Basic Books, 2000]) who analyzed some brain-damaged cases and remarked that some patients appear to have intact moral knowledge but have damaged the circuitry that allows emotion to collide with such knowledge and guide action. As Hauser puts it, “it appears that these patients have normal moral competence, but abnormal moral performance” (Hauser, p. 229). Hauser characterizes such a “moral organ” at length and compares it with animal’s cooperative behaviour. He gives many examples showing that animal societies have unwritten rules that function in the regulation of dominance relationships, plays, sexual behaviour, the defense of space, etc. and argues that “parts of our moral faculty are shared with other animals, and parts appear to be uniquely human” (ibid., p. 414), although he shuns from giving an answer to the question whether animals are moral. Obviously, as befits a contemporary scientist, he does not seem to be aware that the ancient and medieval authors made similar observations of human and animal behaviour and even of brain damaged cases. Instead of calling this part of brain “moral organ,” they gave to it the name *vis cogitativa* for humans and *vis estimativa* for other animals to mark the difference.

Cf. Adina Roskies, “Are Ethical Judgments Intrinsically Motivational? Lessons from ‘Acquired Sociopathy,’” *Philosophical Psychology* 16 (2003): 51-66, who also uses Damasio’s research in order to provide evidence for the falsity of substantive belief-internalism (i.e. that our moral knowledge is inextricably linked to our motivational system).

⁶⁴ “Sciendum est ... quod tam ex parte apprehensivarum virium quam ex parte appetitivarum sensitivae partis, *aliquid* est quod competit sensibili animae secundum propriam naturam; *aliquid* vero, secundum quod habet aliquam participationem modicam rationis, attingens ad ultimum eius in sui supremo; ... vis aestimativa, per quam animal apprehendit intentiones non acceptas per sensum, ut amicitiam vel inimicitiam, inest animae sensitivae secundum quod participat aliquid rationis: unde ratione huius aestimationis dicuntur animalia quamdam prudentiam habere” (*De Veritate*, 25, 2).

⁶⁵ “Intellectus speculativus fit practicus per extensionem ad opus. ... quia intellectus speculativus et practicus non sunt diversae potentiae, sed differunt fine, ut dicitur in II *Meta*. Et in III *De anima*, inquantum practicus ordinatur ad opus, speculativus autem ad veritatis inspectionem tantum” (*Super III Sent.*, 23, 2, 3, qc. 2 sol.). “Intellectus practicus et speculativus non sunt diversae potentiae. Cuius ratio est quia, ut supra dictum est, id quod accidentaliter se habet ad obiecti rationem quam respicit aliqua potentia, non diversificat potentiam ... Accidit autem alicui apprehenso per intellectum, quod

considering something true or false on a general level is called “speculative intellect,” but in its function of applying this general knowledge or general rules to particular operables is called the “practical intellect.” This application is *more* on the side of the interior sense than on the side of the intellect because the interior sense is concerned with singular intentions and the intellect with universal ones. Thus, the interior sense is directly concerned with actions which of necessity are in singulars. The interior sense is a bodily organ which has already its nature, a nature established not by human creative power of the intellect but by God. To be sure, there is a considerable flexibility and receptivity of this sense, yet through its proper object it is possible to recognize its relatively unchanging deep structure, which is its nature. The nature of this interior sense consists in comparing what is experienced with the specific nature of the sensing subject. There is a difference between lamb’s reaction to an approaching wolf and the reaction to the same approaching wolf of this wolf’s cub: the lamb flees from the wolf but the cub follows its mother-wolf. There is the same colour, shape, odour, sound, or movement, but different reactions depending on the nature of the sensing subject. Hence, there must be a sensory faculty that enables this sensing subject to refer the content of sensation to its own specific nature and judge it whether it is beneficial or nocive, whether something should be followed (*prosequendum*) or avoided (*vitandum*), whether something should be done or not. This interior sense enables the sensing subject to estimate what is *good* or *bad* for it, for this singular instantiation of this particular nature. There must be also some sense of identity, some consciousness of itself in a non-human animal in order that it might react according to its nature and according to its experience.⁶⁶

ordinetur ad opus, vel non ordinetur. Secundum hoc autem differunt intellectus speculativus et practicus. Nam intellectus speculativus est, qui quod apprehendit, non ordinat ad opus, sed ad solam veritatis considerationem, practicus vero intellectus dicitur, qui hoc quod apprehendit, ordinat ad opus. Et hoc est quod philosophus dicit in III *De anima*, quod speculativus differt a practico, fine.” (*STh*, I, 79, 11 c.). “Non ergo intendit comparare uerum et falsum bono et malo secundum conuenienciam generis, set uerum et falsum quod est in actione uero et falso quod est sine actione. Et hoc patet ex differencia quam subdit, dicens, quod *differt*, scilicet quod est in actione et quod est sine actione, *in eo quod est simpliciter et quodam*: nam intellectus speculatiuus considerat aliquod uerum esse vel falsum in uniuersali, quod est considerare simpliciter, intellectus autem practicus applicando ad particulare operabile, quia operatio in particularibus est” (*In De an.*, III, 6 [Leon. 45/1, p. 233, lin. 239-250]).

⁶⁶ Note, that the belief that animals are machines with no conscious life is relatively late. Before Descartes it belonged to a common opinion that non-human animals have some consciousness and some share in rationality. It might seem that whoever has seen two cubs playing together should easily reject the mechanistic explanation of all human behaviour. Indeed, the flexibility of animal reactions is one of the greatest difficulties for mechanistic theories. Cf. Mieczysław A. Krąpiec, *Psychologia racjonalna* (Lublin: Redakcja Wydawnictw Katolickiego Uniwersytetu Lubelskiego, 1996), p. 67-103.

According to St. Thomas, man also makes this comparison of what is sensed with himself as the sensing subject, and makes it through the same interior sense. We instinctively react to water differently than dolphins do and the human child instinctively does not follow a mare to feed itself as does a foal. Animals have their instinctive behaviour, but human beings are not totally free from it either. Human beings are also animals. We live in our bodily condition and thus we have much in common with other animals. Like other animals, we also have a distinctive feature that makes of us an instantiation of this particular species. Is this interior sense therefore capable of referring the content of sensation to the specificity of our *rational* nature? How might an interior sense be able to grasp the specificity of rational nature in order to produce an adequate instinctive reaction?

Aquinas says that the highest embodiment of sensory life links animal life with properly human rational life. Thus animal estimative power functions slightly differently in human being because it is intertwined or in continuity with the activity of the intellect. Human estimative power is considerably influenced by the activity of the intellect since the intellect is this distinctive feature that constitutes (along with animality) human nature. For this reason the estimative power in human being gains a different name: it is no longer called *vis aestimativa* but *vis cogitativa* or *ratio particularis* or else *passivus intellectus*.⁶⁷ Through the cogitative power we are able to know a man as this concrete man or a sheep as this sheep. It enables us to know the object of cognition under its common nature and existent as distinct and concrete substance with all its actual accidents.⁶⁸ The content of our consciousness is thereby marked by both our animality and our rationality in their concretization.⁶⁹

⁶⁷ “Illa potentia quae a Philosophis dicitur *cogitativa*, est in confinio sensitivae et intellectivae partis, ubi pars sensitiva intellectivam attingit. Habet enim aliquid a parte sensitiva, scilicet quod considerat formas particulares; et habet aliquid ab intellectiva, scilicet quod confert. Unde et in solis hominibus est” (*Super III Sent.*, 23, 2, 2, qc. 1 ad 3). “Passivus intellectus, de quo Philosophus loquitur, non est intellectus possibilis, sed ratio particularis, quae dicitur vis cogitativa, habens determinatum organum in corpore, scilicet mediam cellulam capitis, ut Commentator ibidem dicit; et sine hoc anima nihil modo intelligit” (*In IV Sent.*, 50, 1, 1 ad 3). “Intellectus passivus dicitur virtus cogitativa, quae nominatur ratio particularis” (*STh*, I, 79, 2 ad 2). Cf. *STh*, I, 81, 3 c.

⁶⁸ “Quod ergo sensu proprio non cognoscitur, si sit aliquid uniuersale, apprehenditur intellectu. ... Si uero apprehendatur in singulari, ut puta si, cum uideo coloratum, percipio hunc hominem uel hoc animal, huiusmodi quidem apprehensio in homine fit per uim cogitativam, quae dicitur et ratio particularis eo quod est collatiua intentionum indiuidualium sicut ratio uniuersalis est collatiua rationum uniuersalium, nichilominus tamen hec uis est in parte sensitua, quia uis sensitua in sui supremo participat aliquid de ui intellectiva in homine, in quo sensus intellectui coniungitur. ... cogitativa apprehendit indiuiduum ut existentem sub natura communi, quod contingit ei in quantum unitur intellectui in eodem subiecto, unde cognoscitur hunc hominem prout est hic homo, et hoc lignum prout est hoc lignum; estimatiua autem non apprehenditur aliquid indiuiduum secundum quod

The content of our consciousness is not necessarily conceptual or speculative. Our sensory consciousness, which is prelinguistic and which we share with some non-human animals, cannot be conceptual because it is sensory, although it can be influenced by conceptual or speculative knowledge. However, our intellectual consciousness does not suppress our sensory consciousness nor it can be freed from sensory consciousness while existing in a bodily condition. Thus, even if we do not find explicit, named ideas in our mind or explicit, named inclinations, it does not mean that some sensory content of our consciousness does not direct our actions according to these singular sensory intentions through which the content of sensation is estimated under the aspect of something's being beneficial or nocive.

To the cogitative power Aquinas also ascribes some function in gathering the *experimentum*⁷⁰ from which the intellect is able to draw the universal intelligible or the first indemonstrable principles.⁷¹ This function is so essential that to some extent the cogitative power and *experimentum* are treated as synonyms.⁷² Moreover, the *experimentum* enhances the efficacy of operation. This clarifies the difference between only universal moral or artisanal rules learned by the way of conceptual instruction (*per modum scientiae*) without application to a concrete action and the rules learned from personal action or rules applied already to a concrete action.⁷³ This interior sense plays some role as well in preparing the phantasms for intellection.⁷⁴

est sub natura communi, set solum secundum quod est terminus aut principium alicuius actionis uel passionis; sicut ouis cogniscit agnus non in quantum est hic agnus, set in quantum est ab eo lactabilis, et hanc herbam in quantum est eius cibus; unde alia indiuidua ad que se non extendit eius actio uel passio, nullo modo apprehendit sua estimatiua naturali: naturalis enim estimatiua datur animalibus ut per eam ordinentur in actiones proprias uel passiones proseguendas uel fugiendas” (*In De an.*, II, 13 [Leon. 45/1, p. 121-122, lin. 182-183 and 191-222]).

⁶⁹ Cf. *STh*, I, 84, 7 c.

⁷⁰ Cf. *In Meta.*, I, 1, n. 15; *In Poster.*, II, 20 (Leon. 1*/2, p. 244-245, lin. 141-195).

⁷¹ “Quia igitur uniuersalium cognitionem accipimus ex singularibus, concludit *manifestum* esse quod necesse est *prima* uniuersalia principia cognoscere per inductionem: sic enim, scilicet per uiam inductionis, sensus facit uniuersale intus in anima, in quantum considerantur omnia singularia” (*In Poster.*, II, 20 [Leon. 1*/2, p. 246, lin. 282-288]).

⁷² For a discussion of diverse texts see John Deely, “Animal Intelligence and Concept-Formation,” *The Thomist* 35 (1971): 43-93.

⁷³ “Quantum ad actum pertinet, experientia nihil videtur differre ab arte. Cum enim ad actionem venit, tollitur differentia, quae inter experimentum et artem erat per uniuersale et singulare: quia sicut experimentum circa singularia operatur, ita et ars; unde praedicta differentia erat in cognoscendo tantum. Sed quamvis in modo operandi ars et experimentum non differant, quia utraque circa singularia operatur, differunt tamen in efficacia operandi. Nam experti magis proficiunt in operando illis qui habent rationem uniuersalem artis sine experimento” (*In Meta.*, I, 1, n. 20).

⁷⁴ Cf. *CG*, II, 60; 73. Cf. also Leo White, “Why the Cogitative Power?” *Proceedings of the Catholic Philosophical Association* 72 (1998): 213-227.

What influences the cogitative power comes exclusively from other exterior or interior senses and from the speculative function of our intellect. Aquinas's conception of the nature of the intellect and his specific claim that the intellect becomes practical in the application of the intellective cognition to singular operables leads to this conclusion.⁷⁵ According to St. Thomas, our intellectual cognition is abstractive – man abstracts the forms of things from sensory cognition and this is the only basis for our intellective cognition. Through the abstractive process the intellect is concerned only with universals and there is nothing in the intellect in Aquinas's account which would enable it to consider singulars.⁷⁶ Singulars are the domain of sensory cognition. Thus the application of our intellective cognition to singular operables is possible only through our sensory cognition. The best candidate for this task is the cogitative power.⁷⁷ If the intellect is practical only through the connection with the cogitative power, it follows that the cogitative power cannot be influenced, except by the fruits of the activity of the speculative intellect.

Through the sensory cognition, which we share to a great extent with some non-human animals, we are able to recognize something as useful or harmful for us, hence, what is good and evil on sensory level. This suffices to put us into some kind of action – action which is not properly *humana* but only *hominis*. For a properly human act it is necessary that we recognize rationally and choose voluntarily. Yet rational recognition of what something is is the work of the intellect in its speculative function because its practical function appears only when what is recognized is applied to action. The application, in turn, happens only through the cogitative power as particular reason since the intellect is concerned with universals. The intellect, therefore, is properly practical only through its connection or continuity with the cogitative power. It may be, however, in a less proper sense called practical also when on a general level it considers issues that may be ordered to practice. In this sense the operation of the intellect itself is none other than speculative but the order of finality of its consideration, that is, an

⁷⁵ Cf. above, footnote 64.

⁷⁶ This conclusion would not be necessary in the Scotistic framework thanks to the distinction into intuitive and abstractive cognition. Cf. section 5.3, footnote 51.

⁷⁷ “Intellectus practicus ad hoc quod de singularibus disponat, ut dicitur in 3 de Anima (text 47), indiget ratione particulari, qua mediante, opinio quae est universalis (quae est in intellectu) ad particulare opus applicetur: ut sic quidem fiat syllogismus, cujus major est universalis, quae est opinio intellectus practici; minor vero singularis, quae est aestimatio rationis particularis, quae alio nomine dicitur cogitativa: conclusio vero consistit in electione operis” (*Super IV Sent.*, 50, 1, 3 ad 3).

application to practice (either achieved in future or not and either planified to be applied to action or not), entitles us to call it practical.

To be sure, human instincts, correlated with the activity of the cogitative power, are not the matter of ethics. It is rather the domain of natural science. Yet note what happens when it is not presupposed in ethics. If ethics is so autonomous that it takes nothing from natural science (because considering human *nature* as the basis for ethics there would pop up the “naturalistic fallacy”), then we are obliged to search for such an element in *moral theory* that could bind everybody, everywhere and always. Ethics, for the sake of guarding its autonomy, becomes a science of “oughts.” We are obliged then to search for a source of this “ought” that is autonomous as regards the “is.”

I argue that this is not necessary in Aquinas’s account because of his explanation of our cognitive faculties. The first principle of practical reason is only a conceptual expression of our sensory consciousness which we share to a considerable extent with other animals. The principle: *bonum est faciendum et prosequendum, et malum vitandum*⁷⁸ is only a conceptualization of the principle that every animal has inscribed in its nature and every animal follows it according to its particular capacity to grasp what is good for it and what is evil. Man has the capacity to grasp the good universally and thus the content of this principle differs significantly, but the principle itself remains the same. Therefore, we are not obliged to search any other distinctive “ought” than the “ought” of natural finality discovered, and not established, in the consideration of what constitutes human being; that is in the consideration of what there “is.”⁷⁹

⁷⁸ “Sicut autem ens est primum quod cadit in apprehensione simpliciter, ita bonum est primum quod cadit in apprehensione practicae rationis, quae ordinatur ad opus, omne enim agens agit propter finem, qui habet rationem boni. Et ideo primum principium in ratione practica est quod fundatur supra rationem boni, quae est, bonum est quod omnia appetunt. Hoc est ergo primum praeceptum legis, quod bonum est faciendum et prosequendum, et malum vitandum. Et super hoc fundantur omnia alia praecepta legis naturae, ut scilicet omnia illa facienda vel vitanda pertineant ad praecepta legis naturae, quae ratio practica naturaliter apprehendit esse bona humana. Quia vero bonum habet rationem finis, malum autem rationem contrarii, inde est quod omnia illa ad quae homo habet naturalem inclinationem, ratio naturaliter apprehendit ut bona, et per consequens ut opere prosequenda, et contraria eorum ut mala et vitanda” (*STh*, I-II, 94, 2 c.).

⁷⁹ This section on the cogitative power is in a way a modest complement to Alasdair MacIntyre’s analysis contained in his book *Three Rival Versions of Moral Enquiry: Encyclopaedia, Genealogy, and Tradition* (Notre Dame, Ind.: University of Notre Dame Press, 1990). He does not mention the cogitative power but discusses a similar problematic from the aspect of soul-body relationship. He remarks that “the relationship of soul to body, indeed the existence of body, had been something of an embarrassment to later Augustinians, even if not to Augustine. And on this specific point Aquinas’s integration of Augustinian and Aristotelian views had seemed to his Franciscan Augustinian contemporaries offensive. More particularly, they were concerned with the implications of soul-body relationships for the knowledge of singulars” (p. 153). MacIntyre notes that “The Franciscan William de la Mare in 1279 denounced 117 theses in Aquinas’s writings in his *Correctorium fratris Thomae*, among them those which give expression to this view of the relationship of soul to body and thus

Thus the question “why be moral?” in Aquinas’s framework is identical with the question “why be human?” or “why maintain my own identity as a human being?” or “why be conscious of who I am and act accordingly?” The main guarantor of the universality of certain moral rules or certain moral order is, on the one hand, the nature itself shared by all people, and on the other hand, the sense of identity which everybody naturally would like to preserve and deepen. To search a distinctive force of moral discourse which could motivate man is to disregard the fact that man is already found as motivated, as tending, as inclined towards his good according to his recognition of this good.

* * *

In Chapter 5 we stated that for Aquinas natural science is proper to construct the human “is” for ethics. Chapter 6 provided some basics of natural science with an initial analysis of its principles and specific method. In Chapter 7 we discussed some aspects of three vital issues from the field of natural science in order to reveal the essential

impugn the competence of the soul to know singulars immediately and independently of bodily experience. In 1282 the Franciscan order prohibited the copying of the *Summa* except as accompanied by the *Correctorium*, a book thereafter referred by some younger Dominicans as the *Corruptorium*” (p. 153). In this context Scotus’s insistence on the possibility of the intuitive intellective knowledge of singulars is not that surprising (cf. section 5.3, footnote 51). Further MacIntyre offers an analysis of two models of the understanding of the relationship between the intellect and will. One of them says that the intellect has the primacy over the will and the other says the opposite. Aquinas works within the first, intellectualist model, to which it is proper to see reason as an active goal-setting, goal-achieving power. Within this Aristotelian understanding of the primacy of the intellect over the will one “can find no room for any question as to why, given that one recognizes that something is one’s true good, one should act so as to achieve it” (p. 154). MacIntyre juxtaposes this framework with an Augustinian understanding of the primacy of the will and suggests that for Scotus, who is one of the proponents of this view, “the primacy of the will entails that the intellect is inert, the will is free, and the will’s being moved by its good is something distinct from the will’s being obedient to the command of another. Part of the freedom of the will to defy God would, on Scotus’s view, be taken away if merely by pursuing its own good the will was obedient to God. The will therefore can only exhibit its obedience to God by not only obeying the natural law *qua* directive of our good but also *qua* divine commandment. Hence alongside of the ‘ought’ of practical reasoning, which in any case *qua* reasoning cannot move us to action (since the intellect is practically inert), there appears another ‘ought,’ one unknown to Aristotle and to the ancient world generally, the distinctive ‘ought’ of moral obligation. But in generating this new, distinctive concept Scotus makes it possible for his successors to generate a new set of problems, problems which were to become in time central to the about to emerge academic discipline of moral philosophy. For once one has identified a moral obligation as an obligation not because of what it enjoins in the doing or achieving of something good, but in virtue of the command of another, questions arise as to why we should obey this command. ... Scotus thus not only made possible but provoked a good deal of later moral philosophy, directly and indirectly, from Occam all the way to Kant” (p. 155). Cf. also MacIntyre’s *Dependent Rational Animals: Why Human Beings Need the Virtues* (Chicago-La Salle, Illinois: Open Court, 1999) where he praises Aquinas who underlines so much the role of our animality for the understanding of our practical rationality, but there also MacIntyre only briefly mentions the cognitive power (p. 55).

elements that allow us to infer in ethics an “ought” from an “is” shaped in the consideration of natural science.

In order to make the image of Aquinas’s thought integral, many other themes would have to be discussed but these three seem to be the most important for the topic of this dissertation.

8. The Analyzability of Goodness

In sections 0.2 and 6.2 it was mentioned that the Aristotelian definition of goodness caused some problems in the history of philosophy. One of the main and best known opponents of naturalism in ethics, G. E. Moore, based his argument on the conviction that good is simple, *sui generis*, irreducible, unanalyzable – and thus indefinable. According to him, every endeavor to define good is doomed to the identification of good with some observable and natural property (which will lead to the denial of the plurality of goods; therefore an ethics built upon such a definition would be dangerous to society), whereas good is a non-natural property, because it is unique and peculiar and nonreducible to anything other. Anyone who infers that something is good from any proposition about something's natural properties commits the "naturalistic fallacy." And so, every effort that endeavors to found ethics on some definition of the good must fail due to the fact that we cannot describe precisely – without an arbitrary decision – what the good is. We can, seemingly, judge about the goodness of things, but not about good itself. If only we think rigorously, it is claimed, we should see that there still remains an "Open Question" why good is desirable or appetible. Descriptions in this account cannot be evaluative; purely factual premises about the naturalistic characteristics cannot entail evaluative conclusions. Indeed, any attempt to reduce moral property to anything else is doomed to fail.

We should now examine how this issue ceases to be problematic within the framework of Aquinas's developed analysis of good. Since we encounter some authors who negate the definition of goodness, a definition that functions as a principle in

natural science and ethics, we should take the role of the metaphysician in order to defend this principle, because to dispute with such opposition is the proper task of a metaphysician. Thus, first, I will briefly explain in what consists the transcendental of the term “good.” Next, mode, species, and order will be discussed as the elements according to which goodness is analyzable. Further, it will be necessary to ask what is the relationship of these three elements of the analyzability of goodness in general to moral goodness. Finally, I will offer some remarks about St. Thomas’s understanding of the practicality of moral science.

8.1. “Good” as a transcendental term

To understand how the term “good” functions in St. Thomas’s writings we should first realize that, like the term “being,” “good” is an analogous term.¹ It seems obvious from our everyday usage of this word. The term “good” is also a transcendental term, just like the term “being.” When in section 2.2 we looked into his manner of considering being, we saw that some terms predicated about being are grouped into the categories that divide being, making some genera of being and some specific modes of being (analogically understood). Yet there are also some terms, like “being,” “thing,” “one,” “something,” “true,” and “good,” that do not divide being into special modes of being but are predicated about being in general. This kind of terms St. Thomas calls *transcendentia*, known now as transcendentals. That a term is transcendental means that it serves to express general modes of being belonging to every being. Transcendental terms other than “being” serve the same purpose but they express also what is not expressed in the term “being” itself.² As such, transcendental terms are opposed to the expression of *special* modes of being which constitute genera of being. Transcendental terms “transcend” genera. So, in a way, what transcendental terms express is added to what is signified by the term “being.”

¹ “Bonum non univoce dicitur de bonis” (*De ver.*, 21, 4 c.). “Bonum dicitur de multis non secundum rationes penitus differentes sicut accidit in his quae sunt a casu aequivoca, sed in quantum omnia bona dependent ab uno primo bonitatis principio, vel in quantum ordinantur ad unum finem. ... Vel etiam dicuntur omnia bona magis secundum analogiam, id est proportionem eandem” (*In Eth.*, I, 7 [Leon. 47/1, p. 27, lin. 199-207]).

² “Aliqua dicuntur addere super ens, in quantum exprimunt modum ipsius entis qui nomine entis non exprimitur. ... modus generalis consequens omne ens” (*De Ver.*, 1, 1 c.).

This addition takes place when something is expressed about being absolutely (*in se*) through affirmation or negation, or when something is expressed about being in relation to something else (*in ordine ad aliud*). The term “good” adds to being in the second way and expresses being in reference to a desire.³ It might be said that “good” expresses the significatum of the term “being” along with the consideration of it as an end, goal or fulfilment. Note that it is not the kind of addition that could be compared with a specific difference constituting a species, nor could it be compared to an accident that adds a specific mode of being to another specific mode of being. This is not an addition of something in the existence of a being because nothing can be added to being in universal consideration (as it is the case in “being” in its transcendental signification) since outside of such being there is nothing.⁴ That addition to being that occurs in transcendentals could be counted only among conceptual distinctions (*secundum rationem*) not real attributes or properties.⁵ In other transcendentals than “being,” there is contained an expression of what is not contained in the term “being,” which means that it is a consideration about or an aspect of being itself not expressly signified by the term “being.” It is therefore an addition according to our understanding or consideration which follows being in general or a being in question.

In the case of goodness it is the addition of relation which does not make the being to be what it is. It is this kind of relation as the relation of a real thing which happens to be known to the knowledge about this thing. The relation of the knowledge of a thing to the thing known is a real one, but the relation of a thing known to the knowledge of this thing is only a relation of reason, although this is not a logical relation. Aquinas notes that the same kind of relation is between measure and what is measured or between perfective and perfectible. Good is one of the instances of the relationship between perfective and perfectible. “Inasmuch as one being by reason of its act of existing is such as to perfect and complete another, it stands to that perfected as an end.”⁶ Here, again, we can observe how crucial it was for St. Thomas to include real

³ “Convenientiam ergo entis ad appetitum exprimit hoc nomen bonum” (*De ver.*, 1, 1 c.).

⁴ Cf. *ibid.*, 21, 1 c.

⁵ Cf. *ibid.*

⁶ “In quantum autem unum ens secundum esse suum est perfectivum alterius et consummativum, habet rationem finis respectu illius quod ab eo perficitur” (*De ver.*, 21, 1 c.).

and non-real (although non-logical) relations into his set of descriptive and analytical tools.

It is important to note that, in the case of good, being is perfective by reason of its act of existing. In this it differs from truth: in the case of truth, being is perfective by its *ratio* or by *ratio speciei*. Whereas in good, being is perfective by reason of the act of existing of this *ratio entis* or *ratio speciei*.⁷ Being is what it is, and is known as good only considering its relation to a desire. This relation to desire does not constitute the thing nor is it its real attribute.⁸

On the one hand, therefore, the term “good” *transcends* every category, that is, it is not confined to any of them. Yet, on the other hand, because particular modes of being are also called “beings” analogically, such a transcendental term as “good” is applied analogically to every category as well.⁹ Thus, since “good” enjoys the status of a transcendental term, as such it cannot be identified with any particular mode of being that constitutes a certain genus, although it is possible to predicate analogically the good about any of the categories of being.¹⁰

The similarity of the good to being is so considerable that St. Thomas says that *secundum rem* good does not differ from being. Good is somehow coextensive with being yet “good” and “being” are not synonymous.¹¹ Aquinas accepts Aristotle’s definition of goodness that it is what is desired by all or that at which all things aim (*bonum est quod omnia appetunt*). It was already explained that a definition of such a basic term cannot have the proper form of a strict definition, it cannot contain a cause

⁷ Cf. *ibid.*

⁸ Today the kind of addition that “good” adds to “being” is sometimes explained in terms of supervenience. In the case of transcendentals, a term is supervenient when it follows being in general or a certain kind of being without adding any real attribute or property yet expressing something more, a certain consideration or respect of that being. “According to St. Thomas’s category/transcendental distinction good is a term that follows or is tied to (‘supervenies’ upon) the being of a thing (with its properties) and yet expresses the something more of a reference to desire. So the predication of good is not a tautology nor is it the predication of some special property of its own. It is the predication of a certain consideration of the being of the thing, not a further addition of being to it” (Peter Simpson, “St. Thomas on the Naturalistic Fallacy,” *The Thomist* 51 [1987], p. 62). Cf. also Eleonore Stump, *Aquinas* (London-New York: Routledge, 2003), p. 71-72.

⁹ This position, however, is all but common opinion among philosophers, perhaps due to the often remarked crisis of analogical thinking (cf. John Deely, “The Absence of Analogy,” *The Review of Metaphysics*, 55 [2002]: 521-550). See Georg Henrik von Wright, *The Varieties of Goodness* (New York: Routledge & Kegan Paul, 1963) for a contrary opinion, namely that various instances of goodness cannot be unified by analogy.

¹⁰ Cf. *In Eth.*, I, 6 (Leon. 47/1, p. 21-23); *STh*, I, 5, 6 ad 3; *STh*, I-II, 18, 3 ad 3; *De ver.*, 21, 1.

¹¹ Cf. *De ver.*, 21, 1 c.

or causes prior or more simple to definiendum, but rather contains a proper effect that indicates what is basic and most primary and what in this case is the cause of the effect.¹² The essence of goodness is therefore what is desirable or what is the goal.¹³ Good is thus identified with what is perfect because what is perfect is desirable. In the analysis of good, St. Thomas takes for granted the fruit of his previous analysis of what is more evident to us, although less universal, namely, from the analysis of changeable being. He now presupposes as already manifest that everything desires its own perfection. Everything desires its own perfection because it belongs to the deepest structure of every changing being, it belongs simply to the very hylomorphic composition or to the structure of being, regardless of having or not having psychic powers of feeling a desire (see sections 2.1 and 2.2).¹⁴

It is visible already now how the explanation of goodness by perfection has its profound consequences for solving the main argument against the Aristotelian definition of goodness as the basis for ethics. By now (perhaps still indistinctly but nonetheless) we can see the door which closes the “Open Question Argument”. If somebody asks why something good is desirable, instead of answering tautologically: “because it is good,” we can pertinently and informatively say: “because it is perfect” or “because it is perfective.” It remains to clarify what being perfect or perfective means. So far we have the door but we still need to find the key that will close the question for good (at least on a general level).

¹² “Bonum numeratur inter prima Prima autem non possunt notificari per aliqua priora, sed notificantur per posteriora, sicut causae per proprios effectus. Cum autem bonum proprie sit motivum appetitus, describitur bonum per motum appetitus, sicut solet manifestari vis motiva per motum” (*In Eth.*, I, 1 [Leon. 47/1, p. 5, lin. 150-158]). Thus the sometimes discussed question whether the agent desires the end because it is good or whether the end is good because the agent desires it, has not the slightest sense in St. Thomas’s approach. (Note that it was one of the problems against which G. E. Moore stumbled.) Denis J. M. Bradley, nonetheless, seems to perceive some ambiguous formulations in Aquinas and even that some of his texts suggest a contradiction (*Aquinas on the Twofold Human Good: Reason and Human Happiness in Aquinas’s Moral Science* [Washington, D.C.: The Catholic University of America Press, 1997], p. 273-274). But finally he states that “Aquinas undoubtedly maintains, despite some ambiguous formulations, that desire essentially follows upon the apprehended goodness of the end. Desire, in other words, does not constitute the good” (*ibid.*, p. 274).

¹³ “Ratio enim boni in hoc consistit, quod aliquid sit appetibile” (*STh*, I, 5, 1 c.).

¹⁴ Cf. *STh*, I, 59, 1 c. While writing *STh*, I, 5, 1, it suffices to him to mention this analysis in only one sentence, as he can have the confidence that his readers have already studied natural science, where all this was explained. Reading this statement (that everything desires its own perfection) without this context of previous analysis in natural science, we could scratch our heads, wondering where he takes it from and even denouncing him as a dogmatic thinker – to have thrown out such a disputable claim seemingly without any discussion.

8.2. Perfect and good according to mode, species, and order

Etymologically, “perfect” means something reduced from potency to act and is synonymous to “complete,” “consummate,” or “accomplished.” In this signification it is applicable to things that become (that is, to things that are the subject of natural science). From this meaning the term “perfect” is also used by Aquinas to signify everything that lacks nothing in actuality according to its proper mode, whether it refers to something becoming or not (which means that the signification of this term is extended to the subject of metaphysics).¹⁵ Hence, generally speaking, perfect is identified with what is in act or actual. Accordingly, this sense of perfection requires that something be constituted in its essence and that it lack nothing its essence should contain. St. Thomas calls this *perfectio prima*.¹⁶ This sense of perfection explains the affirmation that good and being are one and the same thing. *Perfectio prima* is paralleled with *primum esse*, that is, with *esse substantiale*. The claim about the identity of being and goodness is pronounced according to this existence of something, even if this something may not be fully actualized. The notion of act is crucial here because it links the notion of being with “perfect”: what is perfect always implies actuality and actuality is always of something existing (that is, of being).¹⁷ Thus, what is actual, when seen under the aspect of existence, is known as being, whereas what is actual, when seen under the aspect of perfection, is known as good.¹⁸ Yet, strictly speaking, this is not the first sense of the term “good”:

goodness signifies the *ratio* of what is perfect, which is desirable; and consequently it signifies the *ratio* of what is ultimate. Hence that which has ultimate perfection is said to be good simply. Whereas that which has not the ultimate perfection it ought to have (although, in so far as it is at all actual, it has some perfection), is not said to be perfect simply nor good simply, but only relatively. In this way, therefore, viewed in its primal (i.e. substantial) being a thing is said to be simply, and to be good relatively

¹⁵ “In his quae fiunt, tunc dicitur esse aliquid perfectum, cum de potentia educitur in actum; transumitur hoc nomen perfectum ad significandum omne illud cui non deest esse in actu, sive hoc habeat per modum factionis, sive non” (*STh*, I, 4, 1 ad 1). Cf. *STh*, I, 5, 5 c.; *CG*, I, 28, n. 268; *Super III Sent.*, 27, 3, 4 c.; *In De div. nom.*, 12.

¹⁶ Cf. *Super II Sent.*, 15, 3, 1 c.; 34, 1, 4 c.; *CG*, II, 73, n. 1498; III, 64, n. 2394; *STh*, I, 73, 1 c.; III, 29, 2 c.; *In Eth.*, I, 10 (Leon. 47/1, p. 35, lin. 29-31).

¹⁷ “Intantum est autem perfectum unumquodque, inquantum est actu: unde manifestum est quod intantum est aliquid bonum, inquantum est ens” (*STh*, I, 5, 1 c.). Cf. *De pot.*, 7, 2 ad 9; *STh*, I, 3, 4 c.; 4, 1 ad 3.

¹⁸ “Unumquodque dicitur bonum, inquantum est perfectum” (*STh*, I, 5, 5 c.). “Ratio autem boni in perfectione consistit” (*CG*, I, 39, n. 320).

(i.e. in so far as it has being) but viewed in its complete actuality, a thing is said to be relatively, and to be good simply.¹⁹

Here, it is crucial to remark that the first instance of perfection or goodness is predicated in relation to the realization or actualization of a thing's essence or nature.²⁰ A thing's fulfillment in its proper nature is the measure of its goodness. This understanding relativizes goodness to each particular thing and thereby intensifies the role of knowing the thing's nature in judging its actual goodness. St. Thomas states clearly: "for each thing, that is good which suits it according to its form; and evil, that which departs from the order of its form."²¹ In things that are changing, a thing's goodness has its degrees along the process of its becoming. In section 6.1 we quoted Aquinas who explains that forms of things are of two kinds: perfect – that which completes the species of a thing; and incomplete – that which constitutes a thing on the way of generation to the perfect form according to its species or a thing in the process of corruption. Hence, in St. Thomas's understanding of natural form, we face the whole range of intermediate forms that is limited by the primary matter and perfect form of some species. For that reason, the perfection and goodness of a child is to be judged according to the intermediate form which is proper to the child at this stage of development and the perfection and goodness of an old man, similarly, according to what is proper to this stage of human life.

The full perfection of things, however, does not consist only in substantial form:

In natural things the whole fullness of perfection due to a thing is not from the mere substantial form which gives species; but much is added from supervening accidents,

¹⁹ "Bonum dicit rationem perfecti, quod est appetibile, et per consequens dicit rationem ultimi. Unde id quod est ultimo perfectum, dicitur bonum simpliciter. Quod autem non habet ultimam perfectionem quam debet habere, quamvis habeat aliquam perfectionem in quantum est actu, non tamen dicitur perfectum simpliciter, nec bonum simpliciter, sed secundum quid. Sic ergo secundum primum esse, quod est substantiale, dicitur aliquid ens simpliciter et bonum secundum quid, idest in quantum est ens, secundum vero ultimum actum dicitur aliquid ens secundum quid, et bonum simpliciter" (*STh*, I, 5, 1 ad 1). "Si quidem aliquid defuerit de debita essendi plenitudine, non dicetur simpliciter bonum, sed secundum quid" (*STh*, I-II, 18, 1 c.).

²⁰ "In hoc enim consistit uniuscuiusque rei bonitas, quod convenienter se habeat secundum suae naturae" (*STh*, I, 71, 1 c.). "Perfectum dicitur quasi complete factum, sicut perambulasse nos dicimus, quando ambulationem complevimus; unde, quod non est factum, non potest secundum hanc rationem dici perfectum. Sed quia res, quae fiunt, tunc ad finem suae perfectionis perveniunt, quando consequuntur naturam et virtutem propriae speciei, inde est, quod hoc nomen *perfectum* assumptum est ad significandum omnem rem, quae attingit propriam virtutem et naturam" (*In De div. nom.*, 2, 1).

²¹ "Unicuique enim rei est bonum quod convenit ei secundum suam formam; et malum quod est ei praeter ordinem suae formae" (*STh*, I-II, 18, 5 c.). Cf. *STh*, I, 49, 1; I-II, 71, 2.

as man does from shape, colour, and the like; and if any one of these accidents be out of due proportion, its consequence is evil.²²

Action or operation is one of the accidents caused by substance. These can often be very important accidents, which may be essential attributes by which we recognize what is the essence or what is the nature of some thing. When this is the case, we can say that the action of something is a fulfillment of its natural potency, because such an action expresses the intrinsic teleology of the substance. In natural beings which do not have the capacity of intellectual judgment such intrinsic teleology is determined in realization to only one way. Nonetheless, as many individuals instantiate particular natures (in different times and places, in different conditions of matter and agent), we can find as many variations in singular realizations of this natural *telos*. In the case of human beings, the range of variations extends significantly due to the faculty of intellectual judgment.²³ Obviously, a human being is a natural being as well; therefore, there is also a determination to one *telos* proper to human nature. Aquinas agrees with Aristotle that

it can be said that all men seek the same pleasure according to natural desire but not according to their own judgment. Indeed not all think in their heart or say with their lips that the same pleasure is the best. Nevertheless everyone is inclined by nature to the same pleasure as the highest, namely, the contemplation of intelligible truth inasmuch as all men naturally desire to know. This happens because all things have in themselves something divine, i.e., an inclination of nature, which comes from the First Principle, or even their form itself which is the principle of the inclination.²⁴

Yet intellectual judgment can be used in order to establish one's own *telos*, which objectively might be in harmony or at variance with the natural one. According to Aquinas, the natural determination of the intrinsic human *goal* (which is universal for every particular instantiation of human species) does not belong to the range of human decision. We may decide to embrace one way of its realization or another but not

²² "Respondeo dicendum quod in rebus naturalibus non invenitur tota plenitudo perfectionis quae debetur rei, ex forma substantiali, quae dat speciem; sed multum superadditur ex supervenientibus accidentibus, sicut in homine ex figura, ex colore, et huiusmodi; quorum si aliquod desit ad decentem habitudinem, consequitur malum" (*STh*, I-II, 18, 3 c.).

²³ "Ea quae naturaliter fiunt, determinatis mediis perducuntur ad finem, unde semper eodem modo contingunt: natura enim determinata est ad unum. Electiones autem humanae diversis viis tendunt in finem, tam in moralibus quam in artificialibus. Non igitur electiones humanae sunt naturaliter" (*CG*, III, 85, n. 2601).

²⁴ "Omnes homines appetunt eandem delectationem secundum naturalem appetitum, non tamen secundum proprium iudicium; non enim omnes existimant corde, neque dicunt ore eandem delectationem esse optimam, natura tamen omnes inclinat in eandem delectationem sicut in optimam, puta in contemplationem intelligibilis veritatis, secundum quod omnes homines natura scire desiderant. Et hoc contingit, quia omnia habent naturaliter in se ipsis quiddam divinum, scilicet inclinationem naturae, quae dependet ex principio primo; vel etiam ipsam formam, quae est huius inclinationis principium" (*In Eth.*, VII, 13 [Leon. 47/2, p. 433, lin. 156-168]).

change it with our decision. Indeed, our particular choices may really contradict what we are universally determined to by nature, but subjectively it will be always a choice of what is judged better for me for here and now, what is more fulfilling for me – that is, it will always be subject to the same universal dynamism of tending toward happiness.²⁵ “Happiness” is a term for ultimate human fulfillment. It is our ultimate good toward which we aim by nature by the structure of our being. When this happiness is misunderstood, misidentified, or misplaced, such a general misleading of all human choices may objectively take some apparent good, some falsely judged ultimate end, yet subjectively such a human being would still be under the same natural dynamism of striving toward happiness.

Thus, it is insufficient for St. Thomas to say that perfection consists in the actualization of substantial form. He says that apart from *perfectio prima* we need to talk about *perfectio secunda*, which is the goal. Although it is true that it seems impossible to be in the state *perfectio prima* in its fullness and not to have *perfectio secunda*,²⁶ there is an obvious reason for insisting on this distinction, namely, it happens that some individuals may attain the second perfection without having the first one. For example a blind person does not have the perfection which is due to human nature, but such a person may be perfect in the second way, may attain an excellency in operation. The goal could be either the operation itself or something which is attained through operation.²⁷ Hence, St. Thomas can generally say that “the perfection of something

²⁵ “Non enim ad liberum arbitrium pertinet quod volumus esse felices” (*STh*, I, 19, 10 c.). “Ultimus enim finis est ultimus terminus motus desiderii naturalis” (*In Eth.*, I, 9 [Leon. 47/1, p. 31, lin. 60-61]). “Unde rationabile est quod ultimus finis, scilicet felicitas, proveniat homini ex suprema omnium virtute, scilicet Dei summi” (*ibid.*, I, 14 [p. 50, lin. 47-50]). “Omnes actus voluntatis reducuntur, sicut in primam radicem, in id quod homo naturaliter vult” (*De virtutibus*, 2, 1 c.). “Voluntas libere appetit felicitatem, licet necessario appetat illam” (*De pot.*, 10, 2 ad 5). “Quia vero bonum habet rationem finis, malum autem rationem contrarii, inde est quod omnia illa ad quae homo habet naturalem inclinationem, ratio naturaliter apprehendit ut bona, et per consequens ut opere prosequenda, et contraria eorum ut mala et vitanda” (*STh*, I-II, 94, 2 c.). Cf. Lawrence Dewan, “St. Thomas, Our Natural Lights, and the Moral Order,” *Angelicum* 67 (1990): 285-307; Stephen L. Brock, “Natural Inclination and the Intelligibility of the Good in Thomistic Natural Law,” *Vera Lex* 6 (2005): 57-78; John C. Cahalan, “Natural Obligation: How Rationally Known Truth Determines Ethical Good and Evil,” *The Thomist* 66 (2002): 101-132.

²⁶ Nonetheless there is one non-negligable *casus* in Christian belief of such an instance, viz. Lucifer.

²⁷ “Prima quidem perfectio est, secundum quod res in sua substantia est perfecta, quae quidem perfectio est forma totius, quae ex integritate partium consurgit. Perfectio autem secunda est finis, finis autem vel est operatio, sicut finis citharistae est citharizare, vel est aliquid, ad quod per operationem pervenitur, sicut finis aedificatoris est domus, quam aedificando facit” (*STh*, I, 73, 1 c.). “Ad perfectionem alicuius rei dupliciter aliquid pertinet. Uno modo ad constituendam essentiam rei, sicut anima requiritur ad perfectionem hominis. Alio modo requiritur ad perfectionem rei, quod pertinet ad bene esse eius, sicut pulchritudo corporis et velocitas ingenii pertinet ad perfectionem hominis” (*STh*, I-II, 4, 5 c.). “Est autem duplex formalis perfectio: una quidem intrinseca, quae constituit

consists in that that it attain the end.”²⁸ However, the twofold signification of this end should be specified: one is determined by thing’s essence or nature and another is the goal of the thing. In these two kinds of perfection, the attainment of full actualization of form and the attainment of the goal in/through operation, we can see the consequence of Aquinas’s distinction into *finis cuius* (cause of generation, i.e., when final cause coincides with formal cause) and *finis quo* (final cause of thing generated), referred to in section 6.2. Both kinds of a thing’s perfection are identified with its goodness.²⁹ And both kinds of perfections are deeply related one with another.

This consideration of goodness can be further specified so as to acquire a general method of how to analyze it. St. Thomas, following St. Augustine, says that we may analyze the goodness of any substance or accident according to three elements: *modus*, *species*, and *ordo*. Both kinds of perfection mentioned above are analyzable according to mode, species, and order. The form of something is a measure of this thing’s perfection. However, we know already that good expresses the perfective character of being by reason of its act of existing. This is, therefore, not an abstract form that is taken into consideration but a form that really exists with all conditions associated with its real existence. Hence, we should not forget that such a form, on the one hand, presupposes something, and on the other hand, something necessarily follows from it. There lurks here a danger of considering form in a too abstract (that is, a falsely metaphysical) way, form as species existing in mind, so that such a form may nothing presuppose and nothing necessarily could follow from it.

essentiam rei, alia autem, quae supervenit rei in specie sua constitutae” (*In Eth.*, X, 6 [Leon. 47/2, p. 569, lin. 104-107]). “Sicut perfectio domus, secundum quod iam habet speciem, est id, ad quod species domus ordinatur, scilicet habitatio; non enim domus fieret, nisi propter hoc, unde et in definitione domus oportet hoc poni, si debeat definitio esse perfecta. Perfectio vero ad speciem domus est tam id, quod ordinatur ad speciem constituendam, sicut principia substantialia ipsius, quam id, quod ordinatur ad speciei conservationem, sicut appodiacula, quae fiunt ad sustentationem domus, quam etiam illa, quae faciunt ad hoc, quod usus domus sit convenientior, sicut pulchritudo domus” (*CG*, III, 26, n. 2089). “Dupliciter potest dici aliquis perfectus. Uno modo simpliciter; quae quidem perfectio attenditur secundum id, quod pertinet ad ipsam rei naturam, puta si dicatur animal perfectum, quando nihil ei deficit ex dispositione membrorum et aliis huiusmodi, quae requiruntur ad vitam animalis. Alio modo dicitur aliquid perfectum secundum quid; quae quidem perfectio attenditur secundum aliquid exterius adiacens, puta in albedine vel nigredine vel aliquo huiusmodi” (*STh*, II-II, 184, 1 ad 2).

²⁸ “Perfectio enim rei consistit in hoc quod pertingat ad finem” (*In De div. nom.*, 1, 2).

²⁹ “Perfectio uniuscuiusque est bonitas eius” (*CG*, I, 38, n. 311). “Unumquodque dicitur bonum in quantum est perfectum in esse et in operari” (*In De ebd.*, 4 [Leon. 50, p. 280, lin. 152-153]).

The form of a really existing being presupposes a determination or commensuration of principles that could be material or efficient. And this is called by Aquinas “mode.”

What necessarily follows from every form is an inclination to the end or to an action or operation, because what is in act also acts and tends towards what is in accordance with its form. Thus, an order is established by the simple fact of the existence of a form and what necessarily follows from it.³⁰ In this way it is clear that we should take these three elements (*modus*, *species*, and *ordo*) into account whenever we consider goodness of something both under the aspect of *perfectio prima* and *perfectio secunda*.³¹

8.3. Moral goodness and the practical character of moral science

One could object that in what I have written so far about the good we can find an inclination to conflate two distinct kinds of good, namely transcendental/ontological goodness with moral goodness because I should not refer to the former while discussing the foundation of ethics. Also bad actions exist, hence they have some ontological goodness insofar as they exist – this fact should caution us not to use the transcendental/ontological notion of good in this context. It is true that for Aquinas transcendental/ontological goodness is something different than moral goodness, yet in St. Thomas’s texts it is evident that moral goodness is to ontological goodness as species to genus. Ontological goodness is found in a more universal consideration;

³⁰ “Unumquodque dicitur bonum, inquantum est perfectum, sic enim est appetibile, ut supra dictum est. Perfectum autem dicitur, cui nihil deest secundum modum suae perfectionis. Cum autem unumquodque sit id quod est, per suam formam; forma autem praesupponit quaedam, et quaedam ad ipsam ex necessitate consequuntur; ad hoc quod aliquid sit perfectum et bonum, necesse est quod formam habeat, et ea quae praeexiguntur ad eam, et ea quae consequuntur ad ipsam. Praeexigitur autem ad formam determinatio sive commensuratio principiorum, seu materialium, seu efficientium ipsam, et hoc significatur per modum, unde dicitur quod mensura modum praefigit. Ipsa autem forma significatur per speciem, quia per formam unumquodque in specie constituitur. ... Ad formam autem consequitur inclinatio ad finem, aut ad actionem, aut ad aliquid huiusmodi, quia unumquodque, inquantum est actu, agit, et tendit in id quod sibi convenit secundum suam formam. Et hoc pertinet ad pondus et ordinem. Unde ratio boni, secundum quod consistit in perfectione, consistit etiam in modo, specie et ordine” (*STh*, I, 5, 5 c.).

³¹ “Cum bonum convertatur cum ente, sicut ens dicitur secundum substantiam et secundum accidens, ita et bonum attribuitur alicui et secundum esse suum essentiale, et secundum esse accidentale, tam in rebus naturalibus, quam in actionibus moralibus” (*STh*, I-II, 18, 3 ad 3). Cf. *STh*, I, 5, 6 c.; I-II, 52, 1 c.; *CG*, III, 20, n. 2012-2014; *De ver.*, 21, 6 c.; *De virtutibus*, 1, 8 ad 12; *De malo*, 1, 4 ad 6; 2, 3 c.; 16, 2 ad 4.

moral goodness is more specific, related only to rational beings capable of free choice. Bad actions are good insofar as they exist, not insofar they are lacking in perfection. Without their ontological goodness there would be nothing that could be lacking. Aquinas makes it plain in the following fragment:

The disposition of things in goodness is the same as their disposition in being. There are namely some things of which being does not depend on another – in these it suffices to consider their being absolutely. But there are also things the being of which depends on something else – hence, in their regard we must consider their being in its relation to the cause on which it depends. Just as the being of a thing depends on the agent, and the form, so the goodness of a thing depends on its end. Hence in the Divine Persons, Whose goodness does not depend on another, the measure of goodness is not taken from the end. Whereas human actions, and other things, the goodness of which depends on something else, have a measure of goodness from the end on which they depend, besides the unconditional goodness which exists in them.³²

Thus, it is necessary that the goodness of human action be analyzed – as every goodness – according to the species, mode, and order. Yet apart from that the fact that human action is an accidental being should also be taken into account.

Accordingly a fourfold goodness may be considered in a human action. First, that which, as an action, it derives from its genus; because as much as it has of action and being so much has it of goodness, as stated above. Secondly, it has goodness according to its species; which is derived from its suitable object. Thirdly, it has goodness from its circumstances, in respect, as it were, of its accidents. Fourthly, it has goodness from its end, to which it is compared as to the cause of its goodness.³³

Moral goodness or evil are characteristics inhering in a human being through human acts. The human act is an act that is *per se* caused by human being. This means that a human act proceeds from a deliberated will, called also “free choice.”³⁴ Other acts

³² “Respondeo dicendum quod eadem est dispositio rerum in bonitate, et in esse. Sunt enim quaedam quorum esse ex alio non dependet, et in his sufficit considerare ipsum eorum esse absolute. Quaedam vero sunt quorum esse dependet ab alio, unde oportet quod consideretur per considerationem ad causam a qua dependet. Sicut autem esse rei dependet ab agente et forma, ita bonitas rei dependet a fine. Unde in personis divinis, quae non habent bonitatem dependentem ab alio, non consideratur aliqua ratio bonitatis ex fine. Actiones autem humanae, et alia quorum bonitas dependet ab alio, habent rationem bonitatis ex fine a quo dependent, praeter bonitatem absolutam quae in eis existit” (*STh*, I-II, 18, 4 c.).

³³ “Sic igitur in actione humana bonitas quadruplex considerari potest. Una quidem secundum genus, prout scilicet est actio, quia quantum habet de actione et entitate, tantum habet de bonitate, ut dictum est. Alia vero secundum speciem, quae accipitur secundum obiectum conveniens. Tertia secundum circumstantias, quasi secundum accidentia quaedam. Quarta autem secundum finem, quasi secundum habitudinem ad causam bonitatis” (*ibid.*). For an excellent study of the place of final cause in the analysis of moral goodness see Steven A. Long, *The Teleological Grammar of the Moral Act* (Naples, FL: Sapientia Press of Ave Maria University, 2007).

³⁴ “Respondeo dicendum quod actionum quae ab homine aguntur, illae solae proprie dicuntur humanae, quae sunt propriae hominis in quantum est homo. Differt autem homo ab aliis irrationalibus creaturis in hoc, quod est suorum actuum dominus. Unde illae solae actiones vocantur proprie humanae, quarum homo est dominus. Est autem homo dominus suorum actuum per rationem et voluntatem, unde et

that occur in human being are called acts *of* human being rather than human acts. Aquinas equates human act with moral act. “Moral” is therefore a characteristic of an act which is caused by a rational free agent.³⁵ As such “moral” in the human realm is an accident (quality) of an accident (action) of a human being, which is the subject for them. An accident of an accident (a quality of action) therefore should be analyzed accordingly in relation to the immediate (action) and ultimate subject (person).

To the general description of what a human being is, belongs thus not only what it is from the aspect of its substance, but also from the aspect of its accidents, among which the most important in this case are action and quality. Operation and dispositions to the operation constitute the human person, in a way, because they testify to its fulfillment. Hence, in our assessment of the goodness of a human being we should also take into account the kinds of operations undertaken by man or its capabilities to operate in a certain way. In the order of discovery, operation is first and through the operation we are able to recognize that there is an appropriate cause of it. The requirement of the appropriateness of the cause in the case of human intelligent and free action asks for something other than a merely bodily cause.³⁶ This is the way of discovering immaterial faculties of the intellect and will as well as their subject, which is the soul.

Moreover, this manner of describing a human being as the source of certain kinds of action enables us to discover – because of the regularity or constancy of some actions – also some capabilities or dispositions of these faculties. Among these capabilities or dispositions, habits are included as something distinct from faculties and

liberum arbitrium esse dicitur facultas voluntatis et rationis. Illae ergo actiones proprie humanae dicuntur, quae ex voluntate deliberata procedunt. Si quae autem aliae actiones homini convenient, possunt dici quidem hominis actiones; sed non proprie humanae, cum non sint hominis in quantum est homo. Manifestum est autem quod omnes actiones quae procedunt ab aliqua potentia, causantur ab ea secundum rationem sui obiecti. Obiectum autem voluntatis est finis et bonum. Unde oportet quod omnes actiones humanae propter finem sint” (*STh*, I-II, 1, 1 c.).

³⁵ “Dicuntur autem aliqui actus humani, vel morales, secundum quod sunt a ratione” (*STh*, I-II, 18, 5 c.). “Actus dicuntur humani, in quantum procedunt a voluntate deliberata ... actus morales proprie speciem sortiuntur ex fine, nam idem sunt actus morales et actus humani” (*STh*, I-II, 1, 3 c.). “Dicuntur enim proprie illi actus humani quorum ipse homo est dominus; est autem homo dominus suorum actuum per voluntatem sive per liberum arbitrium” (*De ver.*, 5, 10 c.). Cf. *STh*, I-II, 17, 4 c.; *De virtutibus*, 1, 4 c.; *Super II Sent.*, 25, 1, 3 ad 3.

³⁶ “Nulla virtus activa se extendit ad ea quae sunt supra speciem et naturam agentis: quia omne agens agit per suam formam. Sed ipsum velle transcendit omnem speciem corporalem, sicut et ipsum intelligere: sicut enim intelligimus universalia, ita et voluntas nostra in aliquod universale fertur, puta quod odimus omne latronum genus, ut philosophus dicit in sua rhetorica” (*CG*, III, 85, n. 2611). “Sicut dicitur in XVI De animalibus, quorum principiorum actiones sunt sine corpore, oportet principia incorporea esse; unde non potest esse quod actiones intellectus et voluntatis, per se loquendo, in aliqua principia corporalia reducantur” (*De ver.*, 5, 10 c.).

from singular actions. These habits are considered by Aquinas as qualities of the agent. Because these habits cause diverse kinds of actions suitable or not to the agent, they are analyzable according to their goodness or evil.³⁷ Thus, virtues and vices as good and bad habits belong to our ordinary descriptive equipment of what there is.

Ethics assumes the existence of habits and the analysis of their nature from natural science. Already in his commentary to the *Physics* St. Thomas explains that habits or dispositions of the body and habits or dispositions of the soul belong to the first species of quality and they are some virtues and vices:

For in general the virtue of a thing is what makes it good and renders its work good. Hence, a virtue of the body is that according to which it is well constituted and acts well, for example, health. And the contrary is true of vice, for example, sickness.³⁸

The general definition of virtue is applicable not only to the rational soul but also to good dispositions of the body – health is given as an example. Aquinas explains that every virtue and vice is predicated in relation to something else.³⁹ He develops the example of health showing that relation or order to something should be necessarily included in any description of such dispositions. These dispositions, however, are not to be considered as relations but as qualities understandable only together with relations.⁴⁰ Aquinas points at two kinds of these relations or orders: one is set among the parts or elements that constitute something in itself according to its nature, the other compares something to its operation. These two kinds of relations are distinguished as a consequence of two parts of the general definition of the virtue of a thing: 1) what

³⁷ “Quales sunt habitus, tales actus reddunt ut dicitur in II *Eth.*” (*Super III Sent.*, 34, 2, 2, qc. 2 sol.). “Habitus, secundum proprietatem sui nominis, significat qualitatem quandam, quae est principium actus, informantem et perficientem potentiam; unde oportet, si proprie accipiatur, quod sit superveniens potentiae sicut perfectio perfectibili” (*Super II Sent.*, 24, 1, 1 c.). “Habitus potentiae alicuius perfectivus est” (*CG*, I, 92, n. 771). “Habitus autem a potentia in hoc differt, quod per potentiam sumus potentes aliquid facere, per habitum autem non reddimur potentes ad aliquid faciendum, sed habiles vel inhabiles ad id, quod possumus, bene vel male agendum. Per habitum igitur non datur neque tollitur nobis aliquid posse, sed hoc per habitum adquirimus, ut bene vel male aliquid agamus” (*CG*, IV, 77, n. 4114).

³⁸ “Habitus qui sunt in prima specie qualitatis, etiam corporei, sunt quaedam virtutes et malitiae. Virtus enim universaliter cuiuslibet rei est quae bonum facit habentem, et opus eius bonum reddit: unde virtus corporis dicitur, secundum quam bene se habet et bene operatur, ut sanitas; e contrario autem est de malitia, ut de aegritudine” (*In Phys.*, VII, 5, n. 6).

³⁹ “Omnis autem virtus et malitia dicuntur *ad aliquid*” (*ibid.*).

⁴⁰ “Non autem est hic intelligendum quod huiusmodi habitus et dispositiones hoc ipsum quod sunt, ad aliquid sint; quia sic non essent in genere qualitatis, sed relationis: sed quia eorum ratio ex aliqua relatione dependet” (*ibid.*).

makes it good, and 2) renders its work good.⁴¹ Thanks to the latter kind of relations we are able to see such qualities of a thing that exceed in a way our understanding of the thing's nature, because we see

some dispositions of something that is perfect in its nature in comparison to the best, i.e., to the end, which is operation. ... these dispositions are described in reference to the due work, which is the best of a thing.⁴²

Thus a thing perfect in its nature (*perfectio prima*) might have some dispositions to an operation that can be recognized as what is the best of the thing (*perfectio secunda*). This “what is the best of the thing,” which is its operation, is identified as the final cause of the thing.

What is this “due work” that supplies the basis for assessing dispositions? Note that St. Thomas undertakes here, in his commentary to the *Physics*, a description of all dispositions common to everything that operates in any way. Earlier he compared the first kind of relations, according to which something is well kept in itself, to the health of a lion. Such a net of relations that enables us to recognize that a lion is healthy is specific to a lion and cannot be applied successfully in judging the health of a horse. Similarly, the net of relations according to which we recognize an excellency in lion's operation is far different from the net of relations according to which we judge an excellency in horse's operation. These relations must have their foundation in the natural identity of a thing. A “due work” or an excellency in operation cannot be judged otherwise than referring to the particular nature of the agent.⁴³ Remember that this is the most general consideration, which is presupposed and treated as manifest in more specific disciplines. When St. Thomas writes about human excellency, when he describes intellectual and moral virtues, he applies the same schema.

⁴¹ “Nomen habitus ab habendo est sumptum ... alio modo, secundum quod aliqua res aliquo modo se habet in seipsa vel ad aliquid aliud” (*STh*, I-II, 49, 1 c.). “Si autem sumatur habere, prout res aliqua dicitur quodam modo se habere in seipsa vel ad aliud; cum iste modus se habendi sit secundum aliquam qualitatem, hoc modo habitus quaedam qualitas est: de quo Philosophus, in V *Metaphys.*, dicit quod *habitus dicitur dispositio secundum quam bene vel male disponitur dispositum, et aut secundum se aut ad aliud, ut sanitas habitus quidam est*” (ibid.). “Habitus ponitur prima species qualitatis” (*STh*, I-II, 49, 2 c.). “Habitus importat dispositionem quandam in ordine ad naturam rei et ad operationem vel finem eius, secundum quam bene vel male aliquid ad hoc disponitur” (ibid., 4 c.). “Habitus est quaedam dispositio alicuius subiecti existentis in potentia vel ad formam vel ad operationem” (ibid., 50, 1 c.).

⁴² “Huiusmodi enim sunt quaedam dispositiones eius quod est perfectum in sua natura per comparisonem *ad optimum*, idest ad finem, qui est operatio. ... Dicuntur ergo huiusmodi dispositiones per relationem ad debitum opus, quod est optimum rei” (ibid.).

⁴³ “Dispositio ordinem quandam importat, ut dictum est. Unde non dicitur aliquis disponi per qualitatem, nisi in ordine ad aliquid. Et si addatur *bene vel male*, quod pertinet ad rationem habitus, oportet quod attendatur ordo ad naturam, quae est finis” (*STh*, I-II, 49, 2 ad 1).

Yet, in this view moral science might appear as only a specification of natural science that seems inappropriate because of the practical character of the former and only the theoretical character of the latter. There is certainly something of the specification in ethics as regards natural science, but it is similar to the way medicine is in relation to natural science. In medicine, natural science is presupposed and a special quality or perfection (health) of the human being is studied more closely in order to guide sanative activities of the doctor; similarly in ethics natural science is presupposed and a special quality or perfection (moral goodness) of the human being is studied more closely in order to guide human activities towards happiness.

The amount of theory does not decide whether a science is theoretical or practical. Practical sciences differ from theoretical in their goals or ends. The goal or end of theoretical sciences is only the attainment of truth whereas practical sciences seek the truth so as to order it to practice or operation. The unique essential difference between theoretical and practical sciences consists, therefore, in the existence or non-existence of the ordering to practice. Obviously, there are some additional reasons that may be brought forth, as for example that the subject considered in practical sciences (*factibilia* or *operabilia*) is by itself inextricably practical whereas the subject of theoretical sciences (for example the subject of mathematics) is not by itself practical. Yet, properly speaking, what is studied in practical sciences is something that is first recognized to exist or that it should exist; it is recognized as such and such or recognized that it should be such and such; it is recognized as doable or operable, and only finally it is considered under the aspect of how it may be made or done. The practicality of science comes last in the process of forming such a science but it comes without eliminating previous intrinsically theoretical steps of this process.

The knowledge that an artist has about something that can be made is of two kinds: speculative and practical. He has speculative or theoretical knowledge when he knows the intimate nature of a work but does not have the intention of applying the principles to the production of the work. His knowledge is practical, properly speaking, when by his intention he ordains the principles of the work to operation as an end. In this way, as Avicenna says, medicine is divided into theoretical and practical. It is clear that the practical knowledge of an artist follows his speculative knowledge, since it is made practical by applying the speculative to a work. But when the practical is absent, the speculative remains.⁴⁴

⁴⁴ “Artifex de operabili habet duplicem cognitionem, scilicet speculativam et practicam: speculativam quidem sive theoricam cognitionem habet cum rationes operis cognoscit sine hoc quod ad operandum per intentionem applicet, sed tunc proprie habet practicam cognitionem quando extendit per intentionem rationes operis ad operationis finem, et secundum hoc medicina dividitur in theoricam et practicam, ut Avicenna dicit. Ex quo patet quod cognitio artificis practica sequitur cognitionem eius

Hence, moral science does not lose its practical character when it is considered as dependent upon a theoretical or speculative science. Moreover, to be a *science* at all it must be so dependent, as it was already argued in section 4.3. Now more will be said about the specificity of this dependence.

The beginning of Saint Thomas's commentary on the *Ethics* revolves around the term *ordo*. He states that it is characteristic of the intellect or reason to recognize *ordinem*: "even if the sensitive powers know some things absolutely, nevertheless to know the order of one thing to another is exclusively the work of intellect or reason."⁴⁵ Between the two orders we can find in things, things among themselves and things to an end, the latter is called *principalior*. Yet in relation to reason there is a fourfold diversification of orders.

Because the operation of reason is perfected by the habit of science, according to these different modes of order that reason properly considers, there are different sciences. To natural philosophy pertains to consider the order of things that human reason considers but does not make – in this way under natural philosophy we also include mathematics and metaphysics. The order that reason considering makes in its own act, pertains to rational philosophy, which considers the order of the parts of speech among them and the order of principles to conclusions. But the order of voluntary actions pertains to the consideration of moral philosophy. The order that reason considering makes in external things established by human reason, pertains to the mechanical arts.⁴⁶

Aquinas says that reason in its own consideration is able to establish different orders. We saw already how this establishing of order is achieved in the case of logic: this is not an arbitrary establishing of anything, but a complete dependence of our cognitive faculties and its activities on things of this world. This dependence is the measure of the veracity of every logical reasoning and of every statement. Logic is built upon intellectual perceptions of relations that ensue in the human mind from intellectual perceptions of things. Logical principles and rules of thinking come from the

speculativam, cum practica efficiatur per extensionem speculativae ad opus; remoto autem posteriori remanet prius" (*De ver.*, 2, 8 c.).

⁴⁵ "Nam, etsi vires sensitivae cognoscant res aliquas absolute, ordinem tamen unius rei ad aliam cognoscere est solius intellectus aut rationis" (*In Eth.*, I, 1 [Leon. 47/1, p. 3, lin. 4-7]).

⁴⁶ "Quia consideratio rationis per habitum scientiae perficitur, secundum hos diversos ordines quos proprie ratio considerat, sunt diversae scientiae: nam ad philosophiam naturalem pertinet considerare ordinem rerum quem ratio humana considerat sed non facit, ita quod sub naturali philosophia comprehendamus et mathematicam et metaphysicam; ordo autem quem ratio considerando facit in proprio actu pertinet ad rationalem philosophiam, cuius est considerare ordinem partium orationis adinvicem, et ordinem principiorum in conclusiones; ordo autem actionum voluntariarum pertinet ad considerationem moralis philosophiae; ordo autem quem ratio considerando facit in rebus exterioribus constitutis per rationem humanam pertinet ad artes mechanicas" (*ibid.* [p. 4, lin. 25-39]).

observation of this world, because, according to St. Thomas, there is no understanding without phantasms: our cognition begins in senses and phantasms are necessary in every act of understanding. All first principles in their functioning are based on the understanding of the terms of these principles. Understanding of any concept, again, is impossible without our previous possession of phantasms, which could provide a basis for the intellect to abstract a concept. This is valid for all sciences. Thus, the order that is only discovered and not made by human reason, the order proper to natural science along with mathematics and metaphysics, is presupposed even in the consideration of logic. Otherwise, in Aquinas's account, it would be impossible to conceive any logical principle, it would be impossible to judge the truth of predications and the validity of inferences.

According to St. Thomas, in mechanical arts similarly, reasoned considering establishes an order in exterior things, but it depends in this activity upon the order of nature. Mechanical arts also presuppose the order which is not made but only discovered in human experience of the world. A doctor cannot take the first principle of medical science and arbitrarily establish what health is nor is it possible to construct a ship without knowledge of the nature of materials and the force of waves. *Ars imitatur naturam* – St. Thomas repeats again and again. He explains why this principle is true in this way:

The reason for saying that art imitates nature is as follows. Knowledge is the principle of operation in art. But all of our knowledge is through the senses and taken from sensible, natural things. Hence in artificial things we work to a likeness of natural things. And so natural things are imitable through art, because all nature is ordered to its end by some intellective principle, so that the work of nature thus seems to be the work of intelligence as it proceeds to certain ends through determinate means. And this order is imitated by art in its operation.⁴⁷

Finally, is ethics so significantly different from logic and mechanical arts that it should not presuppose the order only discovered and not made? Is ethics so exceptional that it does not or even cannot repose on the order considered in speculative sciences? Is it possible to have such first principles of ethics that they be independent from our

⁴⁷ “Eius autem quod ars imitatur naturam, ratio est, quia principium operationis artificialis cognitio est; omnis autem nostra cognitio est per sensus a rebus sensibilibus et naturalibus accepta: unde ad similitudinem rerum naturalium in artificialibus operamur. Ideo autem res naturales imitabiles sunt per artem, quia ab aliquo principio intellectivo tota natura ordinatur ad finem suum, ut sic opus naturae videatur esse opus intelligentiae, dum per determinata media ad certos fines procedit: quod etiam in operando ars imitatur” (*In Phys.*, II, 4, n. 6). Cf. *ibid.*, 13, n. 4; *STh*, I, 117, 1 c.; *CG*, II, 75, n. 1558; *Super IV Sent.*, 42, 2, 1 sol.; *In De sensu*, I, 1 (Leon. 45/2, p. 8-9, lin. 277-321); *In Polit.*, prooem. (Leon. 48 A, p. 69, lin. 1-23).

knowledge of the order of nature? No, it is impossible in the Aristotelian account. And this for the same reason as this quoted above in the case of mechanical arts. First principles of every science depend upon our knowledge of the order of nature. Apart from what Aquinas says on this in his last lesson of the *Commentary on the Posterior Analytics* (see section 4.3), in his introduction to the *Commentary on the Politics* he gives an even more explicit statement confirming this general rule in application to both groups of practical sciences: to mechanical arts and to moral science.⁴⁸ St. Thomas begins this commentary with his personal reflection on how art imitates nature. He takes “art” in the large sense as a cause of things opposed to “nature” and “chance.” In the course of this reflection he says that:

human reason, in reference to the things that exist according to nature, is only a cognoscitive power, whereas in reference to things that exist according to art, it is both a cognitive and operative power. Hence, the human sciences that deal with natural things are necessarily speculative, while those that deal with things made by man are practical or operative according to the imitation of nature.⁴⁹

Practical or operative sciences are both cognitive and operative because they are practical or operative “according to the imitation of nature.” If so, they are necessarily first cognitive and then practical – otherwise they would not be “according to the imitation of nature.” Further Aquinas touches the same question when he remarks that politics is a part of practical philosophy because human reason in reference to *civitas* is not only a cognitive power but also operative.⁵⁰ This “not only ... but also...” reveals certain dependence of the practical character of reason upon what is known from the order of nature as given and not made by man. In particular, politics,

considering the principles and the parts of the city, gives a knowledge of it by manifesting its parts and its properties and its operations. And because it is a practical science, it manifests in addition how each thing may be realized, as is necessary in every practical science.⁵¹

⁴⁸ Cf. *In Polit.*, prooem. (Leon. 48, p. 69-70).

⁴⁹ “Ratio humana eorum que sunt secundum naturam est cognoscitiva tantum, eorum uero que sunt secundum artem est et cognoscitiua et factiua. Vnde oportet quod scientie humane que sunt de rebus naturalibus sint speculatiue, que uero sunt de rebus ab homine factis sint practice siue operatiue secundum imitationem nature” (ibid. [p. 69, lin. 29-36]). Cf. *STh*, I, 60, 5; II-II, 31, 3; 50, 4; 130, 1.

⁵⁰ “Cum enim scientie practice a speculatiuis distinguantur in hoc quod speculatiue ordinantur solum ad scientiam ueritatis, practice uero ad opus, necesse est hanc scientiam sub practica philosophia contineri, cum ciuitas sit quiddam totum, cuius humana ratio non solum est cognoscitiua, set etiam operatiua” (*In Polit.*, prooem. [Leon. 48, p. 69-70, lin. 75-81]).

⁵¹ “Sicut enim scientie speculatiue que de aliquo toto considerant, ex consideratione partium et principiorum notitiam de toto perficiunt passiones et operationes totius manifestando, sic et hec scientia principia et partes ciuitatis considerans de ipsa notitiam tradit partes et passiones et operationes eius manifestans. Et quia practica est, manifestat insuper quo modo singula perfici possunt: quod est necessarium in omni practica scientia” (ibid. [p. 70, lin. 110-119]).

Here again, the basic function of this science is a description and explanation in general and its practicality consists only in manifesting how singulars may be brought to perfection. The *ordo* that reason establishes should be thus understood primarily as a net of relations that occur between an acting person and this person's acts in the perspective of personal and universal final cause as well as between this acting person and other personal beings. This is the *ordo* that human being makes in its own acts according to the recognized truth of the agent's identity, of the character of acts, and of the identity of other persons. This recognition of our own identity in the natural order and the identity of other persons Aquinas extends also to God as the One who makes the natural order of things:

just as the order of right reason is from man, so also the order of nature is from God Himself. And therefore in sins against nature, in which the very order of nature is violated, injustice is done to God Himself, the one who orders nature.⁵²

The fact that personal acts are carried out by an order of practical reason, is only secondary, because it concerns the knowledge of "how to do," that is, it pertains more to prudence than to moral science.⁵³

It is proper to moral philosophy ... to consider human operations, insofar as they are ordered to one another and to an end. I am talking about human operations, those springing from man's will following the order of reason. But if some operations are found in man that are not subject to the will and reason, they are not properly called human but natural, as clearly appears in operations of the vegetative soul, which in no way fall under the consideration of moral philosophy. As the subject of natural philosophy is motion, or mobile thing, so the subject of moral philosophy is human action ordered to an end, or even man, insofar as he is an agent voluntarily acting for an end.⁵⁴

St. Thomas juxtaposes the subject of natural philosophy with that of moral philosophy in order to explain the specificity of the latter. In this quotation human operation

⁵² "Sicut ordo rationis rectae est ab homine, ita ordo naturae est ab ipso Deo. Et ideo in peccatis contra naturam, in quibus ipse ordo naturae violatur, fit iniuria ipsi Deo, ordinatori naturae" (*STh*, II-II, 154, 12 ad 1).

⁵³ For a longer discussion of the distinction of speculative and practical sciences see Jacques Maritain, *Distinguish to Unite: or, The Degrees of Knowledge*, Transl. under the supervision of G. B. Phelan (New York: Charles Scribner's Sons, 1959), Appendix VII; William A. Wallace, "Being Scientific in a Practice Discipline" as Essay XIII in *From a Realist Point of View*, p. 273-293.

⁵⁴ "Sic igitur moralis philosophiae ... proprium est considerare operationes humanas, secundum quod sunt ordinatae adinvicem et ad finem. Dico autem operationes humanas quae procedunt a voluntate hominis secundum ordinem rationis; nam, si quae operationes in homine inveniuntur quae non subiacent voluntati et rationi, non dicuntur proprie humanae sed naturales, sicut patet de operationibus animae vegetabilis, quae nullo modo cadunt sub consideratione moralis philosophiae. Sicut igitur subiectum philosophiae naturalis est motus, vel res mobilis, ita etiam subiectum moralis philosophiae est operatio humana ordinata in finem, vel etiam homo prout est voluntarie agens propter finem" (*In Eth.*, I, 1 [Leon. 47/1, p. 4, lin. 39-54]).

appears as a species of operation understood as something universal and common to every activity. If we would like to put human operations into one of the Aristotelian categories, we should put it into the category of action and passion. It is thus one of the nine accidents. In general, action along with passion is considered as a characteristic of every material being. The proper science for this consideration is natural science which has for its subject mobile being. The heading “mobile being” comprises human being insofar as it is material and changing. In this way what we call today biology, and philosophical anthropology, and epistemology, and psychology, all of them used to be integral parts of natural science. All of them treat something of human being and its activity.

To natural science pertains somehow even the treatment of human soul as the substantial form of the body and as manifesting itself through bodily action and experience tied up to phantasms. Intellect and will as faculties of this substantial form, although they themselves are immaterial and act *per se* without matter, nonetheless they belong to a changing being in this present bodily condition and are known only through material manifestations. We do not know what it is like to be without a body or to think without a body or to be conscious without a body. Our consciousness is now necessarily bound up with our bodily condition. Thus, human action in general remains in the scope of natural science.

Among diverse operations of human being there are some ordered to an end through rational appetite. The subject of moral philosophy, human action ordered to an end, is therefore an aspect of human action: *ordinatio ad finem* is its distinctive feature. What is this distinctive feature? How could we put this into one of the Aristotelian categories? We can find a fitting place for *ordinatio ad finem* within the category or relation, often called *ad aliquid*. Again, it is an accident. It appears that in this case *ordinatio ad finem* is an accident of human action, which also is an accident. For St. Thomas it is obvious that every accident is caused by that in which it remains, generally its substance, and thus every accident is definable and explainable by its substance. As a result of this approach to science and to accidents, natural science is necessary to begin the study of moral philosophy. The necessity of natural science before studying moral philosophy is even more visible when we take the second phrasing of the subject of moral philosophy: “a man insofar as he is an agent voluntarily

acting for an end.” This is why Aquinas wisely postpones the course of moral philosophy until students have learned natural science.⁵⁵

On the other hand, moral philosophy seems to be a part of wisdom to which pertains *ordinare*. We could thus imagine that ethics should be taught within or even after the course of metaphysics, to which the name of wisdom applies most of all. Why should it be taught before metaphysics? The *ordo docendi* is conditioned by our cognitive capacities: more known to us are singular things and events, and we find their causes more easily than universal causes of all things. The discovery and demonstration of universal cause which takes place in the last stage of the general study of nature prepares for the study of metaphysics and it seems that metaphysics could be taught just after natural science, and moral philosophy after metaphysics. Yet metaphysics is more difficult to learn than ethics, and so should be taught after that what is easier, if possible.⁵⁶

Apart from that, since in human action there is a special and very important kind of motion not treated in particular in natural science, there is a need just after natural science to devote a special science to explain this kind of motion according to causes that are more known to us. This special kind of motion is the action of the will as ordered by reason⁵⁷: the human being is a changing being not only in the order the human being does not make but also on the level of the order which is made in actions

⁵⁵ Obviously, there is also another argument for this postponement, namely the one concerning a good disposition of students: to learn ethics they need to have more experience than it is required for liberal arts and natural philosophy, and also have their spirits liberated from too much passion.

⁵⁶ Ethics is not necessary for learning metaphysics but it is for the greater good of metaphysics: “*alie uero scientie sunt ad bene esse ipsius [i.e. metaphisice], ut musica et morales et alie huiusmodi*” (*In Boet. De Trin.*, 5, 1 ad 9). Interestingly, John Wippel juxtaposes the text of this answer with the text of Avicenna, *Metaphysica* I, 3, where he more explicitly states that: “*Musica vero et particulares disciplinalium et morales et civiles utiles sunt, non necessariae, ad hanc scientiam [i.e. ad metaphisicam]*.” (John F. Wippel, “Aquinas and Avicenna on the Relationship Between First Philosophy and the Other Theoretical Sciences (*In De Trin.*, q. 5, a. 1, ad 9)” in: *Metaphysical Themes in Thomas Aquinas* [Washington, D.C.: The Catholic University of America Press, 1984], p. 44).

⁵⁷ In his *Commentary to Ethics* St. Thomas presents the intellect or reason and will as principles of movement, according to the treatment of them from *De anima*: “*Duo sunt principia humanorum actuum, scilicet intellectus seu ratio et appetitus, quae sunt principia moventia, ut dicitur in III De anima*” (*In Eth.*, I, 1 [Leon. 47/1, p. 5, lin. 128-131]). Although the specificity of the motion proper to spiritual substances should be underlined in order to avoid some misunderstandings: “*Platonici, qui posuerunt aliqua movere seipsa, dixerunt quod nullum corporeum aut divisibile movet seipsum; sed movere seipsum est tantummodo substantiae spiritualis, quae intelligit seipsam et amat seipsam: universaliter omnes operationes motus appellando; quia et huiusmodi operationes, scilicet sentire et intelligere, etiam Aristoteles in III De anima nominat motum, secundum quod motus est actus perfecti. Sed hic loquitur de motu secundum quod est actus imperfecti, idest existentis in potentia, secundum quem motum indivisibile non movetur, ut in sexto probatum est, et hic assumitur. Et sic patet quod Aristoteles, ponens omne quod movetur ab alio moveri, a Platone, qui posuit aliqua movere seipsa, non dissentit in sententia, sed solum in verbis*” (*In Phys.*, VII, 1, n. 7).

of the will. We are talking about actions of will that *are natural*, but are not actions *of nature* understood as our bodily condition. If we take “natural” as signifying rather our animal condition, actions of the will as ordered by reason exceed the determination of nature. If we, however, take “natural” as signifying both our animality *and* rationality, then actions of the will as ordered by reason are plainly natural.

However, it is true that the study of metaphysics helps significantly in ordering our acts towards the end because this end is more clearly seen. The study of metaphysics provides also the possibility of judging better about the moral matter in the light of higher causes. St. Thomas, as a commentator of Aristotle’s *Ethics*, is already an accomplished professor and when it is advantageous to his readers, he freely elucidates the ethical matters adducing quotations, definitions, divisions and distinctions from *Metaphysics*, not as something that the students should already know but that he is a teacher to whom students owe a confidence about matters which will be fully explained later.⁵⁸

* * *

In this chapter we examined the possibility of an analysis of goodness. In St. Thomas’s approach, such an analysis is possible thanks to his teaching on analogy, thanks to his semantics, and thanks to the hylomorphic structure of his thought. Apart from that metaphysics helps significantly in ordering and strengthening this analysis. Good is analyzable according to mode, order, and species – and this analysis implies that we can know and can predicate of the natures of things as they are instantiated in these things.

The notion of perfection was underlined as this which closes the “Open Question Argument.” The distinction between first and second perfection proved useful also in the analysis of the specificity of moral goodness and its relationship to ontological goodness.

⁵⁸ Cf. e.g.: “Ad cuius evidentiam considerandum est, quod duplex est operatio, ut dicitur in IX *Metaphysicae*” (*In Eth.*, I, 1 [Leon. 47/1, p. 6, lin. 193-194]).

CONCLUSIONS

The aim of this dissertation was to show whether St. Thomas Aquinas justified the transition from “is” to “ought,” that is, the transition from factual descriptions to moral claims. The need for such a study was dictated by a controversy that originated with an interpretation of Aquinas’s writings that takes for granted the negative answer, namely that generally there is no justification for such a transition and Aquinas did not even try to justify it or to make it. For it is believed that to make such a transition is to commit a basic logical fallacy: you simply cannot infer prescriptive conclusions from purely descriptive premises. This claim is presented as an obvious philosophical principle. Some texts from the *Summa Theologiae* are quoted as well in order to prove that practical principles are not deduced from theoretical principles. This should confirm the opinion that St. Thomas was so a great thinker that already in the thirteenth century in his ethical theory he avoided a common mistake which was named and stigmatized only in the eighteenth century by David Hume. Moreover, since the first practical principles are not deduced from metaphysics or natural science, it follows that Aquinas’s ethics is not and cannot be naturalistic. By the same token St. Thomas avoided in his ethics the “naturalistic fallacy” identified by George Edward Moore in the twentieth century.

But this interpretation of St. Thomas proved controversial for several Thomists and many critiques appeared that show inconsistencies in this approach. This study, however, was not undertaken as another polemic with those distinguished authors who advanced the aforementioned interpretation. It intended only to present positively some

aspects of Aquinas's teaching that help to understand why it is possible to say that he did justify the transition from "is" to "ought."

Since the question of this transition is now diversely understood by different authors, after the introduction a brief history of the problem was offered. The goal of this historical sketch was to identify the roots of the problem that was to guide our analysis of St. Thomas's texts. David Hume and G. E. Moore were presented as two main figures who shaped the contemporary belief that no "ought" can be derived from an "is," turning this belief into a general principle. Although the principle seems to be basically the same in the writings of both authors, Hume proposed a naturalistic version of ethics, whereas Moore proposed a deeply non-naturalistic one. This is commonly attributed to the fact that Moore had a more elaborate version of the principle. The above mentioned interpretation of Aquinas that accepts the "Is/Ought Thesis" rejects naturalism in ethics as well, absolving St. Thomas from the charge of baneful naturalism.

A brief analysis of the "Is/Ought Thesis" as it is commonly understood revealed that this meta-ethical principle has its roots in semantics, logic, epistemology and metaphysics. Three layers of the thesis, namely a semantical sub-thesis, logical sub-thesis and internalist assumption, were distinguished so as to proceed in an orderly manner toward answering the problem of this dissertation.

St. Thomas lived in the thirteenth century, a century that belongs to the epoch called the Middle Ages or the Dark Ages – still too often characterized as the age of irrationality, dogmatism and superstition. Since in this study Aquinas was asked to respond to the problem identified in the Enlightenment era, in the Age of Reason, it was appropriate in Chapter 1 to sketch briefly Aquinas's general approach to cognition in order to, on the one hand, underline some attractive points of his philosophical project, and on the other hand, find an interpretative key for reading what he said in his diverse writings. These two aspects are deeply connected because the general approach to cognition includes the Aristotelian technique of research and explanation. Knowing the art of asking questions and the need for dialectical method we could easily avoid an often repeated error of interpreting St. Thomas in a deductivist manner. An emphasis on the virtues of cognition protected our interpretation from the similarly widespread error of neglecting the order of learning in reading Aquinas's writings.

This order of learning was established by St. Thomas himself. One of his reasons for establishing the order of learning was to avoid useless repetition of things

common to diverse disciplines. He could, therefore, confidently presuppose in ethics, things treated in disciplines that should have been taught earlier. For our topic, it turned out to be crucial because, although the problem of the possibility of inferring an “ought” from “is” belongs to ethics or its foundations, the roots of the problem are not ethical and thus the problem seems to be insoluble within ethics as a discipline. Hence, we concluded that in order to find an answer to the problem of this dissertation we cannot read only the texts which we judge to belong to ethics or moral theology. Doing so might easily lead us to interpret them anachronistically. Two distinct disciplines come before ethics in the order of learning, namely logic and natural science. We decided to explore them in order to find some indications of how to respond to the question posed by this study.

Since Aquinas said that there are important things taught in logic that are valid for all disciplines, and knowing from the history of philosophy that logic was not the same for all ages, in Chapter 2 we turned our eyes to see what logic he used. This step was taken not only because of the order of learning but also because of the logical sub-thesis contained in the “Is/Ought Thesis.” First, we followed Aquinas’s divisions of logic so as to, on the one hand, realize that his understanding of logic is different from today’s mainstream logics, and on the other hand, to set an order for our subsequent inquiry. Next, it was necessary to distinguish logic as an art (*logica utens*) and logic as a science (*logica docens*). The first is a part of the art of living, the second is one of the quasi-speculative disciplines (“quasi” because of its subordination to other speculative disciplines). It became obvious that the thesis on the logically illicit character of the inference of an “ought” from an “is” might be easily defended if we take logic in the sense of a discipline, that is, when we take the premises in their logical formality. Such a logic does not consider human being as a changing being, a being that has nature and is naturally inclined and directing his actions to an end, because this logic is not applied to really existing things. To be sure, taking descriptive phrases in their logical formality, no prescriptive or imperative phrase follows from them. Yet it is not so obvious for logic as an art, in applied logic, in logic which serves in other disciplines and shapes real human choices and their lives.

To grasp better the nature of St. Thomas’s logic and how such a logic can be applied to other disciplines we inquired what is the subject of logic. It was necessary to understand exactly what logical relations are as opposite to real relations and non-logical relations of reason because Aquinas’s solution of this question helps to

recognize the possibility of a realistic discourse about things that are not immediately sensorily experienced. In this account, logic, even though remotely, is perform based upon the reality of things. Logic is supposed to lead us to know things as they really are, protecting against errors in our acts of reason. Through logic one makes an order in one's acts of reason, yet this order is not a fruit of an arbitrary creativity of reason. For St. Thomas the logical order would never exist without our cognition of really existing things. Logic only *serves* to know what there is so as to make an order in what we think.

Since we learned in Chapter 2 that there are three kinds of logical relations or logical intentions (namely, the intention of universality, the intention of attribution, and the intention of consequence), we went deeper in our analysis of the topics that generally pertain to Aquinas's logic and explored in Chapter 3 the first and the second kind of logical intentions, leaving the third for Chapter 4. Hence, in Chapter 3 the intention of universality was studied under the aspect of St. Thomas's theory of signification. This served to prepare us to give an answer to the semantical sub-thesis of the "Is/Ought Thesis."

At the beginning we asked where the intention of universality comes from and we made plain how Aquinas undermines the main skeptical premise in his analysis of a simple cognitive act. The representing function of understanding, as the activity of mind which gives rise to the intention of universality, St. Thomas explained within the framework of formal causality. This protected his approach from diverse pitfalls of representationalisms known from the later history of philosophy and allowed him to remain realist and steady in reflecting upon the possibility of the scientific knowledge of the natures of things as they really are in things. Accordingly, the essentials of Aquinas's theory of signification were sketched, and the *immediate* or *primary* signification of words was clearly distinguished from their *proper* signification. This element is foundational for both the theory of predication and theory of science.

The subject of the theory of predication is the second logical intention, the intention of attribution. The inherence theory of predication was briefly explained along with the verificational factor of sentences. We learned that for Aquinas the only properly speaking true sentences are indicative sentences because only these signify the relation of adequacy between the act of the intellect and the actual state of things signified by the subject and predicate of such sentences. Imperative sentences express the tendency of will, hence the character of truth may be ascribed to them only insofar as the will conforms with the judgment of the intellect that concerns things as they

really are. Imperative or prescriptive sentences would be therefore reduced to indicative sentences in order to find whether they are true or not. As a logical tool the inference theory of predication serves to perfect our analysis of what there is in the world and opens the possibility of diverse ways of describing and expressing what there is.

Issues treated in Chapter 3 constitute a necessary background for St. Thomas's theory of learning and his general scientific methodology, which is partly discussed in Chapter 4. In this chapter the third logical intention, the intention of consequence, plays the main role and determines the possibility of inferring conclusions. Hence, looking for the justification of the inference of an "ought" from an "is" we had to explore also this field of Aquinas's logic. Moreover, looking for the possibility of grounding ethics as a science on some descriptive science or sciences we had to determine how exactly the word "science" functions in St. Thomas's writings and what kind of knowledge has scientific status in his works. We learned that his scientific method provides not only a description of phenomena, but also a causal explanation according to formal, material, efficient, and final cause. We remarked as well that Aquinas's theory of science would be impossible without his semantical presuppositions.

Further, some aspects of material logic were considered. In this context we saw how important it is to distinguish science in the sense of an epistemic virtue and science in the sense of a discipline to dispel erroneous interpretations of Aquinas's general scientific method. We also analyzed the conditions for premises to construct a demonstration through which science may be obtained. From this we concluded that sometimes it is impossible to demonstrate otherwise than only through the final cause. Thus the demonstration *ex suppositione finis* is sometimes the only adequate means to fulfill the conditions to acquire science. The role of final cause was especially emphasized as the logical instrument that helps significantly and is even necessary in sciences that explain changing things, things characterized by a dynamism of aiming to their end, namely, in natural science and ethics.

To this part of logic belongs also the discussion about definitions and first indemonstrable principles. We followed St. Thomas's explanation of the origin of all first indemonstrable principles. He teaches that all of them are derived from our sensory experience and all of them presuppose our understanding of terms that constitute these principles. In this topic the distinction between science as a discipline and science as an epistemic virtue was also clarifying for there are principles treated as first and indemonstrable within the scope of some disciplines (especially in disciplines that treat

some accidents inhering in and caused by substance) but they are demonstrable in more basic disciplines (namely in disciplines that treat these substances which cause the accidents in question). Moreover, the lack of such a more basic demonstration, even if it belongs to another discipline, may result in the absence of science as an epistemic virtue. Instead, there would be only dialectical knowledge or opinion. This point underlines the sapiential character of Aquinas's theory of learning and is at odds with our contemporary way of doing philosophy or science.

From this logical analysis we concluded that since moral science treats properly human action as ordered to the end, it treats an aspect (or quality understood only with a relation: "being ordered to") of an accident (action). This aspect is thus an accident of an accident. In the framework of Aquinas's logic (i.e. his theory of science or his way of explanation) this situation calls for a knowledge of the subject (human being) as the cause of the accident (action). Without this basis we, admittedly, could coherently construct a discipline with its first indemonstrable principles that would have all formal requirements for a discipline, but we would not have science as a virtue. Several texts were adduced in order to show that this is indeed so for St. Thomas in the case of moral science.

Chapter 4 closed the first part of this dissertation and left us with the need to looking for a science that could construct such a human "is," which would provide a possibility for inferring an "ought." We embarked on the consideration of this problem in Chapter 5, where we studied how many and what kinds of theoretical or speculative sciences we have, so as to choose from among them the most proper to describe what a human being is. It was necessary to see why these sciences differ, what the factor divides them, and how it influences the mode of their procedure. Especially important was to see how St. Thomas avoids the danger of "mathematization" in natural science and metaphysics and how he avoids the danger of "metaphysicization" in natural science. These clear distinctions of functions and competences of the sciences allowed us to point at natural science as the most proper to carry out the scientific description and explanation of a human being so as to provide a basis for moral science. Indeed, also in the order of learning Aquinas puts ethics only after the study of natural science and before the study of metaphysics. In addition, we learned that within the scope of natural science St. Thomas also establishes an order according to which we should study diverse parts of this science.

In Chapter 6 we explored the particular manner of explanation in natural science. The first basic principles of Aristotelian hylomorphism were analyzed as a way of understanding change or changing being. We saw how the precision of Aquinas's analysis enabled him to avoid some errors of Platonism and gave him some excellent tools which he used in all his writings. If we did not know this analysis we would be prone to diverse misreadings of Aquinas because the hylomorphic structure of his thought is omnipresent. We learned about form as something divine, the best, and desirable, as well as about the necessarily dynamic character of matter as tending towards form.

From this we moved to consider the principles of natural science. Natural motion was distinguished from other kinds of motion and briefly nature itself was identified. The question of the knowability of nature was only touched since it develops the issue of the rise of the logical intention of universality discussed in Chapter 3. We stressed also the difference in the signification of the word "nature" in metaphysics, logic, and natural science. Further, we observed how causes as principles of natural science emerge from a simple analysis of natural motion. Especially the necessity of final causality for the very intelligibility of efficient causality was explained and highlighted since, on the one hand, the notion of final causality is so crucial for solving the problem of this dissertation and, on the other hand, it is so misunderstood today. The correlation of formal and final causality was also stressed in a provisional analysis of the goodness of natural things. Finally, we saw why the subject of natural science often requires that demonstrations be carried out according to the final cause. Because this kind of demonstration involves a supposition, it was also explained what certainty of the conclusions results from it and what errors may be easily made in this context.

This dissertation did not offer an elaborated Thomistic anthropology. In Chapter 6 only some general elements were displayed from the foundational treatise of natural science because these things are said to be presupposed in the whole natural science (so they may be inadvertently omitted by authors who study Aquinas's anthropology and even more so by those who study Aquinas's ethics or moral theology). Nonetheless, from these elements it became clear that St. Thomas's understanding of natural science and his manner of analyzing what there is in natural things gives a possibility of revealing not only what there is but also what there should be according to the inherent nature of this particular thing.

In Chapter 7 we took three specific lessons from the vast domain of natural science so as to grasp better the originality and attractiveness of Aquinas's approach. First, we looked closer at his analysis of motion because he himself expressly said that by not knowing what motion is, one does not know what nature is. Since nature is defined as an inner principle of motion and rest in things, the analysis of motion is one of the privileged ways of recovering the signification of the word "nature" from misunderstandings caused by a selective reading of Aquinas's texts and by anachronistic distortions. This analysis indicated how important the notion of real and non-real (but non-logical) relation is in St. Thomas's account of motion. We remarked also that this simple analysis of motion must include the notion of efficiency and finality. Thus, efficiency and finality turned out to be indispensable for our understanding of motion. It became plain that an erroneous "metaphysicization" of natural beings, their natures, essences, or quiddities might obstruct to grasp their deeply relational character in all their dependencies. We saw how the complete understanding of natural things in their real existence implies our knowledge of their origin and end. To the constitution of really existing thing belongs an order or a relation to its origin and an order or a relation to its end. These orders or relations do not enter into the essence of the thing but they make up the thing in its real existence as a changing being or being-in-motion. We were able thus to appreciate the wise procedure dictated by St. Thomas in his order of learning. According to his intention, everybody had to go through the initial analysis of motion so as to be able to understand nature as it exists in extra-mental things in relation to diverse dependencies of things that instantiate this nature. Among these dependencies the most important are those of origin and finality. Without this initial analysis, the finality of nature might appear as a religious pretension of those who are unable to free their reason from this teleological "superstition."

The second lesson from natural science continued the thread of religious/irreligious thinking about nature and about ethics. We looked for reasons why Aquinas is not hesitant to refer to God in his philosophical discourse on human action. We saw that the question of the Author of nature belongs still to the foundational treatise of natural science and as such it is presupposed in every specific part of this science. Thus, also in the science of man or anthropology, that is, in the science which constitutes human "is," God too should somehow be included. It was, therefore, advantageous for us to see what knowledge of God the students of natural science gained before they started to learn ethics.

We offered only some remarks concerning the physical proof of the existence of the first mover and St. Thomas's discussions with those who disagreed with his approach, so as to show Aquinas's deep conviction that with our natural cognitive capacities it is possible to discover that the first mover of this world exists. He said, namely, that this proof from the foundational treatise of natural science is the most perfect, such that it could not be resisted. We noted as well that already on this stage of philosophical formation there was much more that students learned about God, especially that he produces the world by his intellect and will. We saw how Aquinas explains that there is no serious obstacle to identify this God discovered in natural science with the God of the Bible.

These remarks enabled us to find a better solution to the problem of how to interpret the "religious" character of St. Thomas's thought in his commentary to Aristotle's *Ethics* than pointing at his religious profession. This better solution respects the order of learning and methodological presuppositions clearly articulated elsewhere by Aquinas. We concluded rather that for him every human person is inherently a religious being, which means that everybody by the fact of being human, is already related to God as to the adequate source of human nature in general and the human soul in every instantiation of this nature. Everybody is constituted in one's being also by the order towards God as the unique adequate final cause of man. This *fact* changes significantly our understanding of natural justice and what we, as beings of nature, *owe* to God.

The third lesson from natural science concerned more specific and often underestimated topic of sensory cognition in relation to practical rationality. This lesson helped to deal with the "internalist assumption." We explored some aspects of the nature and functioning of the discursive or cogitative power (*vis cogitativa*). This is the highest of the four interior senses, essentially the same as in other animals (*vis aestimativa*). This sense is responsible for the perception of some singular intentions from sensory data, just as the intellect is responsible for the universal ones. These intentions in the interior sense are the fruit of the comparison of what is experienced with the identity of the agent, which means that the content of experience is taken under the aspect of being beneficial or nocive to the agent. This function allows animals to act instinctively: to protect themselves, feed, play, and reproduce according to their own nature. For Aquinas, animals in their sensory cognition possess a kind of consciousness

and recognize what they experience as something good or bad for them, what should be followed (*prosequendum*) or avoided (*vitandum*).

We learned that according to St. Thomas, on the one hand, all speculative cognition comes through the functioning of the cogitative power because the cogitative power makes experience possible and, on the other hand, that every application of the universality of intellectual operations to singular actions occurs also through the functioning of the cogitative power. Moreover, although prudence is one of the intellectual virtues, Aquinas claims that prudence pertains more to this interior sense than to the intellect because actions are in singulars and intellect concerns only universals.

From our analysis we concluded that the intellect becomes practical through the cogitative power. We also outlined briefly the mutual dependency of the intellect and this interior sense. From this it became clear that the first principle of practical reason is only a conceptual expression of our sensory consciousness which we share to a considerable extent with other animals. The principle that good should be followed and evil avoided appears thus as a conceptualization of the rule which every animal has inscribed in its nature and which every animal follows according to its particular capacity to grasp what is good for it or what is evil. Man has the capacity to grasp the good universally and thus the content of this principle differs significantly, but the principle itself remains the same. This solution allows us to reject the need of searching for any other distinctive “ought” than the “ought” of natural finality discovered, and not established, in the consideration of what constitutes a human being. Thus, St. Thomas’s consideration of what man is contains already in some sense what he ought to do.

In Chapter 8 we examined how Aquinas analyzes the good. Obviously, this topic directly opposes G. E. Moore’s claim that good is unanalyzable. The impossibility of this analysis, according to Moore, sentenced every ethics based upon any definition of good to a lethal fallacy. Therefore, firstly, the analogical character of good was underlined. Then, the transcendentality of the term “good” was explained and the rules of defining according to Aquinas’s semantic presuppositions were applied to goodness. From this analysis perfection as a correlate to good proved useful (once understood in relation with what is presupposed from the initial analysis of hylomorphic structure of material being, which we learned in natural science). Next the Augustinian way of analyzing the good according to mode, order, and species was presented as it was used by St. Thomas. This revealed how goodness is relativized to particular natures of what

is claimed to be good and how such an analysis implies the possibility of knowing the natures of things as well as the “natures” of some accidents. Also an error of the “metaphysicization” of nature was indicated as something precluding the possibility of an integral analysis of the goodness of changeable beings.

Further, some remarks about moral goodness were offered. Moral goodness was presented as a species of ontological goodness, which means that for St. Thomas an “ought” is a species of an “is.” This is possible only if the “is” is depicted and explained with philosophical tools which he so masterly used. Especially the notion of habit was examined as one more element from natural science that perfects the description of what there is and what there should be according to nature. What was said in Chapter 4 was applied to the analysis of moral goodness to emphasize the necessarily naturalist character of Aquinas’s ethics.

Finally, some notes about the practical character of moral science were given so as to forestall the objection that allowing ethics to be naturalistic one devoids its content. There is a danger, it is believed, that such an ethics may be reduced to natural science and lose the reason for its existence. Presupposing what was said in previous chapters, moral science and its proper order was compared with the order of natural science, logic, and mechanical arts. Especially the comparison with logic, as it is understood by Aquinas, proved useful. The possibility of reducing ethics, in the same way as logic, to natural science or metaphysics, comes only from methodological confusion. The possibility of confusion, however, cannot undermine true natures and the functions of these sciences. This chapter ends with some notes on the role of metaphysics in learning ethics and on the place of both in one sapientially oriented organism of philosophy.

* * *

Trying to give a brief answer to the question whether St. Thomas Aquinas justified the transition from “is” to “ought,” we should say: yes, he did. The logical sub-thesis of the “Is/Ought Thesis” in Aquinas’s framework is simply wrong. It is true that not from every descriptive sentence or synthetic statement which uses no term in its moral sense there follows a moral statement. Yet there are descriptive sentences that point at the final cause of a human being and thus entail moral statements. And there are specific rules in material logic discussed by St. Thomas that help to discern what

conditions of descriptive sentences should be fulfilled so as to justify such an inference. The semantic sub-thesis of the “Is/Ought Thesis” does not apply to Aquinas’s framework because of the extensive differences in semantic presuppositions. It could be granted that if aforementioned descriptive sentences be understood not in their proper signification (which means: in their too abstract sense), the possibility of inferring moral claims might be precluded. Yet if they are understood as signifying the final cause of this instantiated nature in a singular man, a moral conclusion follows. A detailed analysis of human cognitive faculties, coupled with an elaborated semantics, allowed Aquinas to avoid also the problems with the “internalist assumption.” Finally, it should be said that in St. Thomas’s approach ethics not only *might* presuppose natural science but it *necessarily* presupposes natural science. In this sense Thomistic ethics is necessarily naturalistic.

To be sure, we might have developed significantly the topic of moral psychology in this dissertation in order to show the genuineness of St. Thomas’s approach. We might have examined closer his theory of relation as it is used in his moral teaching. We might have shown in detail Aquinas’s virtue ethics and his conception of moral fault or sin in order to reveal more clearly the dependency of moral science upon natural science. We might have studied as well how to understand natural law within this framework. Each of the topics, however, deserves that it be undertaken in a separate study.

After this voyage of exploration into logic and natural science (with some metaphysical excursions) which had to prepare our study of St. Thomas’s ethics, we need most of all a separate study which could examine what import all of this has for Aquinas’s moral theology. We may rightly conjecture already now that this import is extensive. This preparation will certainly protect us, at least partly, from being anachronistically creative in the interpretation of his texts. On the other hand, it will give us some useful interpretative tools so as to explain some rather cryptic principles that appear without explanation in a theological context. Yet most importantly this preparation will give us the courage to seek harmony between what we know naturally and what we know from divine revelation. This is what the Catholic Church seems to expect from moral theologians.

BIBLIOGRAPHY

Works of Thomas Aquinas

- Thomas Aquinas. *Scriptum super Sententiis magistri Petri Lombardi*. T. 1-2. Edited by P. Mandonnet. Paris: P. Lethielleux, 1929.
- . *Scriptum super Sententiis magistri Petri Lombardi*. T. 3. Edited by M. F. Moos. Paris: P. Lethielleux, 1933.
- . *Liber de veritate catholicae Fidei contra errores infidelium seu Summa contra Gentiles*. T. 2-3. Edited by P. Marc, C. Pera, P. Caramello. Turin-Rome: Marietti, 1961.
- . *Summa theologiae. Opera omnia iussu impensaue Leonis XIII P. M. edita*. T. 4-12. Rome: Typographia Polyglotta S. C. de Propaganda Fide, 1888-1906.
- . *Quaestiones disputatae de malo. Opera omnia iussu Leonis XIII P. M. edita*. T. 23. Rome-Paris: Commissio Leonina-Vrin, 1982.
- . *Quaestiones disputatae de potentia*. Edited by P. M. Pession. In *Quaestiones disputatae*, T. 2, p. 1-276. Turin-Rome: Marietti, 1965.
- . *Quaestiones disputatae de anima*. Edited by B. C. Bazán. In *Opera omnia iussu Leonis XIII P. M. edita*. T. 24/1. Rome-Paris: Commissio Leonina-Éditions Du Cerf, 1996.
- . *Quaestiones disputatae de virtutibus in communi*. Edited by E. Odetto. In *Quaestiones disputatae*, T. 2, p. 707-828. Turin-Rome: Marietti, 1965.
- . *Quaestiones de quolibet. Opera omnia iussu Leonis XIII P. M. edita*. T. 25/1 and 25/2. Rome-Paris: Commissio Leonina-Éditions du Cerf, 1996.
- . *De unitate intellectus contra Averroistas. Opera omnia iussu Leonis XIII P. M. edita*. T. 43, p. 243-314. Rome: Editori di San Tommaso, 1976.
- . *De ente et essentia. Opera omnia iussu Leonis XIII P. M. edita*. T. 43, p. 315-381. Rome: Editori di San Tommaso, 1976.
- . *De principiis naturae ad fratrem Sylvestrum. Opera omnia iussu Leonis XIII P. M. edita*. T. 43, p. 1-47. Rome: Editori di San Tommaso, 1976.

- . *De aeternitate mundi. Opera omnia iussu Leonis XIII P. M. edita.* T. 43, p. 49-89. Rome: Editori di San Tommaso, 1976.
- . *Expositio libri Peryermeneias. Opera omnia iussu Leonis XIII P. M. edita.* T. 1*/1. Rome-Paris: Commissio Leonina-Vrin, 1989.
- . *Expositio libri Posteriorum. Opera omnia iussu Leonis XIII P. M. edita.* T. 1*/2. Rome-Paris: Commissio Leonina-Vrin, 1989.
- . *Commentaria in octo libros Physicorum Aristotelis. Opera omnia iussu impensaque Leonis XIII P. M. edita.* T. 2. Rome: Typographia Polyglotta S. C. de Propaganda Fide, 1884.
- . *In libros Aristotelis De caelo et mundo expositio. Opera omnia iussu impensaque Leonis XIII P. M. edita.* T. 3, p. 1-257. Rome: Typographia Polyglotta S. C. de Propaganda Fide, 1886.
- . *In librum primum Aristotelis De generatione et corruptione expositio. Opera omnia iussu impensaque Leonis XIII P. M. edita.* T. 3, p. 259-322. Rome: Typographia Polyglotta S. C. de Propaganda Fide, 1886.
- . *In libros Aristotelis Meteorologicorum expositio. Opera omnia iussu impensaque Leonis XIII P. M. edita.* T. 3, p. 323-421. Rome: Typographia Polyglotta S. C. de Propaganda Fide, 1886.
- . *Sententia libri De anima. Opera omnia iussu Leonis XIII P. M. edita.* T. 45/1. Rome-Paris: Commissio Leonina-Vrin, 1984.
- . *Sententia libri De sensu et sensato cuius secundus tractatus est De memoria et reminiscencia. Opera omnia iussu Leonis XIII P. M. edita.* T. 45/2. Rome-Paris: Commissio Leonina-Vrin, 1984.
- . *Sententia libri Ethicorum. Opera omnia iussu Leonis XIII P. M. edita.* T. 47. Rome: Sancta Sabina, 1969.
- . *Sententia libri Politicorum. Opera omnia iussu Leonis XIII P. M. edita.* T. 48 A. Rome: Sancta Sabina, 1971.
- . *In duodecim libros Metaphysicorum Aristotelis expositio.* Edited by M. R. Cathala, R. M. Spiazzi. Turin-Rome: Marietti, 1971.
- . *Super Boetium De Trinitate. Opera omnia iussu Leonis XIII P. M. edita.* T. 50, p. 1-230. Rome-Paris: Commissio Leonina-Éditions Du Cerf, 1992.
- . *Expositio libri Boetii De ebdomadibus. Opera omnia iussu Leonis XIII P. M. edita.* T. 50, p. 231-297. Rome-Paris: Commissio Leonina-Éditions Du Cerf, 1992.
- . *In librum Beati Dionysii De divinis nominibus expositio.* Edited by C. Pera, P. Caramello, C. Mazzantini. Turin-Rome: Marietti, 1950.
- . *Quaestio disputata de spiritualibus creaturis. Opera omnia iussu Leonis XIII P. M. edita.* T. 24/2. Edited by J. Cos. Rome-Paris: Commissio Leonina-Éditions Du Cerf, 2000.
- . *Super librum De Causis expositio.* Edited by H. D. Saffrey. Paris: Vrin, 2002.
- . *Responsio ad magistrum Ioannem de Vercellis de 43 articulis. Opera omnia iussu Leonis XIII P. M. edita.* T. 42, p. 297-335. Rome: Editori di San Tommaso, 1979.
- . *De rationibus Fidei ad cantorem Antiochenum. Opera omnia iussu Leonis XIII P. M. edita.* T. 40 B. Rome: Sancta Sabina, 1969.

Other works

- Aertsen, Jan A. "Method and Metaphysics: The *via resolutionis* in Thomas Aquinas." *American Catholic Philosophical Quarterly* 63 (1989): 405-418.
- . *Medieval Philosophy & the Transcendentals: The Case of Thomas Aquinas.* Brill, 1996.

- Anscombe, G. E. M. "Modern Moral Philosophy." In *The Collected Philosophical Papers of G. E. M. Anscombe*. Vol. III: *Ethics, Religion and Politics*, p. 26-42. Basil Blackwell: Oxford, 1981.
- Ashley, Benedict M. *Theologies of the Body: Humanist and Christian*. Braintree, Mass.: The Pope John XXIII Center, 1985.
- . "Aristotle's *De sensu et sensato* and *De memoria et reminescentia* as Thomistic Sources." Presented during The University of Notre Dame Thomistic Institute, July 14-21, 2000, <http://www2.nd.edu/Departments/Maritain/ti00/ashley.htm> (accessed November 2007).
- . "The Anthropological Foundations of the Natural Law: A Thomistic Engagement with Modern Science." In *St. Thomas Aquinas and the Natural Law Tradition: Contemporary Perspectives*, ed. by J. Goyette, M. S. Latkovic, and R. S. Myers, p. 3-16. Washington, D.C.: The Catholic University Press, 2004.
- . *The Way toward Wisdom. An Interdisciplinary and Intercultural Introduction to Metaphysics*. Notre Dame, Ind.: University of Notre Dame Press, 2006.
- Ashworth, Elisabeth Jennifer. "Medieval Theories of Analogy." *The Stanford Encyclopedia of Philosophy* (Winter 2004 Edition), edited by Edward N. Zalta, <http://plato.stanford.edu/archives/win2004/entries/analogy-medieval/>.
- . "Signification and Modes of Signifying in Thirteenth-Century Logic: A Preface to Aquinas on Analogy." *Medieval Philosophy and Theology* 1 (1991): 39-67.
- Augros, Michael. "Reconciling Science with Natural Philosophy." *The Thomist* 68 (2004): 105-141.
- Baldner, Steven. "Matter, Prime Matter, Elements." Presented at the Notre Dame University Maritain Center Thomistic Institute, July 24, 1998, www.nd.edu/Departments/Maritain/ti98/baldner.htm (accessed November 2007).
- Baldwin, Thomas. *G. E. Moore*. London-New York: Routledge, 1990.
- Beebe, Helen. *Hume on Causation*. London-New York: Routledge, 2006.
- Bocheński, Innocenty M. *A History of Formal Logic*. Translated by Ivo Thomas. Notre Dame, Ind.: University of Notre Dame Press, 1961.
- Bradley, Denis J. M. *Aquinas on the Twofold Human Good: Reason and Human Happiness in Aquinas's Moral Science*. Washington, D.C.: The Catholic University of America Press, 1997.
- Brink, David O. *Moral Realism and the Foundations of Ethics*. Cambridge University Press, 1989.
- Brock, Stephen L. *Action and Conduct: Thomas Aquinas and the Theory of Action*. Edinburgh: T&T Clark, 1997.
- . "Natural Inclination and the Intelligibility of the Good in Thomistic Natural Law." *Vera Lex* 6 (2005): 57-78.
- Brower, Jeffrey. "Medieval Theories of Relations." In *The Stanford Encyclopedia of Philosophy* (Fall 2005 Edition), edited by Edward N. Zalta, <http://plato.stanford.edu/archives/fall2005/entries/relations-medieval/>.
- Butchvarov, Panayot. "That Simple, Indefinable, Non-Natural Property Good." *Review of Metaphysics* 36 (1982): 51-75.
- Byers, Sarah. "Life as 'Self-Motion': Descartes and 'The Aristotelians' on the Soul as the Life of the Body." *The Review of Metaphysics* 59 (2006): 723-755.
- Byrne, Christopher. "Prime Matter and Actuality." *Journal of the History of Philosophy* 33 (1995): 197-224.
- Cahalan, John C. *Causal Realism: An Essay on Philosophical Method & the Foundations of Knowledge*. Lanham-New York-London: University Press of America, 1985.
- . "Natural Obligation: How Rationally Known Truth Determines Ethical Good and Evil," *The Thomist* 66 (2002): 101-132.
- Cartwright, Nancy. "Causation." In *Routledge Encyclopedia of Philosophy*, edited by E. Craig. London: Routledge, 1998, <http://www.rep.routledge.com.proxycu.wrlc.org/article/Q010> (accessed November 2006).

- Chenu, Marie-Dominique. *Toward Understanding St. Thomas*. Translated by A. M. Landry and D. Hughes. Chicago: Henry Regnery Co., 1964.
- Christianson, Joseph M. "Aquinas: The Necessity and Some Characteristics of the Habit of First Indemonstrable (Speculative) Principles." *American Catholic Philosophical Quarterly* 62 (1988): 249-296.
- Conway, Pierre and Ashley, Benedict. "The Liberal Arts in St. Thomas Aquinas." *The Thomist* 22 (1959): 460-532.
- Crowe, Michael Bertram. "Peter of Ireland: Aquinas's Teacher of the *Artes Liberales*." In *Arts libéraux et philosophie au Moyen Age*. Actes du IVe Congrès International de Philosophie Médiévale (Montréal, Canada, 27.08 – 2.09.1967), edited by Henri Irénée Marrou et al., p. 617-626. Montréal-Paris: Institut d'Etudes Médiévales-Vrin, 1969.
- Damasio, Antonio. *Descartes' Error*. Boston: Norton, 1994.
- . *The Feeling of What Happens*. New York: Basic Books, 2000.
- Darwall, Stephen, Allan Gibbard and Peter Railton. "Toward *Fin de siècle* Ethics: Some Trends." *Philosophical Review* 101 (1992): 115-116.
- Deely, John. "Evolution and Ethics." *Proceedings of the American Catholic Philosophical Association* 43 (1969): 171-184.
- . "Animal Intelligence and Concept-Formation." *The Thomist* 35 (1971): 43-93.
- . "Philosophy and Experience." *American Catholic Philosophical Quarterly* 66 (1992): 299-319.
- . "What Happened to Philosophy Between Aquinas and Descartes?" *The Thomist* 58 (1994): 543-568.
- . *Four Ages of Understanding. The First Postmodern Survey of Philosophy from Ancient Times to the Turn of the Twenty-First Century*. Toronto: University of Toronto Press, 2001.
- . *What Distinguishes Human Understanding*. South Bend, Ind.: St. Augustine's Press, 2002.
- . "The Absence of Analogy," *The Review of Metaphysics*, 55 (2002): 521-550.
- De Koninck, Charles. "The Unity and Diversity of Natural Science." In *The Philosophy of Physics* edited by V. E. Smith, p. 5-24. Jamaica, N.Y.: St. John's University Press, 1961.
- de Rijk, Lambert Marie, ed. *Dialectica*, Abaelard, Assen, 1956.
- Descartes. *Discourse on Method*. Translated by John Cottingham. In *The Philosophical Writings of Descartes*, edited by John Cottingham, Robert Stoothoff, and Dugald Murdoch, vol. II. Cambridge University Press, 1985.
- Dewan, Lawrence. "St. Thomas, Our Natural Lights, and the Moral Order." *Angelicum* 67 (1990): 285-307.
- . *St. Thomas and Form as Something Divine in Things*. The Aquinas Lecture, 2007. Milwaukee: Marquette University Press, 2007.
- Di Blasi, Fulvio. *God and the Natural Law: A Rereading of Thomas Aquinas*. Translated by D. Thunder. South Bend, Ind.: St. Augustine's Press, 2006.
- Doig, James. *Aquinas on Metaphysics. A Historico-Doctrinal Study of the Commentary on the Metaphysics*. The Hague: Martinus Nijhoff, 1972.
- . *Aquinas's Philosophical Commentary on the Ethics* ("The New Synthese Historical Library", Texts and Studies in the History of Philosophy, vol. 50). Dordrecht-Boston-London: Kluwer Academic Publishers, 2001.
- Dougherty, Jude P. "The Failure of Positivism and the Enduring Legacy of Comte." In *Recovering Nature: Essays in Natural Philosophy, Ethics, and Metaphysics in Honor of Ralph McInerney*, edited by Thomas Hibbs, John O'Callaghan, p. 25-36. Notre Dame, Ind.: University of Notre Dame Press, 1999.
- Eliade, Mircea. *The Sacred and the Profane: The Nature of Religion*. Translated by Willard R. Trask. New York: Harper Torchbooks, 1961.

- Engelmann, Edward. "Aristotelian Teleology, Presocratic Hylozoism, and 20th Century Interpretations." *American Catholic Philosophical Quarterly* 64 (1990): 297-312.
- Fabro, Cornelio. *God in Exile: A Study of the Internal Dynamic of Modern Atheism from its Roots in the Cartesian Cogito*. Westminster, Md.: Newman Press, 1968.
- Fellon, J. and J. McEvoy (eds.). *Finalité et Intentionnalité. Doctrine Thomiste et Perspectives Modernes. Actes du colloque de Louvain-la-Neuve et Louvain, 21-23. Mai 1990*. Louvain-la-Neuve: Éditions de L'Institut Supérieur de Philosophie, 1992.
- Fieser, James. "David Hume: Life and Writings." In *The Internet Encyclopedia of Philosophy*, www.iep.utm.edu/h/humelife.htm (accessed August 2007).
- . "David Hume: Moral Theory." In *The Internet Encyclopedia of Philosophy*, <http://www.iep.utm.edu/h/humemora.htm> (accessed June 2007).
- Finnis, John. *Natural Law and Natural Rights*. Oxford: Clarendon Press, 1980.
- . "Aquinas' Moral, Political, and Legal Philosophy." In *The Stanford Encyclopedia of Philosophy (Spring 2006 Edition)*, edited by Edward N. Zalta, <http://plato.stanford.edu/archives/spr2006/entries/aquinas-moral-political/>.
- . "Natural Inclinations and Natural Rights: Deriving 'Ought' from 'Is' According to Aquinas." In *Lex et Libertas: Freedom and Law According to St. Thomas Aquinas*, edited by Leo Elders and Klaus Hedwig (Studi Tomistici 30), p. 43-55. Rome, 1987.
- . *Fundamentals of Ethics*. Washington, D.C.: Georgetown University Press, 1983.
- . *Natural Law and Natural Rights*. Oxford: Oxford University Press, 1982.
- Finnis, John, and Germain Grisez. "The Basic Principles of Natural Law: A Reply to Ralph McInerney." *American Journal of Jurisprudence* 26 (1981): 21-31.
- Flage, Daniel E., and Clarence A. Bonen. "Descartes on Causation." *The Review of Metaphysics* 50 (1997): 841-872.
- Flannery, Kevin L. *Acts Amid Precepts: The Aristotelian Logical Structure of Thomas Aquinas's Moral Theory*. Washington, D.C.: The Catholic University of America Press, 2001.
- Floyd, Juliet. "On the Use and Abuse of Logic in Philosophy: Kant, Frege, and Hintikka on the Verb 'To Be.'" In *The Philosophy of Jaakko Hintikka*, (The Library of Living Philosophers, vol. 30), edited by R. E. Auxier and L. E. Hahn, p. 137-187. Chicago-La Salle: Open Court, 2006.
- Frawley, William. *Linguistic Semantics*. Hillsdale, NJ: Lawrence Erlbaum, 1992.
- Garrett, Don. "Hume, David." In *Routledge Encyclopedia of Philosophy*, edited by E. Craig. London: Routledge, 2005, <http://www.rep.routledge.com.proxy.cu.wrlc.org/article/DB040> (accessed November 2006).
- Geach, Peter T. *Mental Acts: Their Content and Their Objects*. London: Routledge and Keegan Paul, Ltd., 1957.
- . "History of the Corruptions of Logic." In *Logic Matters*, p. 44-61. Berkeley-Los Angeles: University of California Press, 1972.
- . "Nominalism." In *Logic Matters*, p. 289-301. Berkeley-Los Angeles: University of California Press, 1972.
- . *Truth, Love, and Immortality*. London: Hutchinson, 1979.
- . *Reference and Generality. An Examination of Some Medieval and Modern Theories*. Ithaca-London: Cornell University Press, 1980.
- Geiger, Louis B. "Abstraction et séparation d'après S. Thomas In de Trinitate, q.5, a.3." *Revue des sciences philosophiques et théologiques* 31 (1947): 3-40.
- George, Marie. "Aristotle and Aquinas on the Division of Natural Philosophy." Presented during The University of Notre Dame Thomistic Institute, July 14-21, 2000, <http://www2.nd.edu/Departments/Maritain/ti00/george.htm> (accessed November 2007).

- George, Robert P. "Natural Law and Human Nature." In *Natural Law Theory: Contemporary Essays*, edited by Robert P. George, p. 31-41. Oxford: Clarendon Press, 1992.
- Gilson, Etienne. *Elements of Christian Philosophy*. New York: Doubleday, 1960.
- Glutz, Melvin A. *The Manner of Demonstrating in Natural Philosophy*. River Forest, Ill., 1956.
- Graham, Daniel W. *Aristotle's Two Systems*. New York: Oxford University Press, 1999.
- Greco, John. *Putting Skeptics in Their Place: The Nature of Skeptical Arguments and Their Role in Philosophical Inquiry*. Cambridge University Press, 2000.
- Grisez, Germain. "The First Principle of Practical Reason: A Commentary on the *Summa Theologiae*, 1-2, Question 94, Article 2." *Natural Law Forum* 10 (1965): 168-201.
- Haaparanta, Leila. *Frege's Doctrine of Being*. Acta Philosophica Fennica, vol. 30, Helsinki, 1985, p. 128-144.
- . "On Frege's Concept of Being." In *The Logic of Being. Historical Studies*, edited by Hintikka Jaakko and Knuttila Simo, p. 269-289. Dordrecht: Reidel Publishing Co., 1986.
- Hauser, Marc D. *Moral Minds: How Nature Designed Our Universal Sense of Right and Wrong*. New York: Ecco/Harper Collins, 2006.
- Henry, Desmond Paul. *Medieval Logic and Metaphysics. A Modern Introduction*. London: Hutchinson University Library, 1972.
- . *That Most Subtle Question (Quaestio subtilissima): The Metaphysical Bearing of Medieval and Contemporary Linguistic Disputes*. Manchester, England: Manchester University Press, 1984.
- Hibbs, Thomas. "Aquinas, Virtue, and Recent Epistemology." *The Review of Metaphysics* 52 (1999): 573-594.
- Hintikka, Jaakko. "Kant on Existence, Predication and the Ontological Argument." In *The Logic of Being: Historical Studies* (Synthese Historical Library 28), edited by J. Hintikka and S. Knuuttila, Dordrecht: D. Reidel Publishing Co., 1986.
- Hittinger, Russell. *A Critique of the New Natural Law Theory*. Notre Dame, Ind.: University of Notre Dame Press, 1987.
- Hudson, W. D. (ed.), *The Is/Ought Thesis*. New York: Macmillan, 1969.
- Hume, David. *A Treatise of Human Nature*, edited by David Fate Norton and Mary J. Norton. Oxford University Press, 2007.
- . *Enquiry concerning the Principles of Morals*, edited by Tom L. Beauchamp. Oxford-New York: Oxford University Press, 1998.
- . *Enquiry concerning Human Understanding*. In *Enquiries concerning Human Understanding and concerning the Principles of Morals*, edited by L. A. Selby-Bigge. 3rd edition revised by P. H. Nidditch. Oxford: Clarendon Press, 1975.
- Hurka, Thomas. "Moore's Moral Philosophy." In *The Stanford Encyclopedia of Philosophy (Spring 2005 Edition)*, edited by Edward N. Zalta, <http://plato.stanford.edu/archives/spr2005/entries/moore-moral/>.
- Hutchinson, Brian. *G. E. Moore's Ethical Theory: Resistance and Reconciliation*. Cambridge University Press, 2001.
- Jackendoff, Ray. *Semantic Structures*. Cambridge, MA: MIT Press, 1990.
- Jenkins, John. "Expositions of the Text: Aquinas's Aristotelian Commentaries." *Medieval Philosophy and Theology* 5 (1996): 39-62.
- . *Knowledge and Faith in Thomas Aquinas*. Cambridge University Press, 1997.
- Jonas, Hans. *The Phenomenon of Life*. New York: Harper, 1966.
- Kane, William H. "The Subject of Metaphysics." *The Thomist* 18 (1955): 503-512.
- Kenzierski, Lottie H. "Maimonides' Interpretation of the 8th Book of Aristotle's *Physics*." *The New Scholasticism* 30 (1956): 37-48.

- Kenny, Anthony. *Aquinas on Mind*. New York: Routledge, 1994.
- Klima, Gyula. *Ars Artium. Essays in Philosophical Semantics, Mediaeval and Modern*. "Doxa Library," Institute of Philosophy. Budapest: Hungarian Academy of Sciences, 1988.
- . "On Being and Essence in St. Thomas Aquinas's Metaphysics and Philosophy of Science." In *Knowledge and the Sciences in Medieval Philosophy: Proceedings of the Eighth International Congress of Medieval Philosophy*, edited by S. Knuuttila, R. Työrinoja, and S. Ebbesen, vol. 2, series B19, p. 210-221. Helsinki: Luther-Agricola Society, 1990.
- . "Ontological Alternatives vs. Alternative Semantics in Medieval Philosophy." *European Journal for Semiotic Studies* 3 (1991): 587-618.
- . "The Changing Role of *Entia Rationis* in Medieval Philosophy: A Comparative Study with a Reconstruction." *Synthese* 96 (1993): 25-59.
- . "The Semantic Principles Underlying Saint Thomas Aquinas's Metaphysics of Being." *Medieval Philosophy and Theology* 5 (1996): 87-141.
- . "*Nulla virtus cognoscitiva circa proprium obiectum decipitur*. Critical comments on Robert Pasnau: 'The Identity of Knower and Known.'" <http://www.fordham.edu/gsas/phil/klima/APA.htm> (accessed November 2007).
- . "Review of A. Kenny: *Aquinas on Mind*, New York: Routledge, 1995." *Faith and Philosophy* 15 (1998): 113-117.
- . "Buridan's Logic and the Ontology of Modes." In *Medieval Analyses in Language and Cognition*, edited by S. Ebbesen, p. 473-495. Copenhagen: Royal Danish Academy of Sciences and Letters, 1999.
- . "Ockham's Semantics and Metaphysics of the Categories." In *The Cambridge Companion to Ockham*, edited by P. V. Spade, p. 118-142. Cambridge University Press, 1999.
- . "Existence and Reference in Medieval Logic." In *New Essays in Free Logic*, edited by A. Hieke and E. Morscher, p. 197-226. Dordrecht: Kluwer Academic Publishers, 2001.
- . "Aquinas' Theory of the Copula and the Theory of Being." *Logical Analysis and History of Philosophy* 5 (2002): 159-176.
- . "Contemporary 'Essentialism' vs. Aristotelian Essentialism." In *Mind, Metaphysics, and Value in the Thomistic and Analytic Traditions*, edited by J. Haldane, p. 175-194. Notre Dame, Ind.: University of Notre Dame Press, 2002.
- . "Putting Skeptics in Their Place vs. Stopping Them in Their Tracks: Two Anti-Skeptical Strategies." <http://www.fordham.edu/gsas/phil/klima/FILES/Inaugural.pdf> (accessed November 2007).
- . "The Demonic Temptations of Medieval Nominalism: Mental Representation and 'Demon Skepticism.'" *Proceedings of the Society for Medieval Logic and Metaphysics* 4 (2004): 37-44.
- . "The Medieval Problem of Universals." *The Stanford Encyclopedia of Philosophy (Winter 2004 Edition)*, edited by Edward N. Zalta, <http://plato.stanford.edu/archives/win2004/entries/universals-medieval/>.
- . "On Kenny on Aquinas on Being: A critical review of *Aquinas on Being* by Anthony Kenny, Oxford: Oxford University Press, 2002." *International Philosophical Quarterly* 44 (2004): 567-580.
- . "Tradition and Innovation in Medieval Theories of Mental Representation." *Proceedings of the Society for Medieval Logic and Metaphysics* 4 (2004): 4-11.
- . "Intentional Transfer in Averroes, Indifference of Nature in Avicenna, and the Representationalism of Aquinas." *Proceedings of the Society for Medieval Logic and Metaphysics* 5 (2005): 33-37, <http://www.fordham.edu/gsas/phil/klima/SMLM/PSMLM5/PSMLM5.pdf> (accessed November 2007).
- . "*Ens multipliciter dicitur*: The Semantics and Metaphysics of Being in St. Thomas Aquinas." Presented during the 4th Annual Hawaii International Conference on Arts and Humanities,

- Honolulu, HI, January 15, 2006, <http://www.fordham.edu/gsas/phil/klima/FILES/Ens-multipliciter-dicitur.doc> (accessed November 2007).
- Klubertanz, George P. *The Discursive Power Sources and Doctrine of the "Vis Cogitativa" According to St. Thomas Aquinas*. St. Louis: The Modern Schoolman, 1952.
- Knight, David M. "Suarez's Approach to Substantial Form." *Modern Schoolman* 39 (1962): 219-239.
- Kovach, Francis J. "Divine Art in Saint Thomas Aquinas." In *Arts libéraux et philosophie au Moyen Age. Actes du IVE Congrès International de Philosophie Médiévale* (Montréal, Canada, 27.08 – 2.09.1967), edited by Henri Irénée Marrou et al., p. 663-671. Montréal-Paris: Institut d'Etudes Médiévales-Vrin, 1969.
- Kovesi, Julius. *Moral Notions (with Three Papers on Plato)*. Edited by R. E. Ewin and Alan Tapper. Christchurch, New Zealand: Cybereditions, 2004.
- Krąpiec, Mieczysław A. *Psychologia racjonalna*. Lublin: Redakcja Wydawnictw Katolickiego Uniwersytetu Lubelskiego, 1996.
- Leff, Gordon. "The Trivium and the Three Philosophies." In *A History of the University in Europe*, edited by W. Rüegg, vol. I: *Universities in the Middle Ages*, edited by H. de Ridder-Syoes, p. 307-336. Cambridge University Press, 1992.
- Lichacz, Piotr. "Metafizyka i teologia u św. Tomasza z Akwinu." *Metafizyka i teologia. Debata u podstaw*, edited by Robert J. Woźniak. Kraków: Wydawnictwo Apostolstwa Modlitwy, 2008.
- Lisska, Anthony J. "Deely and Geach on Abstractionism in Thomistic Epistemology." *The Thomist* 37 (1973): 548-568.
- . *Aquinas's Theory of Natural Law: An Analytic Reconstruction*. Oxford: Clarendon Press, 1996.
- Long, Steven A. *The Teleological Grammar of the Moral Act*. Naples, FL: Sapientia Press of Ave Maria University, 2007.
- MacIntyre, Alasdair. "Hume on 'is' and 'ought'." In *The Is-Ought Question. A Collection of Papers on the Central Problem in Moral Philosophy*, edited by W. D. Hudson, p. 35-50. Macmillan, 1969.
- . *After Virtue. A study in moral theory*. London: Duckworth, 1981.
- . *Whose Justice? Which Rationality?* London: Duckworth, 1988.
- . *Three Rival Versions of Moral Enquiry: Encyclopaedia, Genealogy, and Tradition*. Gifford Lectures delivered in the University of Edinburgh in 1988. Notre Dame, Ind.: University of Notre Dame Press, 1990.
- . *First Principles, Final Ends and Contemporary Philosophical Issues*. The Aquinas Lecture, 1990. Milwaukee: Marquette University Press, 1995.
- . *Dependent Rational Animals. Why Human Beings Need the Virtues*. The Paul Carus Lecture Series 20. Chicago-La Salle, Ill.: Open Court, 1999.
- Mackie, John L. *Hume's Moral Theory*. London: Routledge and Kegan Paul Ltd, 1980.
- Madden, James D. "Aristotle, Induction, and First Principles." *International Philosophical Quarterly* 44 (2004): 35-52.
- Mahoney, Bertrand. *The Notion of Quantity in a Thomistic Evaluation of the Sciences*. River Forest, Ill, 1951.
- Maritain, Jacques. *Distinguish to Unite: or, The Degrees of Knowledge*. Translated under the supervision of G. B. Phelan. New York: Charles Scribner's Sons, 1959.
- Maurer, Armand. "The Unity of a Science: St. Thomas and the Nominalists." In *Being and Knowing: Studies in Thomas Aquinas and Later Medieval Philosophers*, p. 71-93. Toronto: Pontifical Institute of Mediaeval Studies, 1990.
- McCabe, Herbert. "The Structure of the Judgment." *The Thomist* 19 (1956): 232-238.
- McInerny, Ralph. *Logic of Analogy: An Interpretation of St. Thomas*. The Hague: Martinus Nijhoff, 1961.
- . *A History of Western Philosophy*. Vol. 2. Notre Dame, Ind.: University of Notre Dame Press, 1963, <http://www2.nd.edu/Departments/Maritain/etext/hwp223.htm> (accessed November 2007)

- . “Beyond the Liberal Arts.” In *The Seven Liberal Arts in the Middle Ages*, edited by David L. Wagner, p. 248-72. Indiana University Press, 1983.
- . “Being and Predication.” In *Being and Predication. Thomistic Interpretations*, p. 173-228. Washington, D.C., The Catholic University of America Press, 1986.
- . “A Note on Thomistic Existentialism.” In *Being and Predication. Thomistic Interpretations*, p. 165-172. Washington, D.C., The Catholic University of America Press, 1986.
- . *Aquinas on Human Action: A Theory of Practice*. Washington, D.C.: The Catholic University of America Press, 1992.
- . *The Question of Christian Ethics*. Washington, D.C.: The Catholic University of America Press, 1993.
- . *Aquinas and Analogy*. Washington, D.C., The Catholic University of America Press, 1996.
- . *Praeambula Fidei: Thomism and the God of the Philosophers*. Washington, D.C.: The Catholic University of America Press, 2006.
- McLaughlin, Thomas J. “Aristotelian Mover-Causality and the Principle of Inertia.” *International Philosophical Quarterly* 38 (1998): 137-151.
- McMahon, William. “The Medieval Sufficentiae: Attempts at a Definitive Division of the Categories.” *Proceedings of the Society for Medieval Logic and Metaphysics* 2 (2002): 12-25.
- Miller, Alexander. *An Introduction to Contemporary Metaethics*. Cambridge: Polity Press, 2003.
- Moore, G. E. *Principia Ethica*. Revised edition by T. Baldwin. Cambridge: Cambridge University Press, 1993.
- . *The Elements of Ethics*. Edited by Tom Regan. Philadelphia: Temple University Press, 1991.
- . “Conception of Intrinsic Value.” In *Philosophical Studies*, Totowa, New Jersey: Littlefield, Adams & Co., 1956.
- Moreno, Antonio. “The Nature of Metaphysics.” *The Thomist* 30 (1966): 109-135.
- Morris, William Edward. “David Hume.” In *The Stanford Encyclopedia of Philosophy* (Fall 2007 Edition), edited by Edward N. Zalta, forthcoming:
<http://plato.stanford.edu/archives/fall2007/entries/hume/>.
- Mounce, H. O. *Hume's Naturalism*. London-New York: Routledge, 1999.
- Mullahy, B. L. “Subalternation and Mathematical Physics.” *Laval Théologique et Philosophique*, 2 (1946): 89-107.
- Nowacki, Mark. “Whatever Comes to Be Has a Cause of Its Coming to Be: A Thomist Defense of the Principle of Sufficient Reason.” *The Thomist* 62 (1998): 291-302.
- O’Callaghan, John P. “Concepts, Beings and Things in Contemporary Philosophy and Thomas Aquinas.” *The Review of Metaphysics*. 53 (1999): 69-98.
- . *Thomist Realism and the Linguistic Turn. Toward a More Perfect Form of Existence*. Notre Dame, Ind., University of Notre Dame Press, 2003.
- Oesterle, John A. “The Significance of the Universal *ut nunc*.” In *The Dignity of Science: Studies in the Philosophy of Science*, edited by James A. Weisheipl, p. 27-38. Washington, D.C.: The Thomist Press, 1961.
- Perlman, Mark. “The Modern Philosophical Resurrection of Teleology.” *The Monist* 87 (2004): 3-51.
- Pickstock, Catherine. “Duns Scotus: His Historical and Contemporary Significance.” *Modern Theology* 21 (2005): 543-574.
- Pruss, Alexander R. *The Principle of Sufficient Reason: A Reassessment*. New York: Cambridge University Press, 2006.
- Regan, Tom. *Bloomsbury's Prophet*. Philadelphia: Temple University Press, 1986.
- Régis, Louis-Marie. *L'Opinion selon Aristote*. Paris-Ottawa: Vrin-Institute d’Etudes Médiévales, 1935.

- . Review of *Being and Some Philosophers*, by Etienne Gilson, *The Modern Schoolman* 28 (1951): 111-125.
- . *Epistemology*. Translated by I. C. Byrne. New York: Macmillan Company, 1959.
- Rhonheimer, Martin. *Natural Law and Practical Reason: A Thomist View of Moral Autonomy*. Translated by G. Malsbary. New York: Fordham University Press, 2000.
- . “The Cognitive Structure of the Natural Law and the Truth of Subjectivity.” *The Thomist* 67 (2003): 1-44.
- Rist, John. *Real Ethics: Reconsidering the Foundations of Morality*. Cambridge: Cambridge University Press, 2002.
- Robert, J. D. “La métaphysique, science distincte de toute autre discipline philosophique selon Saint Thomas d’Aquin.” *Divus Thomas* 50 (1947): 206-223.
- Robles, Laureano. “El estudio de las *artes liberales* en la primitiva legislación dominicana. Antecedentes históricos.” In *Arts libéraux et philosophie au Moyen Age*. Actes du IVe Congrès International de Philosophie Médiévale (Montréal, Canada, 27.08 – 2.09.1967), edited by Henri Irénée Marrou et al., p. 599-616. Montréal-Paris: Institut d’Etudes Médiévales-Vrin, 1969.
- Roskies, Adina. “Are Ethical Judgments Intrinsically Motivational? Lessons from ‘Acquired Sociopathy.’” *Philosophical Psychology* 16 (2003): 51-66.
- Russell, Paul. “Hume on Religion.” In *The Stanford Encyclopedia of Philosophy (Winter 2005 Edition)*, edited by Edward N. Zalta, <http://plato.stanford.edu/archives/win2005/entries/hume-religion/>.
- Scheu, M. Marina. *The Categories of Being in Aristotle and St. Thomas*. Washington, D.C.: The Catholic University of America Press, 1944.
- Schmidt, Robert W. “The Translation of Terms like *Ens Rationis*.” *The Modern Schoolman* 41 (1963-64): 73-75.
- . *The Domain of Logic According to Saint Thomas Aquinas*. The Hague: Martinus Nijhoff, 1966.
- Schultz, Janice L. “Is-Ought: Prescribing and a Present Controversy.” *The Thomist* 49 (1985): 1-23.
- . “Thomistic Metaethics and a Present Controversy.” *The Thomist* 52 (1988): 40-62.
- Simmons, Edward. “In Defense of Total and Formal Abstraction.” *The New Scholasticism* 29 (1955): 427-440.
- . “The Nature and Limits of Logic.” *The Thomist* 24 (1961): 47-71.
- . “Demonstration and Self-Evidence.” In *The Dignity of Science: Studies in the Philosophy of Science*, edited by James A. Weisheipl, p. 3-26. Washington, D.C.: The Thomist Press, 1961.
- Simon, Yves. *The Tradition of Natural Law*. New York: Fordham University Press, 1965.
- Simonin, H. D. “La notion d’*intentio* dans l’œuvre de Saint Thomas d’Aquin,” *Revue des Sciences philosophiques et théologiques* 19 (1930): 445-463.
- Simpson, Peter. “St. Thomas on the Naturalistic Fallacy.” *The Thomist*, 51 (1987): 51-69.
- Slowik, Edward. “Descartes’s Physics.” In *The Stanford Encyclopedia of Philosophy (Fall 2005 Edition)*, edited by Edward N. Zalta, <http://plato.stanford.edu/archives/fall2005/entries/descartes-physics/>.
- Smith, Vincent Edward. *The General Science of Nature*. Milwaukee: Bruce Publishing Company, 1958.
- Sokolowski, Robert. “Matter, Elements and Substance in Aristotle.” *The Journal of the History of Philosophy* 8 (1970): 263-288.
- Spade, Paul Vincent. “William of Ockham.” In *The Stanford Encyclopedia of Philosophy (Fall 2006 Edition)*, edited by Edward N. Zalta, forthcoming: <http://plato.stanford.edu/archives/fall2006/entries/ockham/>.
- Stump, Eleonore. “Topics: their Development and Absorption into Consequences.” In *The Cambridge History of Later Medieval Philosophy*, edited by N. Kretzmann, A. Kenny, J. Pinborg, and E. Stump, p. 315-334. Cambridge University Press, 1982.
- . *Aquinas*. London-New York: Routledge, 2003.

- Sweeney, Eileen C. "Three Notions of *resolutio* and the Structure of Reasoning in Aquinas." *The Thomist* (1994): 197-243.
- Sweetman, Robert. "Univocity, Analogy, and the Mystery of Being according to John Duns Scotus." In *Radical Orthodoxy and the Reformed Tradition: Creation, Covenant, and Participation*, edited by James K. A. Smith and James H. Olthuis, p. 73-87. Grand Rapids: Baker, 2005.
- Tachau, Katherine H. *Vision and Certitude in the Age of Ockham: Optics, Epistemology, and the Foundations of Semantics 1250-1345*. Leiden: Brill, 1988.
- Tanzella-Nitti, Giuseppe. "The Aristotelian-Thomistic Concept of Nature and the Contemporary Debate on the Meaning of Natural Laws." *Acta Philosophica* 6 (1997): 237-264.
- Paul Tillich, *Systematic Theology*. Vol. 1. Chicago: University of Chicago Press, 1951.
- Toccafondi, Eugenio T. "Il pensiero di San Tomaso sulle arti liberali." In *Arts libéraux et philosophie au Moyen Age*. Actes du IVe Congrès International de Philosophie Médiévale (Montréal, Canada, 27.08 – 2.09.1967), edited by Henri Irénée Marrou et al., p. 639-651. Montréal-Paris: Institut d'Etudes Médiévales-Vrin, 1969.
- Torrell, Jean-Pierre. *Initiation à Saint Thomas d'Aquin: sa personne et son œuvre*. Fribourg: Editions Universitaires, 1993.
- Trentman, John. "Leśniewski's Ontology and some Medieval Logicians." *Notre Dame Journal of Formal Logic* 7 (1966): 361-364.
- Veatch, Henry B. *Intentional Logic*. New Haven: Yale University Press, 1952.
- . *Two Logics. The Conflict between Classical and Neo-Analytic Philosophy*. Evanston: Northwestern University Press, 1969 (a discussion article on this book: Otto Bird. "Veatch on the Humanities." *The New Scholasticism* 44 (1970): 125-132).
- Verbeke, Gérard. "Arts libéraux et morale d'après Saint Thomas." In *Arts libéraux et philosophie au Moyen Age*. Actes du IVe Congrès International de Philosophie Médiévale (Montréal, Canada, 27.08 – 2.09.1967), edited by Henri Irénée Marrou et al., p. 653-661. Montréal-Paris: Institut d'Etudes Médiévales-Vrin, 1969.
- Vogler, Candace. *Reasonably Vicious*. Harvard University Press, 2002.
- von Wright, Georg Henrik. *The Varieties of Goodness*. New York: Routledge & Kegan Paul, 1963.
- Waddington, C. H. *The Ethical Animal*. New York: Atheneum, 1961.
- Wallace, William A. *The Role of Demonstration in Moral Theology. A Study of Methodology in St. Thomas Aquinas*, Washington, D.C.: The Thomist Press, 1962.
- . *Causality and Scientific Explanation*. Vol. 2: *Classical and Contemporary Science*. Ann Arbor: The University of Michigan Press, 1974.
- . "Albertus Magnus and Suppositional Necessity in the Natural Sciences." In *Albertus Magnus and the Sciences*, edited by James A. Weisheipl, p. 103-128. Toronto: Pontifical Institute of Mediaeval Studies, 1980.
- . *From a Realist Point of View: Essays on the Philosophy of Science*, 2nd ed. Lanham-New York-London: University Press of America, 1983.
- . *The Modeling of Nature: Philosophy of Science and Philosophy of Nature in Synthesis*. Washington, D.C.: The Catholic University of America, 1996.
- . "Quantification in Sixteenth-Century Natural Philosophy." In: *Recovering Nature: Essays in Natural Philosophy, Ethics, and Metaphysics in Honor of Ralph McInerny*, edited by Thomas Hibbs and John O'Callaghan, p. 11-24. Notre Dame, Ind.: University of Notre Dame Press, 1999.
- Weidemann, Hermann. "Logic of Being in Thomas Aquinas." In *Thomas Aquinas: Contemporary Philosophical Perspectives*, edited by Brian Davies, p. 77-95. New York: Oxford University Press, 2002.
- Weinberg, Julius Rudolph. *Abstraction, Relation, and Induction. Three Essays in the History of Thought*. Madison and Milwaukee: University of Wisconsin Press, 1965.

- . *Ockham, Descartes, and Hume: Self-Knowledge, Substance, and Causality*. Madison: University of Wisconsin Press, 1977.
- Weisheipl, James A. *Friar Thomas d'Aquino. His Life, Thought, and Works*. Oxford: Basil Blackwell, 1975.
- . *Nature and Motion in the Middle Ages*. Edited by William E. Carroll. Washington, D.C.: The Catholic University of America Press, 1985.
- White, Graham. "Medieval Theories of Causation." In *The Stanford Encyclopedia of Philosophy (Fall 2005 Edition)*, edited by Edward N. Zalta, <http://plato.stanford.edu/archives/fall2005/entries/causation-medieval/>.
- White, Leo. "Why the Cogitative Power?" *Proceedings of the Catholic Philosophical Association* 72 (1998): 213-227.
- Williams, John Fards. *What Is Existence?* New York: Oxford University Press, 1981.
- Wippel, John F. *Metaphysical Themes in Thomas Aquinas*. Washington, D.C.: The Catholic University of America Press, 1984.
- . "Thomas Aquinas's Derivation of the Aristotelian Categories (Predicaments)." *Journal of the History of Philosophy* 25 (1987): 13-34.
- . *The Metaphysical Thought of Thomas Aquinas: From Finite Being to Uncreated Being*. Washington, D.C.: The Catholic University of America Press, 2000.

ABBREVIATIONS

EPM – David Hume, *Enquiry concerning the Principles of Morals*

T – David Hume, *A Treatise of Human Nature*

EHU – David Hume, *Enquiry concerning Human Understanding*

PE – G. E. Moore, *Principia Ethica*

S. Thomae Aquinatis

Super Sent. – *Scriptum super Sententiis magistri Petri Lombardi.*

CG – *Liber de veritate catholicae Fidei contra errores infidelium seu Summa contra Gentiles.*

STh – *Summa theologiae.*

De malo – *Quaestiones disputatae de malo.*

De pot. – *Quaestiones disputatae de potentia.*

De anima – *Quaestiones disputatae de anima.*

De virtutibus – *Quaestiones disputatae de virtutibus in communi.*

Quodl. – *Quaestiones de quolibet.*

De unitate intellectus – *De unitate intellectus contra Averroistas.*

De ente – *De ente et essentia.*

De principiis naturae – *De principiis naturae ad fratrem Sylvestrum.*

De aeternitate – *De aeternitate mundi.*

In Peryerm. – *Expositio libri Peryermeneias.*

In Poster. – *Expositio libri Posteriorum.*

In Phys. – *Commentaria in octo libros Physicorum Aristotelis.*

In De caelo – *In libros Aristotelis De caelo et mundo expositio.*

In De generatione – *In librum primum Aristotelis De generatione et corruptione expositio.*

In Meteor. – *In libros Aristotelis Meteorologicorum expositio.*

In De An. – *Sententia libri De anima.*

In De sensu – *Sententia libri De sensu et sensato cuius secundus tractatus est De memoria et reminiscencia.*

In Eth. – *Sententia libri Ethicorum.*

In Polit. – *Sententia libri Politicorum.*

In Meta. – *In duodecim libros Metaphysicorum Aristotelis expositio.*

In Boet. De Trin. – *Super Boetium De Trinitate.*

In De ebdom. – *Expositio libri Boetii De ebdomadibus.*

In De div. nom. – *In librum Beati Dionysii De divinis nominibus expositio.*

De spir. creat. – *Quaestio disputata de spiritualibus creaturis.*

Super De causis – *Super librum De Causis expositio.*

De 43 articulis – *Responsio ad magistrum Ioannem de Vercellis de 43 articulis.*

De rationibus Fidei – *De rationibus Fidei ad cantorem Antiochenum.*