

Principles of the Truth of Logic

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CHAPTER 1 OUR PURPOSE

A. The priority of reason

The endeavor proper to logic consists in bringing some aid to human reason for the various operations which it must perform in order to form a true representation of the objects which it seeks to know. In order to know, and to know with truth, human reason, because of its nature and the mode this nature has to follow, must perform a multiplicity of very determinate operations: dividing, defining, stating, and arguing in many ways. These are the various operations, imposed on reason by its own nature, which are the proximate causes of a representation being formed in reason of the things which it knows, which representation constitutes in some way the proper work resulting from these operations.

In sum, just as with the manual operations directed by the arts, so in the case of rational operations, it is necessary to distinguish between the operations themselves and certain works formed in the course of their exercise.

In exterior acts, we must look both to the operation and its work (product?). For example, the act of construction and the building; in the same way in the operations of reason we must consider the act itself of reason, which is to reason and to understand, and some work which is found to be constituted by some act of this sort.¹

These are the works, these are the necessary tools of reasoned out knowledge. Logic has as its object the assistance and direction of their formation. Notice, assist and direct their formation, not form absolutely.

We must notice, in sum, that reason itself comes before logic. It is reason itself which, when it knows, naturally forms such and such a work: that is, definition, statement, or argument. Thus, logic does not choose which work reason should form in order to know such an object; it does not choose which operation reason will use to form this work. All of that depends essentially on the nature itself of reason, over which logic does not have any power and to which it must conform all of its rules.

Logic ought only to intervene because, although the works to form are determined by the nature of reason and although all men thus have the power to form spontaneously a definition, a statement, or an argument, nature does not assure that in each and every case it will form these works with all of the perfection required for a true and distinct knowledge. There is still a lot of room for mistakes, there is a door open for errors.

That is why man has a great need for an art which cooperates with his nature, of a logic. Through it he gains a detailed knowledge of the numerous particular circumstances and conditions which require an adequate formation of each of these rational works, works which it must form when it knows or learns.

¹ST I-II, 90, 1, ad 2

To speak more precisely, we can express this in terms of order, more than in terms of works. In effect, the property of reason is to know order. Also, we can glimpse one of the principles which measures logic, if we identify which particular order constitutes its object. This is an order that is only considered, not formed. Now, in the beginning of his commentary on the Nicomachean Ethics, St. Thomas shows that there are four different relations which reason has to order, that there are four different relations of reason to the order which it considers and each constitutes the object of a different habit.

Order is compared to reason in four ways. There is thus an order which reason does not make, but only considers, and this is the order of natural things. There is again an order which reason introduces into in proper act of its considering, as when for example it orders its concepts among themselves, and the signs of these concepts, which are vocal sounds having the power of signifying. There is again a third order, which reason forms in the operations of the will when it considers them. And finally there is a fourth, that reason introduces, by considering, into exterior things of which it is the cause, just as the builder and the house. And as the consideration of reason attains the perfection of a habit, one will have diverse sciences appropriated to diverse orders.²

Now, which of these orders characterizes the consideration of logic? Surely not the order which precedes reason itself and which is already found in exterior things before it knows them: that is relevant to natural philosophy. Again, it is not the order which reason forms outside of itself, since this is in exterior things or in the operations of the will: these are the objects of the mechanical arts and moral philosophy respectively. The order specially considered by logic is the order which reason forms in itself, among the concepts by which it knows.

The order which reason introduces in its proper act as considered, pertains to rational philosophy, of which it is relevant to consider the order of the parts of discourse among themselves, and the order of the principles among themselves and to the conclusions.³

But it is necessary to remember that logic does not form this order, strictly speaking; it assists in its formation. The principles which require this order are not invented by logic. Logic discovers them in considering this order which has already been placed, spontaneously and naturally, by reason in its prior cognitive operations. Logic assists reason in putting the rest in a better order, simply by making reason more conscious of what this order must be.

Briefly, the principles and rules of logic are a function of the nature of reason, not of the will or imagination of the logician. This man might discover them later or not at all, he might discover them more or less perfectly, he might know the truth or deceive himself on the subject, but he does not possess any creative liberty in their elaboration. This is what we mean by the priority of reason over logic. The logician cooperates with the nature of reason, he does not act

² Nic. Eth. I, less. 1, n. 1

³ Ibid., n. 2

independently of it.

B. The priority of knowledge, and of true knowledge.

Nevertheless, this priority of reason does not command the logician. Or, to speak more properly, this principle and this foundation which the logician finds in reason leads him to something else. Subordinate to reason, subordinate to the conceptual order through which reason naturally knows, logic also sees itself subordinate to the end pursued by reason in each of its acts

It is important to remember that, among all of the causes, all of the principles of being and becoming, the end comes first. Thus, when he wishes to explain natural things, the naturalist, if he wishes to proceed in an orderly way, must compare the different causes to which he has recourse, in order to judge their place. For example, should he make everything depend upon the agent, or upon the end? The end, clearly, as Aristotle declares in his parts of animals:

We understand more causes in natural becoming: for example, that which explains from “for the sake of something” and that which explains from that which produces motion. It is necessary to determine which by nature is first, and which second. The first, it seems, is that for the sake of which.⁴

This is the end which is the cause of causes, the reason, the explanation itself of the other causes, and thus it precedes them in nature.

The “for the sake of which” is the reason, and reason is the principle in the productions of nature as well as the productions of art.⁵

Here Aristotle has good reason to compare nature with art, because this priority of the end over every other cause or principle, as the reason and explanation of all, is more manifest in examples taken from art or, more generally, from every practical activity. Thus, the physician explains all that he does through health and the nature of health: health is thus in medicine the cause of causes. Again, the architect will give as the explanation of every act which he performs qua architect the construction of the house.

Thus, after having determined by reasoning and observation, the physician what is health, the architect what a house is, they explain through these the reason and cause of the things they do and why they must act in this way.⁶

Thus, if logic is in the service of reason and depends on reason and its works as

⁴ Parts of animals, 639b 11-15

⁵Ibid., 639b 15

⁶Ibid., b16

something that naturally comes before it, then it will depend upon the proper end of rational activity. The most proper end of reason will be the end of logic and every operation of the logician will be measured by it. To free himself from what is proper to reason will inevitably be, for the logician, to cease to exercise a truly logical activity. After that, it little matters whether or not he persists in arbitrarily preserving the word *logic* to describe what he does.

Now the end of reason, which it properly pursues and which constitutes its perfection, is true and certain knowledge, conforming to the reality known. Thus logic, understood properly, cannot in any way cut itself off from its end, the knowledge of things. "Logic is ordered to the knowledge of things."⁷

Therefore this is another principle to which the logician must conform his consideration: the knowledge of reality. The logician certainly does not consider and describe reality as such. No indeed! The logician considers that which reason forms in itself when it knows. But the whole motive for the logician making his consideration is to correctly assist reason in its knowledge of reality and to furnish instruments useful for this goal.

C. The priority of sense.

Since it depends for its perfection on reason and through that upon the act of knowing, logic must also recognize other principles, to which it must conform all of its operations. It sees to it that reason is effectively led to the knowledge of real things. But knowledge of the real is not immediately proportioned to reason. That is, human reason knows only through the intervention of the senses and the information which it procures from them. Thus, an adequately exhaustive examination of the principles of the truth of logic must without fail consider the senses since they are the root and foundation of reason.

D. Priority of things.

Finally, because it knows things through the intermediary of sense, reason cannot attain a complete independence from things themselves. In the same way, logic cannot be adequately elaborated if it is completely removed from real things. Most certainly, we must say that it is not the place of the logic to contemplate real things as such. This is not its object, its place is in reason, and its object is that which is in reason as a result of the knowing operations which reason performs. But because of its effort to know, reason forms representations, and these are in some way the things themselves. Of course things then find themselves assuming a mode of existence proper to the essence of reason and not strictly real; but this cannot be done, and the logician cannot aid in doing it, if reason is entirely removed from the things themselves, and if real things are not the principle of the information on their own subject.

Thus reason can only form an adequate representation of real things in dependence upon their proper nature. Thus the logician can only claim to furnish to reason the instruments it needs for this end if there is found in it a very strict dependence on real things and their natures.

Therefore we have here the principles of the truth of logic, to which we believe that we

⁷St. Thomas, De Int., less. 2, n. 13

ought to devote our study. It would be good now to examine in turn how the logician must, under pain of abusing his office, submit himself to the requirements, first of the nature of things themselves, second of the nature of sense and of the nature of reason, and third to the nature of the knowledge which reason is seen to obtain from things.

But first, it is fitting to ask briefly from whom and from which discipline the reflections which we propose to make are borrowed. Is it the logician himself, is it logic which can and must establish the principles of its own truth?

CHAPTER II LOGIC AND WISDOM

The moral virtues and the intellectual virtues, the former being the perfection of the will, the latter that of the understanding, present are very dissimilar respecting their connection and internal cohesion. The moral perfections are connected, there is a complete interdependence between these virtues. For example, one cannot be just without also being temperate. Of course, without possessing the virtue of temperance, one can feel a very strong natural inclination to render to each man his due. Usually he does not encounter much difficulty deporting himself as a just man. But if one is not at the same time temperate, if he feels pained to some degree by the effort to contain himself in the face of pleasures of food, drink, and sex, to that degree he will always remain exposed to difficulties in living justly, when justice does not permit him to satisfy those desires. He will be tempted to commit adultery, or to wish for whatever enables him to appease his excessive desire for a sensible good. Thus, he cannot have justice without temperance, since he cannot always easily and with pleasure render to each his due, because when he does so he is pained by containing his excessive desire for some good or other. The same is true of all the moral virtues: none can exist in the will separately from the others. For the will not to be perfectly rectified in one good suffices to compromise its whole perfection: one disorder is the occasion for obstacles in the exercise of all of the other virtues.

But there is not a similar degree of interdependence among the intellectual virtues. The possession of a science by reason does not require that reason possess all of the others also. The perfection of one art does not depend upon the presence in reason of all of the arts simultaneously. For example, a man might be a geometer or a logician without being a metaphysician, or an architect without being a poet or musician.

The intellectual virtues, then, concern diverse matters, which do not have an order to each other, as is clearly seen in the diverse arts and sciences. This is because one cannot find among them the connection which one encounters among the moral virtues, which, in their passions and operations, manifestly present an order among themselves.⁸

It is not necessary to conclude, however, that the independence of the intellectual virtues is absolute. The speculative understanding cannot really attain its good in a particular science if it confines itself to that science, to the exclusion of all others. Of course, a man can be a logician

⁸ST I-II, 65, 1, ad 3

without being an astronomer or metaphysician, but he would not acquire scientific knowledge of logic without recourse to the other disciplines, such as poetry, rhetoric, natural science, ethics, and grammar (which in itself constitutes a prerequisite to logic). The reason for this relates to the natural mode of human knowing: the human understanding cannot be elevated to knowledge of abstract objects without looking at both the similar and the opposite, examples and illustrations which proportion these objects to the need for the sensible and concrete thing on which the understanding depends.

One way the teacher leads the student who already realizes his ignorance is to propose certain means or tools by which his understanding can be helped to acquire knowledge. For example, the teacher presents to his student less universal propositions, which he can judge from what he already knows; then again, he might present sensible examples, or points of comparison, or opposites, or other means of this kind, on account of which the understanding can bring itself, led by the hand [manuductio], to knowledge of the truth he does not know.⁹

Also the apprentice logician should have recourse to the other sciences, natural science for example, and borrow from it matter for such tools that support his understanding, at least if this apprentice wants to acquire scientific knowledge of logic, and not just an acquaintance.

The dependence of the intellectual virtues upon each other goes even further. A man will not satisfy all of his needs even when he looks to what the natural mode of an understanding, rooted in the senses, demands. Through an education which, in bending itself to the needs of concretion, multiplies examples, likenesses, and oppositions, one can bring it about in that man that he receives the science he is concerned with relatively well. Still, his intelligence would not be satisfied with regard to this science. At the same time that the habit of a particular science is acquired and developed, the understanding retains the impression that it has not completely resolved the principle problems relevant to this science, that it has not reached a first foundation.

This is because each particular science sees a particular object and receives as known from the start certain principles about this subject. Thus every scientific operation consists in resolving the pertinent knowledge of the given object to these principles. And so no particular science touches on what is truly first and at the root. For example, each particular science is powerless to defend its principles, if they are put in doubt. It is limited to demonstrating with the rigor belonging to it that its conclusions effectively spring from those principles.

Each of the particular sciences, then, needs to be rooted in a prior science, more common, and founded upon principles that are closer to the root. It is only there that one can hope to find a solution to the difficulties concerning its principles. Thus, within the particular sciences, the understanding is always in suspense regarding the principles. Within them, it does not ultimately reach the most common science, to business it is to solve the difficulties and problems that can arise. This common science uses the first, root principles which themselves do not need to be resolved to prior principles, but are themselves naturally known by reason.

⁹ST 117, 1

Although before reaching this science reason can acquire and develop in itself the different habits corresponding to the different sciences, it is not completely satisfied with its subject until it arrives at the last and universal wisdom. Thus, one can surely know in a scientific fashion natural things and natural phenomena without having yet resolved every difficulty and dissipated every obscurity concerning the principles of this science of nature, of physics. Still, the reason of the naturalist cannot live involved with such difficulties and obscurities, it cannot help wishing to resolve and dissipate them in a metaphysics which assumes this role of wisdom, of which we are going to speak.

Also, we can improve upon the assertion of Aristotle at the beginning of the *Metaphysics*: "All men by nature desire to know" and declare "the human understanding naturally desires wisdom."

Logic does not escape this condition which is tied to every science, and the reason of the logician is also subject to this desire for wisdom.

In order to draw from them the tools of manifestation and of concretion, the logician has a great need to turn his attention to the other particular sciences, because of the high degree of abstraction in the considerations which properly concern him. Apart from this reservation, he can by himself acquire the whole of the knowledge which constitutes the habit of logic, without any absolute dependence on any particular science. For example, it belongs to the logician and to no other to show reason how to define, enunciate, and argue and to point out which conditions must be satisfied in order to correctly form the works which follow from the operations. All of these proceed properly from the light of logic, and strictly belong to the competence of the logician.

As in every science, however, the logician is going to know or make known and make certain his conclusions about the objects of his competence only by tying them and resolving them back into principles known at the beginning of his science. Yet he bases them on the roots proper to his science, on principles above which the reflection of the logician is not elevated. Not that the natural curiosity of the understanding is stifled. Problems regarding these principles can arise, difficulties can come to notice which merit attention. But it will be the duty of a more common science to examine and resolve them. Thus logic, as well as the other sciences, is an occasion for questions which can only be answered in the light of a higher wisdom.

Such are the questions which we rightly propose to grapple with in this volume. For it does not pertain to logic as such to reflect on the principles of its own truth, but rather to the wise man, the metaphysician. His proper domain is the study, the manifestation, and the defense of principles which are entirely first. He finally resolves all of the difficulties tied to the proper principles of each particular science.

Our intention is thus not strictly logical, but metaphysical. Of course, this does not mean that the questions which will be debated here are without interest for the logician. On the contrary, although they receive and assume certain lights from wisdom, they can only confirm and strengthen his principles and his study. He will see better the worth of logic and what it is precisely. He will be better able to avoid the temptation, caused by the abstract character of what he studies, to think he is confronted with a collection which is wholly or partially arbitrary. He will see more clearly why he is measured and to what he must conform himself in his studies. He

will see more adequately in what way that there can properly be more than one logic, if we allow the modern mode of expression, that which distinguishes traditional and modern logic, or the logic of the universal and the logic of classes.

It is clear enough, I believe, that a reflection on the foundations of the truth of logic belongs to the domain of a discipline prior to logic itself. And, in the light of the preceding considerations, we have already looked a little bit into this type of wisdom, into first philosophy to which we must connect any such study. It would not be superfluous, however, if we further manifested this notion of wisdom by briefly recalling the presentation which Aristotle makes at the beginning of the metaphysics.

There is something very remarkable in this presentation. Aristotle has recourse to an extremely simple procedure: he makes known the nature of wisdom by setting out the very diverse ways in which men who describe the wise man express themselves. This is because, as he states elsewhere, when all men speak in the same way, they must in some manner be so inclined by nature. Also, such ways of speaking furnish a starting point that is at the same time much more simple and much more certain than very particular ways of speaking, which reflect certain peculiar opinions and consequently can only pretend to be the fruit of natural inclinations.

Modes of expression which are private seem to belong to the private thoughts of each man. But what is commonly observed by all men very much seems to come from a natural inclination.¹⁰

As the proemium of the Metaphysics shows very clearly, Aristotle willingly invokes the testimony of men, but in this sense, that he willingly accepts their common opinions. In that he is entirely opposed to Descartes, for example, who in no way wishes to listen to or understand common opinions:

It is necessary for each man, as soon as he attains the age of knowledge, to resolve to completely abandon all of the fantasies and imperfect ideas which have already been marked out, and begin again to form in himself ones completely new.¹¹

Let us note, however, that even if Aristotle uses common opinions in this way, he still clearly does not consider them sufficient to engender science. That is because, as long as one dwells on these opinions, one only has probable knowledge. Still, even if they do not procure the certitude of scientific knowledge, these common opinions are nevertheless very useful because they direct the mind in its course toward a more certain knowledge of the truth.

We can compare this to the understanding of natural principles in theology: it is evident that we cannot sufficiently manifest the supernatural by appealing to the natural, because there is not the required sameness between the principles and the conclusion. But even if the natural

¹⁰De Caelo, I, lect. 2, n. 13

¹¹Descartes, Works and Letters, edited by Andre Bridoux (in French) 1953

principles do not suffice for engendering science about supernatural truths, they can still direct the understanding in its investigation of these truths:

These principles are not sufficient for knowledge, but it still holds that they direct in the pursuit of this knowledge.¹²

It is the same thing with the procedure of Aristotle himself which is comprised of examining common opinions: These opinions do not suffice to engender science, but they direct [the understanding]. Thus, in the *Metaphysics*, it is only what Aristotle will say after his discussion of common opinions (when he will manifest that wisdom treats first and universal causes) that will be sufficient; but all the same he will have been directed by the common opinions.

We can connect the inclination coming from nature, encountered in the *De Caelo*, to this notion of direction. It is not yet a question of proof or demonstration, but of direction; but this is a direction which comes from nature. Of course, one thing is accepted by one man, another by another man, but in essence it is nature that inclines men to speak and think in this way. That is why we can rely on it above: common opinions participate in the certainty and determination of nature. By these common opinions nature furnishes to man, not science certainly, but all the same a help, and a direction in which to search for the truth.

But now let us pass on to the consideration of wisdom as such.

1. Wisdom is the Science of the Truth.

We have already seen that logic, just as every other particular science, has a private domain, private conclusions, and thus truths which are private to it. These truths are always particular truths. In the case of wisdom, however, we have in a way the opposite of that: we say about wisdom that it is the science of truth, that is, it considers universal truth, not particular truth; truths which are the origin of all other truths.

The Philosopher says that first philosophy is the science of truth, not any truth, but of that truth which is the origin of all truth.¹³

All of the particular sciences are sciences of truths, in the sense that all clearly enunciate truths, but none of them can attain the origin; that is reserved for wisdom, which is concerned with what is first, what is completely a principle.

2. Wisdom is the Most Certain of All Sciences

Another important characteristic of wisdom, one which helps us to know its nature better, is its certitude.

¹²Quodlibet 8, q. 2, a. 2, c.

¹³SCG 1, c. 1

Without a doubt, the most proportionate way to manifest this point is that adopted by Aristotle in the *Nicomachean Ethics*. Notice that he does not immediately discuss wisdom understood universally. Rather, he speaks at first (appealing to those common opinions) about what is called wisdom in each particular domain, in every given genus:

Aristotle shows at first what things are called wisdom, taken particularly.¹⁴

Let us take the domain of the building art as an example. There is a very clear difference between the architect and the laborer. The architect directs the laborer, because he knows the primary reason why for all of the operations required to construct the building, and his knowledge of the first causes in his art gives great certainty to his decisions in that domain. Thus, we consider that all of the wisdom in the art of construction is found on the side of the architect, not on that of the simple laborer. He is the true expert, the true knower, the true wise man in construction. It is the same in the other arts: the arts which direct others are always the most certain, because they know the first causes in the given genus, so that we are inclined to reserve the name "wise" to them in the given domain.

Among the arts, we assign the name wisdom to the arts which are most certain, because they know the first causes in that genus of making, and they direct the other arts related to the same genus. Thus the art of architecture, for example, directs manual laborers.¹⁵

Further, we speak of wisdom in regard to someone in a given art when that person exercises an art which is not directed by another art, but rather looks to that which is first in a given genus, the practice with the most excellence. This is what the Greeks said about Phydias: he was the wise sculptor; and Polycletes: he was the wise statue maker.

And in this way we say of Phydias that we was a wise sculptor in stone and wood, and that Polycletes was a wise statue maker.¹⁶

We reserve the word wisdom to designate the most perfect in each genus: Something is wisdom in the measure to which it reaches the ultimate, the highest achievement in a given art:

That is called wisdom which is nothing less than the complete power of an art. That is, it is the last and most perfect in that art, and it is through this wisdom that anyone reaches that which is last and most perfect in the art.¹⁷

¹⁴IV Comm. Nic. Eth., lect. 5, n. 1180

¹⁵Nic. Eth. 6, lect. 5, n. 1181

¹⁶Ibid.

¹⁷Ibid.

Up to now, it has only been a question of wisdom so-called in a given genus, but on account of these considerations the understanding is now prepared to receive a notion of wisdom in the strict sense. Wisdom in the most proper sense we think pertains to those who are wise in this way in relation to the whole of that which is; we are thinking of the speculative understanding: speculative wisdom would not be able to be acquired if there were no particular sciences; we can say that there is a total wisdom:

All the same, we think that some are wise in a given art, but some are wise totally, that is, in relation to every genus of being.¹⁸

But we must pay attention: to say that we think that certain men are wise totally is not to want to say that we only call someone a wise man who can do everything. Even if someone is not handy in wood-working, that is, in such and such an art, we can still call him a wise man, and in the strict sense; for we have not been discussing making, but knowing, speculative understanding. Thus, for example, the fact that someone cannot build a house does not at all cast doubt on whether he is a wise man.

Certain men are wise totally, that is, in relation to every given genus of being, and not in only in relation to one part, and yet the first are not wise in relation to each art.¹⁹

Aristotle cites for this purpose an interesting example given by Homer (this proves that Homer has seen what a wise man is). Homer speaks of a person who is not a grave digger, nor a farmer, nor anything of the kind, but who is wise:

Thus Homer speaks of someone whom the gods have made to be neither a grave-digger, nor a farmer, nor versed in any of the particular arts, but have made a wise man pure and simple.²⁰

If such a person is wise in this way, it is in a speculative way, he states.

The fact that the one called wise in a given genus can judge with the greatest certitude in the domain of the products of his art can be applied to enable one easily to comprehend that wisdom in the strict sense, speculative wisdom, is the most certain science:

Just as it is manifest that the wise man in a given domain of making is the most certain in his art, so wisdom as such is the most certain of the sciences.²¹

¹⁸Ibid.

¹⁹Ibid.

²⁰Ibid.

²¹Ibid.

What is the reason for his certitude? What is the foundation for saying that wisdom is most certain? We must attend carefully: when we speak of *the most certain*, we do not wish to say that this certainty is obtained easily. It is only certain in the measure in which it is possessed. Its certainty comes from reaching its first principles.

3. Wisdom is both the understanding of principles and a science

One of the better ways to understand wisdom is to place it in relation to the other intellectual virtues. We know that there are three intellectual virtues: first, understanding of principles, the virtue of speculative understanding which has for its object the principles; then science, which has for its object the conclusions; and finally, wisdom itself. What is the object of this last virtue? Both the principles and the conclusions: insofar as it speaks the truth about the principles (because wisdom is going to determine the principles, make them known, and defend them as needed), wisdom will be called the understanding of principles; and insofar as it knows the conclusions derived from the principles, it will be called a science.

Thus, Aristotle concludes as follows that wisdom, insofar as it speaks the truth about the principles is an understanding of the principles, but insofar as it knows what is concluded from them is a science.²²

We can distinguish, however, wisdom from science commonly understood because of its nobility, eminence. It exceeds the other sciences, it is, as Aristotle says, as it were the head compared to the other sciences.²³ This eminence merits for it the special name of wisdom.

It is distinguished from the other sciences, commonly understood, because of the eminence which it has among the other sciences: in effect, it is that upon which the other sciences depend.²⁴

All of the other sciences depend on wisdom. First, because all the sciences receive something from wisdom: we see at the beginning of each discipline that we must presuppose certain notions which come from wisdom (even if at that moment they are not completely evident to us, nothing changes: each particular science is always in a state of dependence upon wisdom); again, because only wisdom can defend the particular sciences. This is why Aristotle called wisdom "the virtue of all of the sciences."²⁵

²²Ibid., 1183

²³Ibid. lect. 6

²⁴Ibid., lect. 5, n. 1183

²⁵Ibid. (the word 'virtue' has here a special meaning: virtue is that upon which everything else depends. *Comm. on St. Paul's Second Letter to Timothy*, c. 3, v. 5)

PART ONE: BEING, THE FOUNDATION OF TRUTH

Since logic, as we have indicated, is founded upon reason, and the latter receives from the senses, which in their turn receive from things, that is, from being, we must look into things to find the ultimate principle of the truth of logic. Thus, let us first discuss being insofar as it is something first and constitutes the foundation of truth in the reason.

This teaching on being is particularly difficult, and it is not easy to find a fitting way to present it.

That the thing (res, being) has a natural priority over reason and logic must now be shown to us. Such a consideration is required because, if we only discuss reason as forming, we will not resolve our inquiry into something entirely first, and thus the understanding will not be totally satisfied.

A. A text from Boethius

In only a few lines in his commentary on the Categories (at the very beginning, when he wishes to determine the purpose of the treatise), Boethius alludes to the natural priority of things over reason. There he says:

Things are already found before us, subsisting in their nature which originally and properly constitutes them. Only man can give names to them.²⁶

In saying that *things are already found before us* Boethius has discovered that there is not only a priority in nature, but even one in time, of things over reason. That also shows that things are found already there, independently of us.

In saying *and subsisting . . .* Boethius points out the permanence of things: they have their proper natures, which bestow stability, which exist permanently. That is, things are not an ephemeral or changing foundation.

B. A Text of Plato

We can discover something of the same ideas on things and their priority and moreover their permanence in a passage from the Cratylus of Plato.

This dialogue is about names. It treats principally about the arguments for and against names being natural or conventional. He insists very much on natural names, that is, that names are apparently natural. He says that names given by the gods are better than names given by men, because the understanding of the gods is a much better understanding of the nature of things. It seems, then, that to each nature there pertains a name which should be proper to it.

Here is the passage that particularly interests us:

Do you believe that the essence varies with each individual? That is the position of

²⁶Boethius, In I Cat. Aris., Patr. Lat. 64, p.159

Protagoras, who declares that man is the measure of all things, wishing to say without doubt that such as things appear, such they are. Or does it seem that by themselves their essences have a certain permanence? . . . Consequently, if it is true that all things nevertheless should exist similarly always, never having what is proper to another, it is clear that things in themselves are certain permanent beings. They do not let themselves be dragged here and there at the behest of our imagination. But they exist by themselves, according to their proper being and in conformity to their natures.²⁷

C. A Text of St. Thomas

The first article of the first question in the Disputed Questions on Truth is a remarkable text manifesting the priority of things, of being, over reason, and showing that being is the foundation of truth in reason. The question posed by St. Thomas is: What is truth?

a) Preliminary notions

1. Necessity of bringing everything back to something first.

The article begins with a comparison between the first and the third acts of reason. St. Thomas writes:

Just as in the matter of demonstration it is necessary to bring everything back to self-evident truths, so this also must be done in the investigation which has for its object what something is.²⁸

Aristotle makes this comparison (of the third act with something similar in the first) at the end of the first book of the *Metaphysics*. He is interested in seeing how demonstration has a similarity to definition. We can also find this comparison in the *Quodlibetal Questions* (8, q. 2, a. 2) of St. Thomas.

Notice that the first and third acts are different acts, and yet they are alike in that the order of proceeding is the same for each and they relate to one and the same faculty, reason. Despite the difference between the acts, we can, as St. Thomas does, bring them back to one common element, because both proceed from the same faculty.

We find something analogous in the case of speculative and practical reason, which, at a certain level, have a common way of proceeding. This is the fact St. Thomas refers to when he asks whether natural law is the same for all men. For he begins to posit a principle concerning the mode of proceeding which is common to both speculative and practical reason: reason must

²⁷Plato, *Cratylus*, 386a and 386d.

²⁸St. Thomas, *De Ver.* 1, 1, c.

move from the common to the proper.²⁹

Although practical and speculative acts and habits differ very much - they are essentially different - it is still the same reason which knows. But it is essential to reason that it go from the common to the proper; it doesn't matter whether the matter is speculative or practical, this mode of proceeding must absolutely always be followed.

It is going to be the same in our case: to resolve into something that is first is essential to reason, it does not matter whether we are concerned with the first or the third act.

Before we return to the text of the Disputed Questions on Truth, it is worth our while to examine what St. Thomas says, using the same comparison, on the necessity of bringing back all of our conceptions to something first, in the Quodlibetal Questions. This is the same teaching, but more developed.

The human understanding is naturally fitted to know the quiddity of things; it naturally proceeds in the same way in knowing them and knowing complex conclusions. For there are in us, naturally, certain first principles known by all, from which reason begins to know the conclusions which are potentially contained in these principles.³⁰

It is remarkable how much this word *naturally* shows up. St. Thomas insists - and in this respect it is shown here more explicitly than in the Disputed Question on Truth - on this being the completely natural way in which reason proceeds.

He says that the natural way of proceeding in the case of simple natures is the same as that which we ought to observe in the case of conclusions, which are complex; this is the same comparison that is made in the Disputed Questions on Truth. Just as the conclusions ought to be resolved into self-evident principles, so also the definitions ought to be resolved into first notions.

So also there are naturally in us certain conceptions known to all, such as being, one, good, and things of this kind.³¹

Notice that in the case of the third act, St. Thomas speaks of a resolution which is made into truths evident to us: he does not treat only of matter that is self-evident. This is because he knows that there are truths evident to the wise; but here, it is a question of a resolutions which should be made into that which is entirely first, into knowledge of the truths evident to all. Clearly, they are not innate, but the understanding knows them, recognizes them immediately, without any effort. Just as within the first act certain conceptions, which are entirely first, are naturally known by all.

²⁹St. Thomas I-II, 94, 4, c.

³⁰Quaes. Quod. 8, q. 2, a. 2, c.

³¹Ibid.

Regarding conceptions which are not entirely first, we cannot truly possess them without a process of resolving them into that which is first. In *On Truth*, it is a question of bringing them back to the first:

Those things cannot be known unless they are resolved into something known before; and thus we arrive all the way to the first conceptions of the human intellect, which are naturally known to all.³²

This resolution into something first is true just as much of the first act as it is of the third. It is more evident in the third, because that act treats of conclusions: and the relation of principles to conclusions is something very clear, but in the case of the first act, it is more subtle. This is undoubtedly why St. Thomas uses the third act to manifest the first.

Returning to the text of the question *On Truth*, St. Thomas now gives the reason for the necessity of this process: why must we bring everything back to something utterly first? He says, otherwise we would proceed to infinity. But to proceed to infinity goes against the very nature of the intellect, it is the destruction of science (knowledge).

Otherwise in each case it would go into infinity, and thus every science and all knowledge would perish completely.³³

St. Thomas often makes use of this argument founded upon the infinite regress. This question is not easy, but here the practical domain can help us to understand things much better. The cases of counsel and deliberation can help us to better see the impossibility of reason regressing to infinity. As Aristotle says in the third book of the *Nicomachean Ethics*, at a given time there must be a stop: that is, deliberation has a term. Thus Aristotle concludes that there is a term or a stop in the inquiry of counsel.³⁴

The case of counsel is interesting, because the experience itself of our operation makes it clear that if we proceed to infinity in deliberation, we never arrive at action. And just as it is manifest that in the case of action an infinite regress is an obstacle, so it becomes an obstacle to knowledge.

In his commentary on the Letter to the Ephesians, St. Thomas says this: "We cannot proceed to infinity, but we must come to something first."³⁵ This opposition between the infinite and first is interesting: if there is not something first into which we can resolve, we must go to infinity.

In counsel, it is necessary at some point to arrive where it seems that we have found the

³²Quaes. Quod. 8, q. 2, a. 2, c.

³³On Truth, q. 1, a. 1, c.

³⁴In III Ethic., lect. 8, n. 479

³⁵In I Cor., c. 3, lect. 1

best means of acting. It is necessary to come to a stop, otherwise no operation would ever be performed.

Another very interesting article, where the same doctrine is developed in a somewhat different fashion, merits our attention: it is in St. Thomas' commentary on Boethius' *De Trinitate*, question 6, article 4.

2. The notion of being is entirely first.

Let us return anew to the question *On Truth*. St. Thomas asks, what is this first thing, this thing most known to which we must bring back all other notions, in the case of the first act? It is being.

That which the understanding conceives first as the most evident notion, and that into which it resolves all of its conceptions, is being. Consequently, it is necessary that all other conceptions of the understanding be brought back to being as adding something to it.³⁶

We say that this conception is that which is most known, most evident; this is true, but it does not take away the fact that this conception is very confused; it is very certain, very evident, but it does not give us distinct knowledge. We can see by the rest of the article that the wise man should make a discourse which follows the line of distinct knowledge. We have no doubt that the understanding conceives being first among things, as that which is, but it cannot define it or make it more known. We are without doubt or hesitation regarding its being most known, but that knowledge is not very distinct.

3. The notion of mode (way?).

All other conceptions presuppose the first and add something to it. But in what way? In what ways can the other notions and conceptions add to the notion of being? The discourse composed by St. Thomas in response to this question is wonderful. First he very clearly eliminates one way.

Nothing can be joined to being as having an alien nature, in the way in which a difference is joined to a genus, or an accident to a subject, because every nature is essentially a being. That is why the Philosopher proves in the third book of the *Metaphysics* that being is not a genus.³⁷

The notions other than the notion of being cannot be joined to it in the ways of difference or accidents. For, in the case of the difference which is joined to the genus (for example, rational is

³⁶On Truth, q. 1, a. 1, c.

³⁷Ibid.

joined to animal), and in the case of the accident which is joined to the substance (for example: white is joined to man, coming to determine man), the difference and the accident signify another nature (rational, for example, signifies a nature other than animal); but every nature is essentially of being. That causes a problem, since the other natures cannot be joined to the conception of being in the way of differences or accident, because then we would want to say that the other conceptions have for their objects natures which are not beings; but, as St. Thomas says, that is impossible. One cannot speak of natures that are alien to that which is.

From this it follows that being cannot be a genus: for if being were a genus, the more particular conceptions (that is, less common than being) would be added in the way of a difference, a possibility we have already eliminated. Thus it remains that being is beyond any genus.

But if the other conceptions beside being do not add to being in the way of another nature, if in other words one cannot define this addition in terms of nature, how then are we going to define it? In terms of a mode:

Certain things are said to be added to being, because they express a *mode* of it, a mode that is not expressed in the name 'being' itself.³⁸

It is interesting to see how the discourse of St. Thomas is going from the more common to the less common; as one advances, he becomes more precise: first he has manifested that the notion of being is utterly first; then he says that the notion of being is added to by others, but not in the way of a difference or an accident - this is a negative phrase - because thus this would be to say that some notion is added to being which is alien to it. Now he becomes more precise, saying that other things add to the notion of being in the way of a mode.

The mode also comes to determine being, but not as a nature. Whatever is a mode, is always a being; just as one cannot represent or signify by just one word all that pertains to being, so a multiplicity of names and notions are imposed in view of a distinct knowledge of being, of that which is. It is necessary to give a name to each of these modes. Thus, the notion of mode is joined to the notion of name: that which is not signified by the name 'being' and yet which pertains to it, is going to be signified by the words *true*, *good*, etc. Thus, these other words do not signify anything as a nature which is alien; they are always in the domain of that which is.

4. The Division of Mode

Now we can better comprehend the division of mode.

This can happen in two ways: the mode can express a special mode of being; for there are diverse degrees of being according to which are determined the diverse modes of being. This is according to those modes which take in the different genera of things, since substance does not add to being any difference, which signifies a nature superadded to being, but more by the name 'substance' is found expressed a certain special mode of

³⁸On Truth, q. 1, a. 1, c.

being, which is being in itself; and it is the same in the other genera.³⁹

This is the first case: the expressed or signified mode can indicate something distinctive; for example, there is a certain mode of being which we define (or better, that we describe, since it concerns something which, strictly speaking, we cannot define) as that which is in itself; this is substance, in opposition to accident, which is described as that which is in another. There is always being in each case, but the mode of being is different.

The special modes are going to correspond to the ten predicaments. But it is necessary to pay close attention: he is not concerned here with logical considerations, but metaphysical ones. We speak of modes of being, and it is the metaphysician who considers the modes of being.

The special modes are contracted modes; they do not follow upon all being: substance is one thing, quantity another, quality another. But there is another way in which being can be determined by a mode: the mode can be general, necessarily following upon all being. This is the second member of the division proposed by St. Thomas.

The expressed mode can also be a general mode, which follows upon all being.⁴⁰

This mode is general (we could also say common, but since it is given that we are dealing with the question of a common mode of proceeding, that could be using a very ambiguous expression), it follows upon being necessarily, it is absolutely inseparable from being. St. Thomas then gives the subdivisions.

This mode is taken in two ways: in the first way, insofar as it follows upon all being considered in itself; in the second way, insofar as it follows upon each being considered in its relation to some other thing.

Without entering into all of the subdivisions, since that is very difficult and not required for our purposes, all the same let us examine a case of a general mode which follows upon being considered in itself: this is when it speaks of nature or essence:

To express the essence of that which is, insofar as it is called being, we form the name 'thing', which, according to Avicenna at the beginning of his *Metaphysics*, differs from being in that being is tied to the act of existing, while the name 'thing' expresses the quiddity or essence of the being.

The word 'thing' (res) signifies something that the word being (ens) does not: the fact that all being has a nature, an essence.

Regarding a further mode which follows upon all being as such (thus a general mode), but which is taken by relation to another thing, let us be content here with two cases:

³⁹Ibid.

⁴⁰On Truth, 1, 1, c

(A way for a general mode to be taken in relation to something else), this is according to the fittingness (of one thing to another); and that cannot be produced unless there exists something which might be apt by nature to fit with some other being. And this thing is the soul, which in some way is all things, as is said in the third book of *De Anima*.

To speak of a general mode which follows upon all being insofar as it fits with another thing would not make sense unless there was something which could fit with all being. But the soul can fit with being in all of its universality, because it is in a certain way all things (in the intelligible order).

But in the soul, there is understanding and will. The fittingness of being with each of these faculties of the soul can be expressed by two different names, each signifying a new mode of being. The word *good* is going to signify the fittingness between being and the appetite, the word *true* the fittingness between being and the intellect.

Moreover, in the soul there is one faculty of knowledge and another of appetite. The fittingness between being and the appetite is expressed by the word *good* while the fittingness between being and understanding is expressed by the word *true*.⁴¹

Note that the 'name' always comes up with regard to the modes of being. We must pay close attention to not dissociating the word 'mode' and the word 'name', because a mode is always signified and expressed by a name: there are as many modes as there are names. It is necessary that each mode be signified. If the mode is not the same, the name cannot at all be the same. Thus, the word 'true' says something that the word *good* does not, and vice versa.

This whole discourse of St. Thomas is just marvelous for its order: that which we called at the beginning of the article *most known* (notissima), that is, naturally known by us, most evident, becomes difficult to know, now that we have come to a knowledge that is more and more distinct. We have arrived the following: one of the cases of the general mode follows upon all being considered in relation to something other and is related by a fittingness with the intellect.

To manifest this fittingness with the understanding well, we must go through a consideration of the act of knowing: we must see clearly that all knowledge comes to be by the assimilation of the thing known to that which knows (and this is a doctrine, presupposed here by St. Thomas, but given with evidence in the treatise *De Anima*).

Moreover, all knowledge comes to be by the assimilation of the knower to the thing known; of such a sort, that the assimilation is the cause of the knowledge: for example, sight, by the fact that it is disposed by the species of the color, knows the color. The first comparison is with the intellect, in which being thus corresponds with the intellect.⁴²

⁴¹Ibid.

⁴²Ibid.

Notice the words used by St. Thomas: we have already had the word “fittingness” (conveyance). The word “correspondence” is then added. In all that follows after, St. Thomas is going to speak of conformity: it is necessary that being be in conformity with the intellect. He eventually arrives at another word, *adaequatio*. This is the word we ordinarily use when we wish to define truth properly. We say, “Truth is the adequation of the thing and the intellect.”

And this correspondence is called an adequation of the thing to the intellect; this is that in which the definition of the true is found formally realized.⁴³

This definition is the proper definition of truth, it is the first analogue; for the true is an analogous word; it can have definitions other than this.

Although the word *true* signifies a mode of being, it says something that the word *being* does not; it expresses a conformity, a fittingness, and adequation with the intellect.

Thus, this is what the word *true* adds to being, that there is a conformity, or adequation of the thing and the intellect; and it is this conformity, as we have said, which is followed by knowledge of the thing.⁴⁴

We must pay close attention here to the expression *being in conformity with*. This is not the same as *conform itself to*. To conform itself to denotes entirely the notion of a measure and seems to say: *to be measured by*. Here, it is not a question of measure yet: we cannot say that being is measured by the intellect, or that the understanding is measured by being; we simply say (this is more common) that being and the understanding can be in conformity with one another.

b) The truth of things is the foundation.

Thus, in considering truth as a common mode of being, it is clear that the notion of truth implies a priority of the nature of the thing, that is, of being over reason. *Therefore, the existence of the thing precedes the notion of truth.*⁴⁵

Clearly we can say that being is true, but as the truth is perfected, as it is achieved in the intellect, the understanding which would be true presupposes that which is. And there we can speak of *conforming itself to*. The speculative understanding is measured by that which is; it will be true insofar as it is conformed, it is measured by the truth of things: if it says that something is and the thing is, and it says that something is not, and the thing is not, then it is true.

St. Thomas also adds that there are three series of definitions of the true, and in the first series of definitions, he says that we define the true as that which is. This is not the proper

⁴³On Truth, q. 1, a. 1, c.

⁴⁴Ibid.

⁴⁵Ibid.

definition (first analogue) of the true; in this definition, we extend the meaning of the word *true* to designate that which precedes the true, that is, that upon which the true in the strictest sense is founded. That is very interesting for us, since that indicates to us yet again that being is the foundation of the true, and thus that being has a priority over the reason which knows the truth. There is no question of knowledge of the truth in the understanding if it is not founded upon the truth in things.

Let me mention that St. Thomas also develops this doctrine in his commentary on *De Interpretatione*.⁴⁶

Within the first series of definitions of the true, after that which precedes the intellect, that which is the foundation of truth in the understanding (the truth of things is being treated), St. Thomas relates a definition of Avicenna.

The truth is nothing other than a property of its being which is stable to it.⁴⁷

Avicenna says - and this is just marvelous - that the truth of every thing (notice, we are still discussing the truth of things) is as a property of its being (of its nature, we might say), and he introduces into his definition this important notion of stability. Already, in discussing above the general mode which follows upon being considered in itself and which is expressed by the word 'thing,' we have been referred to this stability of being: the thing is being considered insofar as it has a nature, an essence. Here, the notion of stability enters into the very definition of the true given by Avicenna; that is, a thing will be truer insofar as it is more stable.

Aristotle speaks about that in the tenth book of the *Metaphysics*. He says that things stand to truth as they stand to being. The disposition of being will be the disposition of truth. The more an object is intelligible, the more truth it has. And we think this way about the separated substances. And inversely, contingent things are less intelligible and have less truth.

In introducing this notion of stability, Avicenna has found a way to explain the truth of things in relation to their natures, since greater priority and stability are always related to the nature of things. And we can say that the more a thing is stable, the more is it true.

In the *Summa Theologica* St. Thomas manifests that greater priority and stability is attached to the nature, when he says that the order of nature, especially human nature, inscribed in us is *prior to and more stable than any other order joined to it*.⁴⁸ He mentions the above in order to show that sins contrary to nature are more serious than, for example, sacrilege which goes directly against God. This is because the supernatural order, insofar as it is added, is not first, neither is it as stable as the order of nature.

Conclusion

⁴⁶In *Is De Interp. Lect. 3*

⁴⁷On Truth, q. 1, a. 1, c.

⁴⁸*IIaIIae*, q. 154, a. 2, ad. 2

What we have principally wished to show is that being, insofar as it is true, insofar as it is the foundation of truth in the intellect, is first. All that concerns the understanding - we are speaking here of the speculative understanding - must in the last resort resolve to it. The same is true of logic.

Logic, however, is not about that in itself; that is not at all in its domain, that is, to speak of being or truth, as understood here. For example, if someone denies that logic is ordered to a knowledge of the truth, it pertains to the wise man to intervene and to show that logic can direct the understanding in its knowledge of the truth.

Logic cannot fulfill its mission of directing the understanding in its pursuit of its good if it has not been ultimately founded upon something altogether first, which precedes and which measures the intellect. Logic is ordered to the truth, and thus it must be founded upon the truth; and first of all upon the truth of things.

PART TWO

SENSE, THE FOUNDATION OF RATIONAL KNOWLEDGE

Logic, we have already mentioned, must be founded upon reason, and reason in its turn must be founded upon things, on the truth of things. But between reason and things, there are the senses. But can we true have confidence in the senses and see them as a foundation for reason?

A. The problem of falsity in the senses

Certain men pretend not to, saying: the senses lie. But to the kind of men who speak in this way, we can at least ask that they explain to us in what way and how the senses lie. When this question is put to St. Thomas in *On Truth* and in the *Summa Theologica*, namely, whether there is falsity in the senses, he replies affirmatively. And he responds in the same way to the question: Is there falsity in the intellect? But, he explains in *what* way.

Aristotle does the same thing - and this is very extraordinary - in the fourth book of the *Metaphysics*. After he has defended the principle of non-contradiction, he shows that the enunciation *all that seems so is true* is false. It seems to apply much more to this problem than to the principle of non-contradiction, but *all that seems so is true* and the denial of the principle of non-contradiction proceed from the same difficulty. This difficulty concerns the senses and intellect. Those who have tended to posit this affirmation, *all that seems so is true*, identify the senses and intellect. And St. Thomas says that their argument is deficient, not only in this that they identify the senses and intellect, but also because for them the senses are never deceived.⁴⁹

Thus, Aristotle relies upon the fact that the senses can be deceived to show that not all that seems so is true. If therefore we insist that the moderns also discovered that the senses deceive us, sure, no problem. They also show us that there is falsity in the senses. But to rely on the possibility of falsity in the senses in order to show that it is false to say that all that seems so is true, this they do not do.

In sum to those who say that the senses deceive us, and thus you have based yourselves

⁴⁹St. Thomas, In IV Metaph. Lect. 12, n. 672 and 673

on appearances, we must respond: not when we know when there are false appearances and how there is the possibility of deception.

a) Distinctions fundamental to resolving the problem of falsity in the senses

We can find distinct considerations of this problem in the *Summa Theologica*,⁵⁰ but instead we are going to examine article 11 in question 1 of *On Truth*, which is more developed, and thus more proportioned to us.

1. Two ways in which to consider the senses

St. Thomas first considers an important distinction: the senses are found to be the intermediary between things and the intellect. There are two relations in which they can be considered: in comparison with things, and in comparison with the intellect:

Our knowledge, which takes its origin from things, progresses in the order of knowledge. It begins in the senses, it afterwards reaches the understanding in such a way that the senses are found to be a sort of intermediate between the understanding and the thing. In effect, compared to the things the senses are an intellect, and compared to the understanding they are a thing.⁵¹

The problem of the falsity in the senses thus is doubled: we must examine it according to each of the ways of considering sense.

Consequently, we speak of truth or falsity in the senses in two ways.⁵²

According to the first consideration, that is, according to the comparison of the senses to intellect, the senses are called true or false insofar as the things are called true or false. For just as things, per accidens, can sometimes cause a false estimation of themselves, so also can the senses in comparison to the intellect:

In the first way, according to the order of the senses to the intellect. And in this way the senses are called true or false like a thing; that is to say, insofar as they cause a true or false estimation in the intellect.⁵³

⁵⁰Ia, q. 17, a. 2

⁵¹On Truth, q. 1, a. 11, co.

⁵²Ibid.

⁵³Ibid.

In discussing the next consideration, we must manifest in what measure the senses can be true or false as if they were a certain intellect, because they are compared to things. We have already spoken of the truth or falsity of the senses in a way like the truth and falsity in things. Now we are speaking of the truth or falsity of the senses as we speak of truth and falsity in the intellect. And thus, just as the understanding is called true when it judges that what is, is, and what is not, is not, and false if it judges to the contrary, so also the senses are called true in the measure in which they judge, for example, of the white thing that it is white, and false in the contrary case.

In another way, according to the order of the senses to the thing. And in this way, we speak of the truth and falsity of the senses just as in the intellect. That is, insofar as it judge to be that which is, and not to be that which is not.⁵⁴

2. Truth and Falsity in the Senses

We said at the beginning: we admit that there is falsity in the senses, but all the same we must know in what and how falsity is in them. If we consider the senses in the first way of which we spoke, as a certain thing, we can consider it - this is a necessary subdistinction - both as a thing in itself and a thing which indicates another. We can see that only in one of these ways is there a possibility of falsity in the senses:

If then we speak about the senses in the first way, in one way there is falsity in the senses, in another way there is not. In effect, the senses are at the same time things in themselves, and things indicating other things.⁵⁵

If we look at the senses considered as things, and in themselves, there is no falsity in them; because the senses are always manifested as they are, according to the way in which they are disposed. Because here we are not looking at the senses as indicating other things, as they judge such and such a sensible; instead we are regarding them as things in themselves, and these things are shown to the understanding just as they are. There cannot be falsity in this; while if a sense could show itself other than it is, it would have falsity (but this is never the case):

If thus the senses are compared to the understanding insofar as they are certain things, in this way there cannot be any falsity in the senses compared to the intellect; because it is according to the way in which they are disposed that the senses show their dispositions to the intellect; that is why St. Augustine said that they absolutely cannot enunciate anything other than the way in which they are affected.⁵⁶

⁵⁴Ibid.

⁵⁵Ibid.

⁵⁶Ibid.

If now we consider the senses as things, but as indicating or representing other things, then there is the possibility of falsity, because sometimes they represent a thing to the understanding as other than it is. Thus, they are an occasion of error for the intellect:

If moreover the senses are compared to the understanding insofar as they are representative of another thing, given that their representation is sometimes other than the thing, to this degree they can be said to be false, insofar as they are apt to cause a false estimation in the intellect.⁵⁷

Thus, we admit the possibility of falsity, but nevertheless we explain it, in saying: this can cause an error in the intellect; but we must also say that the senses are no more a cause of falsity in the understanding than things themselves are.

The senses are apt to cause a false estimation in the intellect, but they do not necessarily cause it more than things: because just as the understanding judges things, it also judges what is presented to it by the senses.⁵⁸

For example, fool's gold does not necessarily cause an error in the intellect; it is like the case of the stick which seems bent in the water: the understanding is always there to make corrections.

Of course, the understanding receives from the senses, but it is not so dependent on the senses that it is purely and simply measured by them because it goes farther than they do. The understanding should only let itself be measured purely and simply by the nature of reality, not by the external appearance. Certainly, there is a danger here, because it must in always pass through the exterior, but still that exterior is not necessarily a cause of error. The understanding always has command of its own judgement. It is measured by things, but it also judges things; it is measured in a certain way by the senses, but it also judges the senses.

So here is our first consideration: the senses in their relation to the understanding are not in any way the occasion for falsity in the intellect, that is, concerning the manner in which they are disposed, but they can cause falsity in the understanding regarding how they represent things.

Thus, the senses compared to the understanding always cause a true estimation in the understanding on the subject of their own disposition, but not on the subject of the disposition of things.⁵⁹

Moreover, if we consider another relation, that of the senses to the things, there is truth and falsity just as in the case of the intellect.

⁵⁷Ibid.

⁵⁸Ibid.

⁵⁹De Veritate, q. 1, a. 11, c.

If on the other hand we consider the senses as compared to things, there is truth and falsity in the senses in the way in which it is in the intellect.

In the intellect, truth is verified principally in composition and division. The understanding cannot be false regarding its proper object, that is, regarding its knowledge of a nature: we either know the *quid* or we do not. To speak of truth and falsity in the intellect, we must talk about composition or division, either an actual or at least a virtual composition and division: the understanding must either be or not be measured by that which is. Thus, when the understanding says that about what is, that it is, for example, in saying that man is a rational animal, it forms an true enunciation in act. When it says: rational animal, without having a verb, this is virtually an enunciation. Saying that man is a rational animal is formally true, because there is a composition or division in act.

Moreover, in the understanding truth and falsity are found first and principally in the judgement in which there is composition and division: while in the formation of quiddities (there is not falsity or truth), except in the relation to a judgement which follows such a formation.⁶⁰

The case with the senses is the same: first by this, that we cannot speak of truth and falsity except in relation to some composition or division.

Consequently, we speak properly of truth and falsity in the senses insofar as they judge sensible things; but insofar as they apprehend the sensible, there is not properly speaking truth and falsity, but only in the relation to some judgement which follows the aforesaid formation; that is, insofar as such an apprehension is fittingly followed by such a judgement.⁶¹

It follows that the senses cannot be false when they act on their proper object, knowing the proper sensible, unless there is some indisposition on the part of either the organ or the medium. But if there is not an obstacle, the senses are always true.

The judgement of the senses regarding certain objects is natural, as for the proper sensibles . . . But the natural act of a thing is always accomplished in the same way, at least when it is not impeded per accidens, whether by reason of an intrinsic fault, or because of an external obstacle. This is why the judgement of the senses about the proper sensibles is always true, at least if there is not an obstacle on the part of the organ or the medium.⁶²

⁶⁰Ibid.

⁶¹Ibid.

⁶²Ibid.

But when we arrive at another kind of sensible, that is, the common sensible, we are removed from the proper sensible and there is thus a certain indetermination: the senses can thus be deceived. And it can be deceived more easily in the case of the per accidens sensible, which in fact is the object of the understanding.

But with regard to the common sensibles and per accidens sensibles, the judgement of the senses is sometimes erroneous.⁶³

Thus we yet again admit that there might be falsity in the senses, that the senses can deceive us, but we explain in what way and in what measure in making the aforesaid distinctions.

To complete our consideration, St. Thomas very clearly manifests an opposition between the external senses and the imagination: the imagination, contrary to the external senses, can represent to itself things in the absence of these things; thus it is a greater possible cause of error than the external senses, to the point that Aristotle has called it *The Master of Falsity*.

In what concerns the apprehension of the senses, we must know that there is an apprehensive faculty which apprehends the sensible species when the sensible thing is present, an external sense; there also is one which apprehends in the absence of the thing, the imagination. Consequently, the senses always apprehend a thing as it is, at least if there is no obstacle in the organ of the medium; but the imagination for the most part apprehends the thing as it is not: because it apprehends as present that which is absent. Thus the Philosopher affirms that the senses are not the master of falsity, but instead imagination is.⁶⁴

This is a beautiful expression: *Master of Falsity*. The external senses, concerning their proper sensibles, are not masters of falsity, but since it is necessary to pass through the imagination in order to join up with the understanding, the imagination can interfere - which indeed it does! It is an intermediate that is absolutely necessary, but it can come between the thing such as it is and the understanding.

Besides, Aristotle has said that there are two causes of error: the imagination and the appetite; either someone is badly disposed by appetite and allows himself to be seduced by his prejudices, or he does not know how to control his imagination and this latter becomes *the madman in the house*.

b) The determination of the senses is great than that of understanding

All the same, if as we have seen it can be the case that the senses are deceived, it remains that the external senses carry with themselves a great determination which is given to them by

⁶³ibid.

⁶⁴Ibid.

nature; this is why the senses, as we have already said, are not deceived concerning their proper sensibles, unless in exceptional circumstances.

Again the natural powers do not fail in their proper operations, unless rarely, because of some corruption. Thus also the senses do not fail when they make judgements about the proper sensibles, unless in exceptional cases by reason of a corruption of the organ.⁶⁵

We can see even better this great determination of the senses when they are compared to the understanding in regard to the possibilities of falsity in each case.

The occasion of this comparison is furnished by Aristotle in his treatise *On the Soul*, when he wishes to show that the act of understanding differs from the act of sensation. One of the arguments used by Aristotle to manifest this difference is rightly based upon the great difference there is between the possibilities of falsity in each of the two acts.

Aristotle first notes that it happens to the understanding that it knows well or badly, either truly or falsely. *The act of the understanding can proceed correctly or incorrectly.*⁶⁶

When the understanding possesses the intellectual virtue of science, it thinks well, it speaks the truth: someone possessing science is not deceived about the object of his science; he always speaks the truth about its subject, in the measure certainly, in which he effectively possesses this science. And if the understanding possesses this other intellectual virtue, prudence, it thinks well and it speaks the truth - this time, we are obviously considering a practical truth - about the subject of actions which can be proposed. And in this case, the understanding considers a contingent object, while the virtue of science has the necessary for its object. And finally, the same is true in the case of opinion, each time that in fact the opinion formed by the understanding is true, the understanding thinks well.

(The act of the understanding) proceeds correctly either according to science, which bears upon the objects that are attributed to speculative knowledge and are necessary, or according to prudence, which is right reason of contingent doables, or even according to true opinion.⁶⁷

On the other hand, when the understanding is found in a disposition contrary to the preceding ones - and this is not an exceptional case! - it thinks incorrectly, it says what is false, because its judgements proceed from apparent science, or from imprudence, or even from false opinion.

But (the act of the understanding) becomes incorrect according to their contraries, that is

⁶⁵Commentary on De Anima, III, lect. 6, n. 661

⁶⁶Ibid, lect. 4, n. 630

⁶⁷Ibid.

according to false science, imprudence, or even false opinion.⁶⁸

If we now consider the acts of the senses, as they are exercised in regard to their proper objects, we see that these acts are almost always brought about correctly.

The acts of the senses however are performed correctly only, because the senses are always true concerning their proper sensibles.⁶⁹

And from all the preceding Aristotle concludes that the act of sensation and that of understanding are not identical.

What interests us here is the opposition between the understanding and the senses with regard to their respective possibilities of falsity. It is well known that there is falsity in the understanding, and in the senses, but if we compare the two, we perceive that the possibilities of error or falsity are infinitely greater in the case of reason than in the case of the senses. And this is because the understanding by nature, before it acquires the habits and intellectual virtues of science, prudence, and art, is indeterminate. In order to be able to be correctly determined concerning the truth, it must acquire habits; and if indeed it does not acquire such stable dispositions, it cannot determinately speak the truth but sometimes it says what is false.

On the other hand the senses themselves are by nature already proportioned and determined in relation to their proper objects; no habit is necessary for them to say what is true about their objects. That the external senses do not have any need for habits is an interesting sign of the great determination which is given to them by nature - even if, as some might say, there can be cases in which the senses are deceived.

For those who wish to delve even further into this problem of the senses and falsity, let us mention that some very interesting things on this subject are found in the fourth book of the *Metaphysics*.⁷⁰

B. The senses as a foundation

It was of the first importance to clarify in what and how the senses can deceive us, because we found out at the same time in what things the senses cannot deceive us, but on the contrary must be true; and this is clearly the measure in which they can play the role of foundation for the understanding.

The considerations which will follow rightly bear upon the senses as foundation, as being something first. They are important for our purpose, which is the problem of logic and truth, because as we have mentioned several times already, if we wish to establish the principles of the truth of logic, we must go all the way to things, and these are known by reason in dependence

⁶⁸ibid.

⁶⁹Ibid.

⁷⁰cf. lessons 12 and 14 of St. Thomas' commentary

upon the senses. But if indeed the senses are the foundation of understanding, does it not remain, if we reject the senses, if we disown them, if we wish to be freed from them, that the understanding would lose all contact with reality, with things? And since logic itself has a foundation - however remote - in reality, that there could no longer be any logic?

a) External senses and judgement

1. The external senses are tied up with judgement

That the senses are the foundation of understanding, we will manifest by examining the dependence of understanding on the senses in the judgements which it forms. We will appeal in this examination to a text of St. Thomas in which he discusses the judgement of prophesy. True, he discusses it in a theological context, but the considerations that we will draw from it are strictly in the philosophical order.

As we speak of judgement in thinking, we must distinguish, as St. Thomas does, between reception and judgement, and indeed know what constitutes the notion of judgement.

Judgement does not only depend upon the reception of a species, but also on this that the things of which we judge are examined in relation to a principle of knowledge. Thus, we judge conclusions by resolving into principles.⁷¹

Every judgement requires an examination according to a principle; to judge a conclusion, for example, is to consider it in relation to the principles upon which it is based. It is always by a process of resolution into the principles that the understanding can make a judgement about a conclusion.

St. Thomas thus concludes that waking is favorable to judgement. While we are sleeping, the external senses being tied up, we cannot judge (but nothing impedes the understanding from receiving, for example, from the imagination). For it is because of the external senses that judgement is possible for the understanding; without them the principle of knowledge, in relation to which things can be examined and thus judged, would be missing.

But because the first principle of our knowledge is sensation, it is necessary that in some way we resolve all those things which we judge into the external senses.⁷²

The senses then are far from being a purely subordinate or occasional foundation for the understanding. Because they are the first principles of all of our knowledge, we must resolve all into them; it is always in some way on account of them that we can judge.

St. Thomas then reviews a passage in the *De Caelo* of Aristotle in which he says that *the term or completion of art and nature is the sensible visible thing, by which we ought to judge*

⁷¹De Veritate, q, 12, a. 3, ad 2

⁷²Ibid.

*other things.*⁷³

It is what the senses show that permits the understanding to judge. That is manifest in the case of the science of nature, in which we must resolve to the external senses. But what about mathematics in which we must resolve into the imagination; or metaphysics, which we resolve into the understanding? But we will return to this problem a little later.

St. Thomas cites another text from Aristotle, this time taken from the sixth book of the *Nicomachean Ethics*.

And again, he says also in the sixth book of the *Ethics* that the senses bear upon the extremes, just as the understanding on the principles, here meaning by extreme that into which the resolution is made by which we judge.⁷⁴

In the response to the third objection, St. Thomas, making more use of the notion of extreme to describe the senses, makes an interesting distinction regarding the nature of the dependence of understanding on it:

The judgement of the understanding does not depend upon the senses in such a way that the act depends upon the exercise of a sensible organ; rather, it is as something extreme and last, into which resolution is effected, that the understanding needs it.⁷⁵

The word “need” used by St. Thomas indeed makes reference to the poverty of the human understanding. The understanding absolutely needs the senses as an extreme which is the last term of resolution.

The senses are thus the foundation for the intellect, not only in this, that they are the principle of all of our knowledge, but also in this, that they are the term, as we saw in the preceding consideration on judgement. That is because he who makes a judgement examines in relation to a principle of knowledge, and this principle of knowledge is, for the intellect, always ultimately in some way the senses.

Consequently, when the external senses are tied, judgement is impossible. What comes to mind immediately is what St. Thomas says in his commentary upon *On Sleep and Wakefulness* in which he says that sleep is the immobility of the senses and as it were fetters.⁷⁶

Also, because in sleep the senses are tied up, there cannot be a perfect judgement.⁷⁷

⁷³ibid.

⁷⁴Ibid.

⁷⁵Ibid., ad 3

⁷⁶In de Somno et Vigilia, lect. 2

⁷⁷De Veritate, q.12, a. 3, ad 2

Also, the so-called philosophers (*philosophes*) - we are thinking, for example, of Descartes - who wish to reject the senses as the foundation for our understanding, have done a very serious thing. Just as people who close the windows and shutters of their house thus hide themselves from the rays of the sun, these so-called philosophers have voluntarily closed the first window, that of the senses, the first window from which proceeds all light without which none can enter.

This likeness was suggested to us by Cornelius a Lapide, in his commentary on *Isaiah*, in a passage in which he speaks about blindness of spirit from the practical point of view. Take the case of the sinner who is blinded by his passions. He says that the man, from that moment, *does not want to receive light and even puts obstacles (as it were closing the window to the rays of the sun) in the way of divine illumination, through which God sufficiently proposes the things necessary for salvation.*⁷⁸

Those who wish to shut the window of the senses or, in other words, to free themselves from the external senses in the intellectual life, fatally become slaves to their imaginations and appetites. That very nice expression of Aristotle comes to mind: *It is not the senses that are masters of falsity, but the imagination.*⁷⁹ There is an appearance of freedom (since they pretend to be *freed*), but in fact a true slavery. To take an expression from St. Thomas (explained for us in another context) *this state implies a true servitude and not a true, but only an apparent, liberty.*⁸⁰

2. The Notion of the Extreme

1) The singular qualifies as an extreme.

The senses, as seen in the *De Veritate* (12, 3, ad 2), qualify as extremes. In the end to better understand what we wish to say, it is worth the trouble to go to another text to which St. Thomas refers when introducing this notion, that is to the sixth book of the *Nicomachean Ethics*. The issue is prudence, and on this occasion it is the singular which is called an extreme.

We know, that prudence directs the intellect, but that it directs singular actions. And because it directs singular actions, it is called the virtue of extremes.

Prudence concerns an extreme, that is, a singular, because it concerns the operable, and the operable is singular.⁸¹

It is in the place where he explains what a sentence consists in, which is a judgement the politician must render, that St. Thomas is most explicit on the notion of the extreme:

⁷⁸Cornelius a Lapide, *In Sacram Scripturam*, v. 11, *In Isaiam*, c. 6, p. 182

⁷⁹Aristotle, *Metaphysics* IV, cf. above.

⁸⁰St. Thomas, *Super Romanos*, c. 6, lect. 4, n. 509

⁸¹St. Thomas, *In VI EthicI.*, lect. 7, n. 1213

A sentence is nothing other than an application of universal reason to a particular operable. For something is not called a sentence unless it concerns something operable. And because the operable is singular, it follows that the sentence is of some extreme, that is, some singular: which is called an extreme, because it is that from which our knowledge begins, proceeding toward the universal and coming back to a term in it by way of descent.⁸²

Thus because, in the area of the practical, the judgement (or the sentence) has an operable singular both as principle permitting it to be raised to the universal and as term of application, the singular is called an extreme, and we speak of the sentence as concerning an extreme.

But the singular is only known directly through the senses.

Of this extreme, there is not science, nor is there proof by reason, but rather there is sensation, because it is perceived by the senses.⁸³

The senses themselves consequently can also be considered as the principle from which the understanding can approach the universal and the term of resolution for the judgement which the understanding forms concerning both speculative and practical matters; it can thus justly be called a qualified extreme.

2) Sentence, sense, and certainty

Regarding the word *sentence* St. Thomas says something interesting in the *Summa Theologica*.

The context is the following: St. Thomas is speaking about the angels and asks whether the angels possess sensation. Of course, he replies that they do not; but the objections present certain texts accounted as authorities in which the word *sentence* is found in relation to the angels. How does he interpret these texts? St. Thomas shows that we can do this in two ways, and the latter is what interests us, that is, what he says about the second way:

We can also say that these authorities probably should be understood in a metaphorical sense; because it being given that the senses have a certain apprehension concerning their proper sensibles, there is a way of speaking even of *sensing* something with regard to the certain apprehension of the intellect; this is why also it is named a *sentence*.⁸⁴

The certainty of the senses is such that we sometimes use the word which designates the act of sense, *to sense*, in a metaphorical sense to name an act of the intellect, since the latter

⁸²Ibid. n. 1198

⁸³Ibid., n. 1214

⁸⁴Summa Theologica Ia, q. 54, a. 5, c.

implies a great certainty. St. Thomas also says that the word *sententia* seems to be derived from *entire* because the word *sentence* designates something certain. When we say of the judge that he has handed down his verdict, his sentence, we are in the presence of something irrevocable, which implies a very great determination. And even should the etymology given by St. Thomas turn out to be false, it does not matter: it is still a principle of manifestation.

3) Comparison with the understanding of the principles.

As we found a little above, in the *De Veritate* St. Thomas has compared the senses with the understanding of the principles, affirming with Aristotle: *Sensus sunt extremi sicut intellectus principiorum*.⁸⁵ In the eight chapter of the sixth book of the Nicomachean Ethics, Aristotle compares prudence to the understanding of the principles. The foundation of the comparison is the same: both concern extremes.

In the case of the understanding of the principles, the extremes, the truths entirely first and indemonstrable, constitute the object of this habit, because they are, in relation to the conclusions, at the same time principle and term.

The understanding of the principles concerns certain terms or extremes, that is, indemonstrable principles, of which there is not proof, because they cannot be proven by an argument, but are immediately known in themselves.⁸⁶

Looking at prudence, we also might say that it concerns an extreme; but the extreme in that case is not the common indemonstrable principle, but the operable singular, also indemonstrable because it also cannot be proven by reason, but can only be received by the senses.

Prudence has a certain resemblance to the understanding of the principles . . . for prudence implies an extreme, a operable singular, that must be received as a principle of action; and there is not science of this extreme, because it cannot be proven by reason, but it is possessed through the senses because it is perceived by the senses.⁸⁷

Regarding the senses, we have seen that they are the principle and in some ways the term of all of our knowledge, and thus they can also be classified as extremes from a comparison to the understanding of the principles: *sensus . . . sicut intellectus principiorum*.

To end our consideration, and for the sake of the *bonitatem doctrinae*, here are some remarks on the understanding of the principles.

We know that because of the opposition between the knowledge of middle truths and that

⁸⁵St. Thomas, *De Veritate*, 12, 3, ad 2

⁸⁶St. Thomas, *In VI Ethic.*, lect. 7, n. 1214

⁸⁷*Ibid.*

of truths that are immediately on the level of universal understanding, we call the former reasoning strictly speaking, the latter understanding; reason, when it passes from principle to conclusion, understanding when it knows immediately.

It relates to understanding, in universal things, to form an absolute judgement on the subject of the first principles, and to discourse from principles to conclusions.⁸⁸

Since we have spoken of prudence, it is good to know that the cogitative sense, an integral part of prudence, is an internal sense which also has two names, in which it imitate the universal understanding: sometimes it is called *particular reason*, insofar as it can make a discourse (but a discourse among singulars). This is the discourse which gives birth to experience, which is an incipient whole (collation) made from singular representations conserved in the memory. But when there is not a passage from one singular to another, but rather the cogitative posits an absolute judgement about the singulars, it is called understanding (*intellectus*).

Again, in that which deals with singulars, the cogitative is called understanding insofar as it has an absolute judgement on the subject of singulars . . . It is moreover called particular reason insofar as it discourses from one singular to another.⁸⁹

And the singular which holds the place of the principle and is the object of an absolute judgement on the part of the cogitative power is surely an extreme.

b) An apparent contradiction.

1. The problem

As we were saying before about the senses in relation to judgement, we have seen in basing ourselves on a text from the *De Veritate* that the senses are an extreme and thus a principle and term: thus principle and term are connected. Further St. Thomas said that because the senses are a principle, we must judge by them and resolve to them in some way; in brief, St. Thomas connects principle and judgement.

But in the commentary on the treatise of Boethius, *De Trinitate*, there is a text which causes a difficulty because it seems to contradict the doctrine presented in the question above. In this text in effect St. Thomas opposes or clearly distinguishes principle from term:

In all knowledge there are two things to consider, that is, the principle and the term. The principle concerns the reception while the term concerns the judgement.⁹⁰

⁸⁸Ibid., lect. 7, n. 1255

⁸⁹Ibid.

⁹⁰St. Thomas, *In de Trinitate*, q. 6, a. 2, c.

Yet in the question from De Veritate principle and term were connected, and the judgement was even related to the principle, while here St. Thomas opposes them, and now maintains that the term is connected to judgement.

Further, conceding that the external senses are the principle of all of our knowledge, St. Thomas still says that they are not always the term, because judgement should not be resolved to the senses in every science.

Thus, the principle absolutely of all of our knowledge is the senses . . . But the term of this knowledge is not always the same: sometimes in effect it is the senses, sometimes the imagination, and sometimes only the understanding.⁹¹

As St. Thomas explains in the rest of the article, the science of nature resolves to external sense, but mathematics resolves itself into the imagination, and metaphysics ought to resolve into the understanding. How do we explain the affirmation encountered in the De Veritate: It is necessary to resolve all into the senses? How is it that in this question the external senses are always said to be terms, yet in the treatise on De Trinitate they are sometimes opposed to other terms such as imagination and understanding? We said in effect that the senses are only the term in the case of our knowledge of natural things.

2. Solution

I think that the response to this problem can be taken from this: the process of resolution can be considered either uniquely from the point of view of the science as such: this is what St. Thomas does in his commentary on the De Trinitate; or from the part of the power of knowledge: then we consider, as St. Thomas does in the De Veritate, the relation between the senses and the understanding.

In the article on this same question in the De Trinitate, St. Thomas has distinguished three meanings of the expression *processus rationale*. And, according to the third sense, a process is called rational from the part of the rational faculty, while in the first cases, they are named rational on the part of the science.

It is somewhat the same in the case of judgement, of the process of resolution: just as there is a place to distinguish the process which is named from the part of the science from that which is named from the power or faculty, so also the process of resolution can be named either from the part of the science or from the part of the power, of the faculty of knowledge. Here the relation between the senses and the understanding is being considered.

When we consider the understanding as a faculty in its relation with the senses, we must say universally: in a certain way we ought to resolve all things into the senses and we can speak of it as a principle and extreme.

When we say on the contrary that we only resolve into the external senses in the case of the knowledge of natural things, this is because the conclusions of the science of nature depend on such principles as ought to be judged in the light of sensible things: the universal principles

⁹¹Ibid.

appropriate to the science of nature imply sensible matter. In contrast to the principles of mathematics, for example, they do not abstract from the sensible qualities which can be attributed to their object. Also, considered from the point of view of science, it is peculiar to the process of resolution in the science of nature that it is completed in the external senses.

C. An opposite: reason and logic according to Hegel

We are now going to say something on Hegel's conception of logic, which has an interest for us in giving a point of view opposed to what we have seen concerning the dependence of logic upon reason and that of reason upon the senses and things. Whenever we can, in order to manifest something, it is ideal to bring out some opposite of it because that helps to further clarify our understanding. We know that opposition or negation plays an enormous role in the life of the mind; it permits us to distinguish things, many times radically.

a) The conception of reason in Hegel

Since the conception of logic which we have follows our conception of reason, we should first examine the way in which Hegel conceives of reason.

According to Hegel, our reason never stretches itself to things. He admits however that we can know things (after all, there are philosophers who play the fool, who say that we cannot know things). According to him our reason, although it never reaches things, can all the same know them, because it reaches all within itself.

So Hegel certainly rejects the senses. Things do not measure reason and, consequently, reason reaches only itself; it never receives anything from the senses. If one has a reason which receives from the senses and the senses from things, then one has an understanding that is measured by things through the mediation of the senses. With Hegel, we begin with reason, purely and simply.

The principles of the independence of reason, of its absolute autonomy in itself, should be considered henceforth as the universal principle of philosophy.⁹²

And:

Thus, I posit in the self-movement of the concept that through which science exists.⁹³

In sum, we have here uprooted reason. Speculative reason, for Hegel, is purely a measure, it in no way is measured.

⁹²Hegel, *Phenomenology of Spirit*, trans. Hippolyte, Book I, p. 160

⁹³Ibid.

All is real only to the degree that it contains and expresses the Idea.⁹⁴

Basically, he attributes to human reason something which is really only proper to the divine understanding. In reality man, in any domain whatever, is measured; even in the domain in which he measures, in his works, he is still a measured measure. From the speculative point of view, he is purely and simply measured: he does not make nature.

b) The conception of logic in Hegel

Since reason for Hegel is not in any way measured, we should not expect measurement in logic. For Hegel logic depends on things no more than reason does; just as reason is uprooted, so according to him logic is uprooted.

Logic should thus be considered as the system of pure reason, and the realm of pure thought.⁹⁵

c) A flagrant contradiction concerning reason

Moreover, Hegel admits the potentiality of reason, the passage in it from ability to act.

Thus science, the crown of the spirit of the world, is not yet finished from its beginning.⁹⁶

And:

In order to come to know properly speaking, or to engender the elements of science, which is for science a pure concept, knowledge should run through a laboriously long road.⁹⁷

On the other hand, he affirms, as we have seen, that reason reaches only itself. This is a flagrant contradiction: if it is potential, reason clearly cannot become actual without depending on something already in act. But Hegel not only denies that our understanding has an indispensable need for an exterior measure, but he rejects entirely the existence of that which could play that role.

⁹⁴Ibid., p. 463

⁹⁵Ibid., p. 35

⁹⁶Ibid., p. 13

⁹⁷Ibid., p. 25

Thought is that which is ultimate, most profound, first, and it is entirely itself.⁹⁸

Only with great difficulty could we imagine an opposition more radical to the course we have proposed here.

PART III THE TRUE, THE FOUNDATION OF LOGIC AND THE MOTIVE OF ITS DISCOVERY

As we establish what makes the working out of logic necessary for man, we will touch upon the principle that truth is the final cause of logic. But we will do more than that: we will also take time to understand that logic was discovered precisely for responding to the need which made its working out necessary. This issue in its turn enables us to throw some light on the problem of the dependence of logic upon things.

A. The necessity of logic

a) The place of a question on necessity.

Before taking up the question of the necessity of logic, it would be good to have an idea of the place of this question in relation to the questions which the understanding can ask about any object. That is, there is an order among the questions which the understanding can ask. St. Thomas, in his commentary on the Posterior Analytics enumerated in order the following questions: There is the problem of the existence of the thing (the question *an sit*), which precedes the problem of its nature (the question *quid sit*), but first of all is the problem of what the name means (the question *quid nominis*).

Before we ask about something whether it exists, we cannot properly know what it is. That is, there is no definition of that which does not exist. This is why the question of if it exists precedes the question of what it is. But it is not possible to show whether a thing exists, unless we first understand what is signified by the name.⁹⁹

The signification of the name is this the very first question. That moreover is the reason why Aristotle, when he defends the principle of contradiction, says that he must begin with the meaning of names.

This is why the Philosopher, in the fourth book of the Metaphysics, in the discussion against those who deny the aforesaid principle, begins with the signification of names.¹⁰⁰

⁹⁸Hegel, *Lesson on the History of Philosophy*, trans. Gibelin, p. 111

⁹⁹St. Thomas, *In I Post. Anal.*, lect. 2, n. 17

¹⁰⁰Ibid.

There is no other way to follow. We cannot begin with an enunciation, a proposition, because that would be like begging the question. We begin with the name, with the fact that names signify something determinate.

But where, among the first questions which the understanding can ask, namely, what the name means, whether the thing exists, and what it is (in that order), should we put the question of necessity, the question which now interests us? The question of necessity relates to the question about existence.

Since there is an order in generation among questions, we cannot in our inquiry into a subject like logic go immediately to the question of its nature; we must go through the question of the meaning of the name, then that of existence, that is, its necessity, because the question of existence is related to it. We can never lose sight of the first questions, but rather we must frequently return to them. They allow our understandings to see better, to be more firmly fixed, and to arrive effectively at a more and more distinct knowledge.

This is why it is much preferable, before we begin, to put off the question of the nature of logic and its subject, and to first ask the question about its necessity.

b) Remarks on the meaning of the word *logic*.

But first we might find it interesting to ask what we can say about the meaning of the name *logic*. I even think it might be better to relate it to the expression *rational philosophy*. This expression, or the equivalent one, *rational science*, which is used by St. Thomas in his proemium for the Posterior Analytics (which in fact is a proemium for the whole of logic), can be much clearer than the word *logic*. To say "rational science" is to say "the science of reason," the power of directing the discourse of reason in which it is found. St. Thomas moreover uses this expression to show that we can consider not only the treatises which are directly ordered to demonstration, but even the *Rhetoric* and the *Poetics* as part of rational philosophy. Of course, in poetry for example, there is not strictly speaking augmentation, nor demonstration, but there is the presence of the certain discourse: there is the plot, the story, which goes from one point to another, one action to another, etc.

Thus, we can say about the meaning of the word *logic*: by logic we mean the rational philosophy (or rational science) which directs the activity of reason, of whatever kind it might be. But we must exclude practical reason, for example, art in the strict sense: the reason of the carpenter is not directed by logic.

c) The necessity of logic

St. Thomas' proemium to the Posterior Analytics is the fundamental text on the problem of the necessity of logic. Thus, we need to take it as the point of departure for our inquiry.

Of course, we mean the proemium of St. Thomas, not the proemium of Aristotle commented upon by St. Thomas. But when St. Thomas writes a proemium he almost always begins with a text of Aristotle, a text completely first, upon which he leans, evidently so that he can later say something of his own.

Thus this is how the Proemium of St. Thomas begins:

As the Philosopher says in the first book of the Metaphysics, the human race lives by arts and reasonings.¹⁰¹

We can also translate 'art,' if we give it the precise sense which it has at the beginning of the Metaphysics where it is opposed to experience, by the words *universal knowledge*. Experience is opposed to art in that it comes from the comparison of the notions of the individual which are preserved in memory. Moreover, we must understand that when he speaks of art in this context, it is not entirely of art as a particular virtue, or a practical one: by art in this context he means all universal knowledge.

And we can translate "reasonings" by the word "discourses."

Thus, man lives by universal knowledge and discourses. In his case almost everything is taken from the judgement of his reason. Almost everything, but not everything absolutely, since there are some notions, some conceptions, some common truths which are naturally known by all, and in this case, reason as reason does not come in.

St. Thomas follows up:

By this, the philosopher seems to touch upon something proper to man, and that by which he differs from the animals. The other animals are directed in their actions by natural instinct, while man is directed in what he does by the judgement of reason.¹⁰²

The expression *the other animals* is very well chosen. We also are animals. Thus, the other animals are guided by their instincts; nature has determined them in advance. Man, on the contrary, is not determined: in his case almost everything is raised to the judgement of reason.

But reason in man is at first ignorant; moreover, a man must direct himself, or be directed, so that he can effectively do those acts by which he achieves his purpose. This is the source of the necessity of the arts:

That is why, so that human actions can be accomplished easily and in an orderly way, the different arts are necessary. Art seems to be nothing other than a rigorous order by which reason directs, through determined means, human actions to their desired end.¹⁰³

Man must work out the arts because human actions need a sufficient ease and order in their execution. These habits are finally necessary to fill in the indetermination which is initially found in reason.

So far this consideration has been very general, very common: it concerns the necessity of certain arts which direct reason in its operations. But what St. Thomas then joins to this is very important, because it touches most upon the more particular and restricted problem, that of logic:

¹⁰¹Ibid., proem., n. 1

¹⁰²Ibid.

¹⁰³Ibid.

Moreover, reason not only directs the acts of the inferior parts, but it also can direct its own actions. That is because it is proper to the understanding part to be able to reflect upon itself. Because the understanding understands itself, reason can also seemingly discourse on its own actions.¹⁰⁴

It is absolutely indispensable to understand that reason has this ability to discourse upon its own actions, that is, to exercise its proper act, which is to reason, upon itself. Through this we can know how logic could have been discovered and in what it consists.

Even to be fittingly assured of the good of shelter, man's reason must reflect upon the actions of the hand and discover the art of construction, without which man could not build with ease and in order. In the same way, man must reflect upon the actions of his reason, and thus discover the art of using his reason well. Since the initial indetermination of man extends to reason itself in its proper actions, it could not proceed with ease, order, and without error toward knowledge without such an art. And this art which is necessary for reason to effectively direct itself is the art of logic.

Thus just as by the reflection of reason on the actions of the hand the art of building has been discovered, by which man can easily and with order exercise such an act; so also such an art is necessary to direct the actions of reason itself; an art by which man can proceed with order, easily, and without error in the act of reasoning itself. And this art is logic, that is, the rational science.¹⁰⁵

The entire necessity of logic comes from the need for reason, given its initial state of indetermination, to be directed so as to be able to exercise its operation of knowing with the greatest perfection. And this direction is made possible by the power which reason has to reflect upon itself and its proper operations, and thus discover the means of self-direction.

B. How logic is discovered.

a) Reflection on actions.

We have been able to ascertain that St. Thomas, in establishing the necessity of logic, indicates for us the way in which it was discovered. As we saw, using a likeness between the actions of reason and the actions of the hand, he manifests that, as has been the case with all of the arts, logic has been discovered by a reflection on the actions of the faculty concerned.

We can moreover see a radical opposition with Hegel and understand with greater clarity the dependence of logic upon reason, and ultimately, upon things. Just as we cannot say that we have discovered the art of carpentry or of building by considering the bare hand, but only in contemplating the actions of the hand, so also it is not in considering bare reason that logic will be able to be discovered, but only in considering the actions of reason.

¹⁰⁴Ibid.

¹⁰⁵Ibid.

b) The action is specified by the object.

What manifests the dependence of logic upon things? It is saying *action*, since we are obliged to refer action to an object. For the action is always specified by the object. Since the work is the object of the action, just as by considering the works art is discovered, so also in the case of speculative reason, by considering the thing, things being the object of the actions of speculative reason, logic is discovered. This is why in simply saying that logic is discovered by reflecting upon the actions of reason, we are radically opposed to Hegel, for whom reason is never tied to things, but only to itself.

c) Conclusion and transition.

Thus, logic has been discovered because man has considered, has analyzed, the actions of reason; and that would be absolutely impossible if reason was severed from things.

Clearly we have done nothing except give a very sketchy account - still one that is very valuable to us - of the fact that, in order to work out logic, it is necessary to reflect upon the action of reason. To understand what we have said better, it would be necessary to be more precise, and to discover that which is implied in the enunciation: *reason can discourse on its own actions*.

That is very difficult, because it would then be necessary to look into the very nature of logic. We came to see that we must consider the actions of reason and that those cannot be detached from things. In order to obtain a more distinct understanding, it remains to ask ourselves: what do we perceive in things - not as things, since that is relevant only to the philosophy of nature or to metaphysics, but things as considered, things as known - the consideration of which would be of such a kind as to obtain for reason the direction it needs? What does the logician look at in things as known in order to discover his subject? As a reply to this question, St. Thomas in the proemium to his commentary on the Nicomachean Ethics is content to speak of order: the logician perceives an order in things as considered. That statement is very universal and easy to grasp, but it will lead us to something very precise. Although to speak of order could be precise enough in a sense, we would like, if possible, to be even more precise.

Another, perhaps even more common way to speak of the subject of logic is to speak in terms of tools: the logician discovers, looks at the tools which reason needs for its own direction, tools which it forms spontaneously, although imperfectly. But whether we speak of order, or the tools formed by reason, it is all the same: the order formed by reason to direct its own actions is just as much a tool; for example, definition and division both imply order, as do the rest.

PART IV

THE RATIONAL WORK, SUBJECT OF LOGIC

Among the questions which we addressed previously, the question about the nature followed immediately upon that about existence, to which, as we have seen, the question of necessity is related. Thus we are now going to treat of the problem of the nature of logic, that is

to say, of its subject. Moreover, our previous considerations on the necessity of logic lend themselves very naturally to this problem.

A. Some examples of logical relations.

a) Justification of this stage

1. The necessity of going from the singular to the universal.

But before we discuss the subject of logic in a universal way, that is, present the logical relation as such in all of its universality, it is fitting at least to respect the need dictated by the nature of the understanding itself to proceed first from singulars, from some instance of logical relations which is very manifest. We are respecting a completely fundamental need for our reason to go in its knowledge from the singular to the universal.

In spite of the length of development which this stage involves, it is not right to leave it out. Because to neglect it would be to fall into undue haste.

2. Remarks on undue haste.

It is good to note the analogy between bodily movement and haste in speculative matters; so that he who is in a hurry in the exercise of his understanding can be compared to the man who, going down the stairs, jumps down the steps in a dangerous way:

There is truly an analogy in which we speak of hurry in the acts of the soul according to a comparison taken from bodily movement. We say of someone who is hurried in bodily motion that he is carried from top to bottom, either because of a jump if he has done it himself, or because he has been pushed, if he has received from another. Either way, he has not descended in an orderly way, step by step.¹⁰⁶

We can first transpose this onto the operations of the soul in practical matters: the process in which practical reason is carried all the way to the operation is like the movement from the top of the stairs to the bottom. It comprises several intermediate steps through which it must pass both for deliberation and, consequently, for the operation to be correctly carried out.

But in the soul, reason itself is the highest thing; the lowest is the operation carried out by the body; the intermediate steps through which we must descend in an orderly way are the memory of past facts, the understanding of present facts, the wisdom for considering future events, the reasoning which compares one thing to another, and the docility through which we accept the decisions of our superiors; these are the steps which someone descends in an orderly way in view of good counsel.¹⁰⁷

¹⁰⁶St. Thomas, *Summa Theo.*, IIaIIae, q. 53, a. 3, c.

¹⁰⁷Ibid.

Also, just as we say of someone who jumps down the stairs that he is in a hurry, so we say equally that he who, in great urgency, neglects such and such steps which are necessary elements in the rightness of his action, is hasty.

If moreover someone is pushed to act under the impulse of will or passion, he would be, in skipping over the steps, hasty.¹⁰⁸

Now we can transpose this to the speculative order: just as someone can be hasty in descending concerning operations, so he can be hasty in the order of speculative knowledge, in climbing up the universal, if he does not climb in an orderly way, step by step.

In the practical order, the highest thing is reason, the lowest the operation. In the speculative order, it is the reverse: the lowest is the singular and the highest is the universal to which we climb.

It is completely natural and fundamental for man to progress in his knowledge by going from the singular to the universal; we should never neglect that process: to climb right away to the universal is truly a form of undue haste.

To avoid climbing too quickly, we quite rightly are going to first consider the singular, that is, chiefly two particular cases of logical relations, instead of immediately considering logical relations in a universal fashion.

b) About the argument from example in four terms: a case of order in reason.

We saw that logic, as we have alluded to already, considered the order formed by reason. But this order presents to us a very great complexity and we can consider different parts, different aspects of it. But the most manifest instance of order in reason is without doubt argumentation: the relation, the order of premisses to the conclusion is something very evident, more obvious than the relation of genus to species. So it is preferable to look at argumentation as a case of order, of a particular logical relation, so that we might as much as possible proceed from the known to the unknown.

There are, however, many forms of argumentation. But because of its very proportionate matter, which makes it very easy for us, the argument from example constitutes without a doubt the most appropriate choice. We therefore are going to study the example and first in regard to its matter.

First, notice that in the case of example, we go from singular to singular or from particular to particular. This is why the example constitutes the weakest form of argument. On the other hand, it has the advantage of being very proportionate. Contrary to the syllogism, the example does not proceed from the universal. It differs equally from induction, which is placed between example and syllogism, because it requires the enumeration of singulars, and yet all the same arrives at the universal.

Rhetoric, which deals with the singular actions of men, uses examples in which it goes from the singular to the singular. But the philosopher can also be served by the example (as

¹⁰⁸Ibid.

Aristotle is often served). In his case, he does not argue from singular to singular, but from one part to another, from one particular to another.

We should also remark that the word *example*, even in logic, can have at least two meanings. Sometimes by *example* is meant only a singular or a particular that is placed under a universal. This is what it means in grammar to exemplify. This is what English speakers call an *instance*. Aristotle sometimes uses the word this way: in order to manifest the universal, to confirm it, he will put a singular under it.

We are not speaking of this meaning of example. We mean by *example* rather an argument in four terms.

Because example requires four terms, the order of reason which it requires becomes particularly noticeable, but that is not to say that these terms will always be easy to order.

1. The example of the war with the Phocians.

We will first analyze an example which goes from a singular to another and whose matter has been proposed to us by Aristotle himself in the *Prior Analytics*.

This will prove that a war of the Athenians against the Thebans would be bad. We can imagine that the Athenian head of state has assembled his council, and that they have deliberated about whether they should wage war against the Thebans; or even that the deliberations have ended, and he has judged it to be bad. Thus he must now persuade the multitude, the people, that it would not be good to declare war. And since in a speech addressed to the people, he cannot enter into all the details and show all of the circumstances which have been considered by the Council (who are, we suppose, men of experience), he must make an appeal to an orator. Or better yet, the head of state himself will address the people, but he will then speak as an orator. In his discourse, he must simplify things, and he can use example as a form of argument.

Thus, the orator manifests to the Athenians that declaring war against the Thebans would be bad, because at a former time a war waged by the Thebans against the Phocians in fact was bad.

1) Conditions required on the side of the thing.

Recall the logic - reason - things dependence. Rightly, then, in the case of example, which is, as an instrument of logic, formed by reason, there will be certain conditions required on the part of the things involved.

First, they must be two singulars. We are going from one singular to another. In this case, we are speaking of two wars: the war of the Athenians against the Thebans (because even if it never takes place, still it is a possible war) and the war of the Thebans against the Phocians.

Second, the two singulars must be like each other, not absolutely, but under a certain relation, from a certain point of view. Notice that the *things* are like each other; this is not made up by reason. In the particular example which we are analyzing here, the two wars have this likeness, that they are both wars against neighbors. If there was no element common to the two wars, there would not even be a question of an argument from example. Because we can argue by going from one singular to another only because in reality they already are somewhat alike.

Third, one of the singulars must have a property that is already known. Thus in our example it is necessary that everyone knows that the war of the Thebans against their neighbors the Phocians has taken place and was actually bad.

2) A link established by reason.

These three conditions on the part of things having been met, we now must ask how do we tie one singular to the other, upon what scheme of manifestation? How should reason conduct itself in order to tie together the war of the Thebans and the war of the Athenians? Reason must interfere and, in the exercise of its proper action, something must be made, must be formed; and the thing formed is the subject of the considerations of logic.

That which reason forms and constitutes assures the passage from the known to the unknown. Reason makes a relation between, let us say, the war of the Thebans against the Phocians, which took place a century ago, and the war which the Athenians are thinking of waging against the Thebans. There is no relation between the two, on the part of things, except the likeness of which we have just spoken: war between neighbors. Reason ties one to the other. So relations of reason are formed because the act of tying one singular to another implies an order of reason.

a - An analysis presented in a determinate matter

It is now a matter of showing that the war of Athenians is bad. The argument has these four terms: war with the Thebans, war with the Athenians, war with neighbors, bad. Thus, the argument cannot be ordered in the form of a syllogism, since a syllogism must be composed from three terms. Therefore, in attempting to explicate the implicit order of the argument, we must use two syllogisms.

First, we know what we must prove: that the war of the Athenians against the Thebans would be bad. Yet, that the war of the Athenians against the Thebans would be a war against neighbors is entirely separate from the other war; it is taken in, it is known independently from the argument.

war of the Athenians against the Thebans - between neighbors
war of the Athenians against the Thebans - bad (conclusion)

So, when reason uses a similar singular and forms it into a principle of argumentation, a relation of principle to conclusion is established, and we are then dealing with the order of reason. Certainly, there was a likeness between the things, but when the similar singular is formed *as principle*, it is found, from this point of view, on the side of reason.

It is now a matter of analyzing how reason uses the other singular, that is, the similar singular about which it ultimately wishes to conclude something. It forms it as a principle in attributing to it, under the form of two propositions, both an already known quality (namely, that the war of the Thebans against the Phocians was bad) and a common quality (one it has in common with the other singular). That permits it to infer, as a conclusion, that war among

neighbors is bad:

War of Thebans against Phocians - bad
War of Thebans against Phocians - between neighbors
War between neighbors - bad

That constitutes the very substance of the example. What the similar singular gives us is the ability to put together two common terms. The war between the Thebans and the Phocians is a singular which enables us to put together *war between neighbors* and *bad*, which are two very common terms. In other words, the similar thing, insofar as it has been formed or constituted by reason, enables use to put together in the conclusion two common terms which we have attributed to the similar singular in the premisses.

The singular having already played its roles, all that is left to do is to take the conclusion which we have obtained and make it the major premiss of a second syllogism, which enables us to infer the final conclusion we have been aiming at:

1. War of Thebans against Phocians - bad
War of Thebans against Phocians - between neighbors
War between neighbors - bad
2. War between neighbors - bad
War of Athenians against Thebans - between neighbors
War of Athenians against Thebans - bad

We call the syllogism which led to the first conclusion the pro-syllogism, and that which enables us to infer the final conclusion the second or principal syllogism.

b - Analysis without determinate matter

We have already done logic in such an analysis. We have helped reason to form an example, but we have done so *in a matter*: the order of reason that we have liberated is tied to a determinate matter. We had to work in this way because we would otherwise have been too abstract, but it is possible to go further still. In order to come to an even more distinct knowledge, it would be necessary to liberate the order of reason in such a way that it could be verified in any matter; that is, not only [in the relation] of one such singular to another such singular, but of any one particular to another.

1° The order of the terms

This analysis requires an order among the propositions, but let us now examine the order of the terms making up these propositions. We know that there are four of them. How do we order them?

The order of the terms is dictated by greater or lesser universality. We are speaking of the order of predicability. For example, *animal*, which is more common than *man*, comes before him. If we consider our four terms, we immediately notice that they taken in two singulars. Since universality dictates order, it is impossible that the singular be first. With regard to the other two terms, they are common. We have *war between neighbors* and *bad*. Which of these is more common? It is *bad* because it cannot be war between neighbors, which would be one bad thing. *Bad* is therefore first, and the other would be called the middle.

Notice that the word *middle* as it is used here (and as Aristotle himself uses it at the end of the Prior Analytics) has an entirely different meaning from that which the word *middle term* does in the case of the syllogism. In a syllogism, it is a defect to put the middle term in the conclusion; the middle term can only be in the premisses because it is what enables us to join the major and minor terms. The whole substance or essence of the middle term is to unite the two extremes. On the other hand, in the case of the example, a term is called middle only because it is intermediate from the point of view of predicability. Notice again that the syllogism of the first figure, called the perfect syllogism, has two characteristics in this regard: not only does its middle term unite the two extremes, as it does in every syllogism, but because of the perfection of order among its terms, it is also the middle in the order of predicability. This is not the case in the second and third figures.

In the case of the syllogism the term called middle is enough to unite the two extremes. But in the case of the example, one term is not enough: it is impossible to prove the conclusion through only one intermediary. Furthermore, this is why a pro-syllogism is necessary. The singular term upon which we are relying cannot truly be a middle term. We reserve the name of middle for the term coming immediately after the most common term in the order of universality. In a word, we want to call the middle, purely and simply, that which is intermediate in universality, in predicability.

Let us continue the analysis of the order of terms. We recognize now the first two, namely the first (*bad*) and the middle (*war with neighbors*). How do we order the other two? They are both singulars, and in this way they are equal. What will enable us to say that one comes after the other? It is the singular used to manifest the other; that is, it is the most manifest. And because it is the most manifest, it least resembles the universal, and is farthest from the common. But the other, although in fact it is not universal, yet is not as far from the common, and thus is less manifest. And so it qualifies as the third term. The third term in our example would be the war of the Athenians against the Thebans.

In order, we signify the first term by the letter A, the middle by the letter B, the third by the letter C, and the fourth, or the term similar to the third, by the letter D.

2° The order of propositions.

The order of propositions would be the following: we want to prove that A pertains to C, that is, that it would be bad for the Athenians to wage war against the Thebans. To do this, we begin with the knowing that *D is A*, that is, that the war of the Thebans against the Phocians was bad, and we continue using B, that is, using the known fact that both are wars between neighbors.

D - A
D - B
B - A

B - A
C - B
C - A

That B belongs to C is known independently of argumentation. The similar case (D) enables us to join the first term (A) with the middle (B), which we then use as the major premiss in the second syllogism. And since the pro-syllogism through which we join A and B constitutes the substance of the example, Aristotle has a good reason to define the example with this extremely brief formula: *The greater extreme (is attributed) to the middle through a (term) like the third.*¹⁰⁹

When the order of terms and propositions is thus liberated from every particular or singular matter such as war of the Thebans, war of the Athenians, etc., we can speak of the a universal *at rest in the understanding.*¹¹⁰

Of course, in certain way we attain the universal through the senses because we see the universal in the singular, for example man in Socrates. But this knowledge is still confused and imperfect: insofar as our understanding has not clearly liberated the universal which is its object, we have not yet arrived at a truly distinct knowledge. It is somewhat the same here (though we should not push the comparison very far): insofar as we only comprehend the example within a very singular matter, we have only arrived at an imperfectly distinct knowledge. Someone can comprehend that we have shown that the war of the Athenians against the Thebans would be bad because it is a war between neighbors, and that at another time war between neighbors has been ascertained to be bad, but it is only when we have liberated the order of terms in such a way that this order is verified in every matter that it would be a logical universal at rest in the understanding.

Clearly, it is not possible to reach this universal all at once. We must demonstrate gradually before we approach the logical analysis in all of its universality. We cannot begin teaching about argument by example by saying: the example is a *primum de medio per simile tertio*.

3° Remarks on the use of letters.

It is good to note that Aristotle only uses letters (A, B, C, ...) in the logic of the third act, since this is not always fitting; for example, in the case of the second act (in the treatise *De Interpretatione*), there would be no purpose in signifying, let us say, the noun with the letter A, and the verb with the letter B. There is too much variation in the significations and ways of signifying. In order to use letters, there has to be a degree of homogeneity. In the logic of the third act, we are always concerned with nouns; the letters simply serve to indicate that one noun comes before another, that is, that it is more universal than another.

St. Albert calls these letters transcendental terms. He explains them, saying:

¹⁰⁹Aristotle, *Prior Analytics*, II, c. 24

¹¹⁰Aristotle, *Posterior Analytics*, II, c. 19

They are transcendental terms, which at the same time signify everything and nothing.¹¹¹

We can see what he wants to say: these terms signify nothing determinate: A can signify man, animal, a quantity, . . . in a word they imply nothing except a universal; and they yet signify everything because they can signify one or another of these things. By saying *nihil et omnia* St. Albert makes an appeal to the matter of argumentation. We think it preferable to say: these letters do not signify any determinate matter.

Notice especially that we use these terms about the form of the syllogism, the form of the example, etc. Although they do not signify anything very determinate with regard to the matter, they do signify something very determinate with regard to the form: in fact, the letters determinately signify such an order of reason, such a relation of reason. Thus in our example the letter A cannot designate anything other than the first term, that is, the most common term, which is first from the aspect of predicability.

And because they serve to signify an order of very determinate relations, these letter will be the subject of a very rigorous logical science. That is, they are not in any way symbols used to facilitate a reckoning, such as are found in algebra or in mathematical logic (also called, and rightly, symbolic logic).

2. The example of form, end of the matter.

When we wish to illustrate a rule or definition in logic, it is never good to take an example whose matter is very difficult. We would be doubling the difficulty. There is already enough difficulty present in the order of reason, in the logical order which we wish to comprehend. Thus it is important to choose examples, or models of discourse, with a proportionate matter.

Granted that an example which is really philosophical necessarily requires a more difficult matter than one which proceeds from one singular to another, the example formed by Aristotle in the *Physics*, Book II, chapter 2, still has a matter proportionate enough to us that we can profitably use it as a second example illustrating these logical relations.

We will discover the same framework, we could say, the same order of terms as in the example of the war of the Athenians. But what makes this text marvelous is the discourse which precedes the example itself and is necessary before it can be formed. While in the example of the war of the Athenians it was a historical fact that the war of the Thebans against the Phocians had been bad, here, on the contrary, the similar case upon which we must build is not given, but must be proven.

We will go slowly. We are always inclined, when teaching, to go too quickly. Because when we know the subject already, and have reflected upon it for a long time, it becomes so manifest to us that very often we do not think of presenting the matter with a fitting rhythm, in a way proportioned enough to those who are taking it up for the first time.

In the passage which we will examine, the point is to show that the form is the final cause of matter. The final cause, not simply the end, because the word *end* sometimes simply signifies

¹¹¹St. Albert, *In Prior Anal.* (No other reference given)

the term, that which comes last; while final cause is not only realized as a term of becoming, but as the better, and also it is that in view of which the process was carried out.

That the form is the term of generation is manifest in itself. But that it is that for the sake of which the generation is worked, in relation to the matter, Aristotle manifests through a likeness taken from the arts.¹¹²

Here the concern is an argument which proceeds from a similar case found in the artificial order. Aristotle shows his wisdom here, because the artificial is much more manifest than the natural.

1)The whole preceding discourse.

First of all, it would be fitting to take a look at the considerations which precede the example and prepare it.

a - Two arts which make matter.

Aristotle establishes first a distinction between two arts which concern matter. In one case, the concern is matter purely and simply.

We meet with some arts which make the matter; and of these, some make matter simply, as the art of the brick maker gives the bricks which furnish the matter of the house.¹¹³

While in the second case, we are concerned with a matter which indicates a relation to a form, as for example the wood which the carpenter fashions for such and such a structure. The work of the carpenter concerns a matter, but the matter must be disposed and prepared to receive such a form. Thus it must be prepared very particularly: for example, if the carpenter fashions the wood for the building of a ship, he cannot fashion it in the same way as if he were preparing it for the building of a house.

Other arts make it more specially, that is, they dispose (more proximately) an already existing matter for the reception of a form, as the art of the carpenter prepares the wood for the form of a ship.¹¹⁴

b - Man is the end of the works of art.

¹¹²St. Thomas, *In II Physic.*, lect. 4, n. 173

¹¹³Ibid.

¹¹⁴Ibid.

Aristotle then introduces a second consideration, still concerning art. He remarks that man is served by the works of art, that artificial things exist for him. They all exist for his sake, whether for purely physical and material ends, that is, for the needs of the body, or for the needs of the soul and understanding.

It is also necessary to consider that we use all the works made by art as existing for us. In a certain way, we are the end of all artificial things.¹¹⁵

Notice that these two considerations, these two truths given in reality, are independent of our speculative understanding. Moreover, although they are not disparate, since both relate to art, one is not in any way inferred from the other. It is otherwise in the considerations which follow, which depend on what precedes them.

c - Two arts which judge the arts of matter.

Presupposing the considerations just made, Aristotle manifests that there are two more arts which dictate to the previously considered arts and that it is insofar as they judge that these other two arts are said to command.

From which we can understand that there are two arts which command matter, that is, which command the arts which make the matter and which know, that is, judge those arts.¹¹⁶

These two arts are the art of using and the art of the form. And each of them, in its own way, is architectonic:

The first is that which uses [the work], and the second is that which makes the work by introducing a form. The latter is architectonic in regard to that which disposes the matter, as for example the art which makes ships is in regard to the carpenter who cuts the wood. Consequently it is also necessary that the art itself which uses be in some way architectonic, that is, the principal art with respect to the art which makes.¹¹⁷

An architectonic art is one which commands and judges. The art which disposes the matter should receive the command of that which knows the form. The latter tells the art which concerns the matter in what way it should dispose, for example, the wood, and what kind of wood it should use, so that the matter which is used in the building of the ship will be well prepared, well disposed. But the art of the form is not architectonic because the art which uses

¹¹⁵Ibid.

¹¹⁶Ibid.

¹¹⁷Ibid.

also commands it: the art of the form must receive its own commands.

Thus there are two arts which command, but one (the art of the form) commands that which disposes the matter, and the other (the art which uses) commands that which knows the form.

But although the two are architectonic, namely the art which uses and the art which makes, they differ: because the art which uses is architectonic since it knows and judges the form, while the other, which is architectonic since it makes the form, knows the matter, that is, judges it.¹¹⁸

This shows that there is an order, and a superiority on the side of usage. For the art which knows the form judges the matter: he who makes the ship will command the carpenter, will tell him how to fashion his wood for the sake of making a ship; while he who uses the work judges the form, command the art of the form: he who uses the ship - the pilot - will himself command the construction of the ship.

Aristotle himself develops this example of the pilot - Look! *Example* here is taken only in the first sense which we spoke of: it is only a matter of putting a singular or particular under a universal.

Aristotle manifests this through an example. The use of the ship concerns the pilot; thus piloting is an art which uses; it is therefore architectonic with respect to the art of building ships and knows and judges its form. And this is what Aristotle says, that the pilot knows and commands what should be the form of the tiller.¹¹⁹

For example, a man having experience in navigation would know that a schooner, with such a form, will be better able to sail the sea, while a ship made otherwise would present a great risk of an accident. It belongs to he who uses the work to be a judge of it.

Moreover, the maker of the ship knows what kind of wood he must use:

While the other, namely the maker of the ship, knows and judges of what kind of wood and of what quality of wood the ship must be made.¹²⁰

After this example, this illustration of the universal, we are now better able to understand the distinction between the two kinds of architectonic art:

Thus it is manifest that the art which introduces the form commands the art which disposes the matter; while the art which uses the work already made commands the art

¹¹⁸Ibid.

¹¹⁹Ibid.

¹²⁰Ibid.

which introduces the form.¹²¹

That which comes to be established, namely, that there are two architectonic arts, one in relation to form, the other in relation to matter, furnishes the evidence for a likeness of relation between matter and form on the one hand, and form and use on the other:

From which we can understand that matter is to form just as form is to use.¹²²

We can express this in the following way:

<u>Matter</u>		<u>Form</u>
Form	=	Use

Since there is an art which judges matter: this is the art of the form; and an art which judges form: this is the art which uses; there is the same relation of matter to form as form to use: a relation of that which is judged to that which judges. In fact, such is the point of comparison: the two, the art of the form and the art which uses, judge.

2) The example is four terms itself.

Let us look at the following text. This is the passage that we will try to analyze and put in its form.

But the use is that for the sake of which the work is produced; while the form is that for the sake of which the matter exists in artificial things. So just as in the things which relate to art we make the matter for the sake of the work of art, so also the matter, though made by nature and not by us, is in natural things as having an order to form, and existing for the sake of the form.¹²³

What is necessary here to form an argument from example, an argument in four terms? It is first necessary to be able to see all of the terms presented. There are many, but it is necessary to choose four. But the question which we must ask first of all is, what does Aristotle intend to prove here? What is the final conclusion?

Aristotle wishes to manifest that natural form is the final cause of matter. Thus we already can tell that *final cause* (of matter) is the largest term and that *natural form* is the third term. Moreover, it is easy to discover that artificial form is used as the similar case.

¹²¹Ibid.

¹²²Ibid.

¹²³Ibid.

a - An example which concludes concerning the artificial form

But if at first we examine the first phrase of the text, and then the one which it precedes, we notice that we are only dealing with art, that is, that we only conclude about the artificial form. Thus, there is an argument that comes before the one which reaches our final conclusion. We must therefore first try to analyze that argument, and put it in proper form. Only then do we return to that which concludes about natural form.

What is the conclusion of this first argument?

It is that *the form is that for the sake of which matter exists in artificial things*. In other words, that the artificial form is the final cause of the matter. *Final cause* is therefore certainly a term to save: it is the largest term, the predicate in the conclusion. We also have *artificial form*, which is the subject of the conclusion. Where should we put *use*? This is the similar case, the other particular, which certainly enters into the pro-syllogism.

We have already seen, in the example of the war of the Athenians, that certain conditions are required on the side of things, that certain things are known and given independently of the example. Thus, there must be two particulars; here, we have *use* and *artificial form*. It is equally necessary that these two particulars be like each other in some way, that they possess a quality, a property, a common element; here, the common element is that the art which is tied to them is architectonic. In fact, we have seen that the art of the form and the art which uses are both arts which command and judge. Finally, one of the particulars must possess a quality already known, independently of the example; here, 'use' possess the property of being final cause: in fact we have seen that man is in some way the end of all artificial things: the latter are produced for the sake of being used by men.

All the conditions required on the part of the things have been realized. Now reason can intervene and connect one of the particulars to the other, forming at the same time an order of reason. To establish the similar particular as a principle, reason attributes to it, under the form of two propositions, a quality already known, namely that use is the final cause, and a common quality. Reason then forms a pro-syllogism in which the conclusion is: that which is effected by an architectonic art is a final cause.

Use - final cause
use - architectonic
architectonic - final cause

This conclusion is then repeated as the major premiss of the second syllogism, in which the minor proposition expresses an attribution of the quality possessed in common - and that is known independently of the example - with the particular of which we wish to manifest something. We then have nothing left but to infer the conclusion: the artificial form is the final cause.

Use - final cause architectonic - final cause

use - arch
arch - final cause

artificial form - architectonic
artificial form - final cause

Thus reason goes from use to artificial form, and from the art of use to the art of form, in coming to grips with the common element: both are architectonic.

b - The example which concludes about natural form.

Now let us return to the argument which leads to the final conclusion, that is, the example which concludes about natural form. As becomes very clear in Aristotle and St. Thomas, the logical form of this argument is not explicitly demonstrated.

We know that the conclusion will be "Natural form is the final cause of matter." *Final cause* is therefore the largest term, and *natural form* is the third term. And the place or the role which *use* has in the preceding example would now be held by *artificial form*; this is the term which is the similar particular.

The problem of the common element remains. This is the most difficult thing. Given that Aristotle and St. Thomas, before considering example itself and making this argument, had said that the form is the term of generation, and that this is self-evident; while the fact that form is the final cause of matter still must be manifested, we might think that *term of generation* is the common element. However, Aristotle has insisted that something can be a term without ever being that for the sake of which, and consequently that to manifest that the natural form is the end would be to manifest that it is not only the term but also that for the sake of which. It would be surprising if he should use *term* as the common element permitting a passage from artificial form to natural form because, if we conceive the example thus, the universal through which we pass (that is, the two terms connected by the pro-syllogism and constituting the major premiss of the second syllogism) would be *the term is the final cause*:

artif form - final cause
artif form - term
term - final cause

term - final cause
nat form - term
nat form - final cause

But St. Thomas, remember, has insisted from the first that *something can be a term without being that for the sake of which, and thus can lack the ratio of end*, and this as the reason why we must actually argue for our conclusion. This directly weakens the proposition *the term is the final cause*. Thus, even if it is true that being a term is a character that apparently belongs equally both to the artificial form and the natural form, this character could not be used in this example.

Someone has suggested *optimum (the best)* as a possible common element. This solution must also be set aside because it is absolutely necessary that the common element be something already known. But that the natural form is best in generation is not known before this argument. Rather it must be proven. In fact, to say that the natural form is the final cause and that is it the best comes to the same thing. For that which is the final cause requires two elements: it must be the term of the generation, and it must be that which is best in that generation. But, that the

natural form is the term of generation is self-evident; it must therefore be proven that it is the best and thus the final cause.

Would not the common element simply be *form*? The artificial and natural forms are equally forms.

Notice that Aristotle does not go explicitly from artificial form to natural form. Rather, he says: *just as the matter is for the sake of the form in art, so the matter is for the sake of the form in nature*. But this is essentially the same thing. If we wish to make explicit the logical form of the example, we must see that artificial form, when we consider it, allows us to put together two common terms, namely *final cause* and *form*. That artificial form is the final cause of matter is already known because of the preceding argument. Moreover, both artificial form and natural form are forms (this is so manifest that Aristotle did not think that there was a need to mention it explicitly), independently of the actual argument and final cause:

artif form - final cause

artif form - form

natural form - form

We have only posited the two common terms, put together because of the pro-syllogism, as the major premiss of the second syllogism. Now we must infer the conclusion:

artif form - final cause

artif form - form

form - final cause

form - final cause

natural form - form

natural form - final cause

This whole text is a model of discourse, simple enough, but nicely structured. Aristotle begins by stating what we need to formulate our example: that there are two arts which concern matter, that we are the end of natural things, that there are two arts which command. Finally, he gives us all the elements necessary to form our example.

3. The case of an argument that is difficult to analyze.

In many cases, it is not easy to make a logical analysis of the text. Let us try to discover from the viewpoint of logic what is going on in the following passage from St. Thomas' proemium to his commentary on the Physics, at least so that we might experience this difficulty:

Because what follows is something common, it should be determined first and separately, so that we might not be obliged to repeat this common thing many times in all the remaining parts. It was thus necessary to put at the beginning of the science of nature a first book in which we discuss what follows upon mobile being commonly; somewhat as we put first philosophy, in which we determine about what is common to being as being, before all the sciences.¹²⁴

¹²⁴St. Thomas, *In I Phys.*, proem., n. 4

Can we see that, although it is not the only form of argument in this text, that the example in four terms is present here?

Perhaps not when St. Thomas says that the common and what relates to the common ought to be considered first and separately and gives a reason for it. For there is no particular in this propositions: the terms are universals, but the example is always under a universal: it proceeds from one singular to another, or one particular to another. Thus in the example in which it is a question of the art which uses and the art of form, it is not art in all of its universality that comes into play, but only one part, one species of art.

Moreover, further in the text, we see that metaphysics (first philosophy) is used as a case similar to the Physics. Thus, it would be an example in four terms. But is not this likeness very difficult? In fact, every good likeness should proceed from a case that is both similar and more known than that which it serves to manifest. But metaphysics is the discipline that should come in last place, in the order of acquisition. How could it be more known than the first part of the science of nature?

It is very necessary to see that this likeness only makes an appeal to a knowledge of what is largely the subject of metaphysics. Looked at in this way, nothing prevents metaphysics from being used as a likeness. Of course, it would not be good to present this likeness to someone who did not have any knowledge of first philosophy, who does not even know what it is about. Notice that this text of St. Thomas is tied to a proemium. But, as we have mentioned before in another course on the proemium, the word of the proemium is very perfect, very brief. Especially in the case of the written word, it is necessary, even if it requires an act of natural faith on the part of the learner, to say things as perfectly as possible, in extremely rich words. But in oral teaching, if we wish to explain that the Physics should be studied first, we risk, in entering into this likeness to metaphysics, saying absolutely nothing.

What St. Thomas is concerned to manifest is that in the science of nature there is a necessity for one distinct, separated first part - this is the Physics - in which we determine about the subject of this science in common, that is, we treat what is common to all mobile being considered as such. To manifest that, metaphysics turns out to be a very good likeness, because it is a discipline which only concerns the common. Thus it is easier to see the separation of the consideration of the common. This is why the likeness is perfect; in the other disciplines, which concern the common and the proper at the same time, there would be a danger of confusing the common and the proper, the more common and the less common, while there is not in metaphysics because its subject is defined by the common.

We can put all this in form and make an example in four terms. First philosophy allows us to put together two common terms, namely *common* and *determine first and separately*:

first philosophy - determined first and separately

first philosophy - common

common - determined first and separately

We put the conclusion of the pro-syllogism as the major premiss of the second syllogism, then we join it to the minor premiss, the proposition in which we attributed to the science of nature the quality already known to be common to it and first philosophy, namely that they deal

with the common. Then we only need to infer the final conclusion:

1st phil - determined 1st and separately
1st phil - common
common - determined 1st and separately

common - determined 1st and separately
common in nat science - common
common in nat science - determined 1st and separately

B. The subject of Logic

After this examination of some particular logical relations, in this case ones which make up examples in four terms, we are now better prepared to ascend to the universal, that is, to universal considerations on the subject of logic.

A) In terms of the condition or modality of existence.

In the examples in four terms which we have analyzed, we were able to notice that, before the formation of the example, some conditions were required on the parts of things, and then reason intervened and formed something. As we saw, the singular *war against the Phoceans* exists or has existed truly in reality and in fact has a similar relation to the war which the Athenians are really thinking of waging against the Thebans, since the two are wars among neighbors. But in order that this likeness might be able to help us make the passage from the known to the unknown, that is for example, the passage from *the war of the Thebans against the Phoceans was bad* to *the war of the Athenians against the Thebans would be bad*, reason must intervene and make a likeness insofar as it is a principle of manifestation. This is to say that this likeness can be considered in two ways: either as a thing existing outside of our understanding, or as knowledge present in the understanding; in other words, it can be conceived either in its reality, or insofar as it is known.

But it is not only this way in the likeness of the example, but it is universally true of everything that the understanding knows.

The thing known can be considered in two ways, namely, insofar as it exists outside the soul of him who knows, and insofar as the motion exists in the soul of him who knows.¹²⁵

And just as in the case of the example, it is not the likeness which exists outside the understanding, as such, that produces knowledge of the unknown; but it is insofar as it is received and has been assimilated to the understanding that it becomes a principle of manifestation for the unknown; so also it is true universally about everything which the understanding can know.

It is not insofar as the thing exists outside the soul of him who knows that the known

¹²⁵ St. Albert, *In de Praedicabilibus*, tract. 1, c. 4

thing causes knowledge of the unknown, but rather insofar as there is a notion of the thing, a notion existing in the soul of him who knows; in fact, it is then that it signifies and allows the inference of that which is unknown.¹²⁶

This distinction among two ways of considering the known thing puts us on the trail of what constitutes the subject of logical considerations. Just as in fact things in their reality are taken under certain conditions, for example, the conditions of matter: man, in reality, is always an individual, there is not common 'man' in nature; so also things insofar as they are known, such things as the understanding receives into itself, are taken under certain modalities, certain conditions which relate to the understanding as such: man in the understanding is common, universal; he assumes a certain modality because the understanding has abstracted from singular men the definition of man, a definition which will be verified equally in every singular. It is rightly these conditions - or rather things under these modalities or conditions - which logic considers. Although such things, while existing outside the soul have a particular existence and are studied by the science of nature, for example, the consideration of them as known, as things in the understanding, would in some way be in the domain of logic.

b) In terms of order.

We must make precise how things can enter into the constitution of an order of reason according to the existence which they have in the understanding. We have observed an instance of this order in the way in which reason ordered its concepts in the argument through example. Every order which reason forms in itself when it proceeds from the known to the unknown rightly constitutes the subject of logic. For example, take reason as it discourses from a principle to a conclusion: it belongs to logic to consider the principle as such, in relation to the conclusion; the order between principle and conclusion is not found in exterior things, but only in reason, and its consideration is relevant to logic.

c) In term of relations.

An even more precise way to talk about the subject of logic is to speak in terms of relations.

He who says 'relation' says 'connections with,' 'reference to' something other. There are many possible instances of relations and not all of these interest the logician as such.

1. Real relations and relations of reason.

Certain relations are real, that is to say they touch on things in their reality itself, independently of any knowledge we can have of them. An examples of a real relation of one thing to another is that of father to son. This is a very easy case.

¹²⁶ Ibid.

But there are also certain relations which are formed by reason, which are not in reality; these concern an order among known objects. We call these relations "relations of reason."

Again, real relation consists in an order of one thing to another, while relations of reason consist in an order among concepts.¹²⁷

2. Two kinds of relations of reason.

Of course, it is not among the real relations, but among the relations of reasons that we search for the subject of logic. Does this mean that every relation of reason of whatever kind interests the logician?

It is common to every relation of reason that it is formed by reason and does not exist in reality, that is, outside the understanding. But we must distinguish two modes.

Certain relations follow our way of knowing; in some cases, indeed, it is necessary for reason to form relations in order to know, even if this order implied by the relations does not exist in things. Reason does not discover this order or these relations in things, rather it forms them itself in order to be able to know the thing which it considers. Thus, these are not real relations: the thing in itself, in its reality, is not turned to another, as the father and son are turned to each other. On the contrary, it is reason which, in order to know the thing, must turn it to another; yet the understanding is perfectly aware that this order is formed by itself. For example, to know the object of science, our understanding absolutely must establish a relation between the object of science and the science. It cannot represent to itself the object of science and consider it absolutely, but only relatively. We must relate it to something else, namely science, although it [the object] does not depend upon it in its reality. For if the science is really related to the object of science, being measured by it, it [the object] does not really rely on the science. Its relation to science is a relation of reason; it has not been discovered in reality because it is not found there. This relation is a means of knowing, a necessity which is imposed upon reason in order to know. If, for example, one does not refer the object of science to the science, if one does not turn it to this other thing, one cannot know it, even if in fact, from the point of view of its reality, this object does not depend upon that other thing. And that reason must posit certain relations in order to know is a sign of its poverty.

Certain relations of reason follow our way of knowing. That is, the understanding conceives one thing as ordered to another; nevertheless, the understanding does not discover this order, but rather it follows with a certain necessity upon the way of knowing. . . . The things, not implying in themselves such an order, are conceived with an order. The understanding, however, does not conceive that they really have the order, because it would thus be false.¹²⁸

¹²⁷ St. Thomas, QD de Potentia, q. 7, a. 11, c.

¹²⁸ Ibid.

The relation to the creature which one posits in God when one calls him Creator furnishes another example of such a relation of reason. Clearly there is not predicamental relation of God to the creature. However, the understanding cannot represent to itself, even in a very imperfect fashion, the notion of Creator without turning the Creator to the creature, without referring the Creator to the creature. Notice that this relation of reason to the creature which is attributed to God is attributed to the Creator in his reality itself, and not to God as known.

The understanding does not attribute these relations of reason to something which is in the understanding, but to that which is in reality.¹²⁹

But there is another kind of relation of reason, and this only constitutes the subject of logic.

The relations of reason called logical are those that reason forms in the exercise of its proper act and discovers in things as considered. These relations are thus distinguished from the preceding in this, that they are found in things, not indeed in their exterior reality, but as considered; they are beings of reason, yet they are still things existing in the understanding, in things insofar as they are known. The understanding, in reflecting upon its proper act, will see in things, as considered, this order, these relations. And because it discovers them there, these relations can be attributed to things as known. Thus, for example, species is a relation of reason which cannot be attributed to the singular man as he exists in reality - there are no species in nature - but only to man as considered. And the relation of reason called genus is attributed to animal as known and compared to man. Thus it is only insofar as it is known, as it is abstracted, that things can receive such predicates; otherwise, they would be false: these relations do not pertain to things as existing in nature, since such things are always particular and individual.

In order that man, animal, or anything might become a species, a genus, or some other universal, it is necessary that the consideration of the understanding intervene. This is what frees the common element from all the singulars, for example from all men; it conceives man as something one, it conceives this nature as universal, but this unity does not exist in reality, because men are many and diverse. It is the understanding which conceives this object in this way, and in reflecting upon the way in which the understanding correctly receives it, that is to say knows, we discover the relations of universality, which of course exist only in the understanding. We discover, for example, that the understanding establishes a relation between man as known, such as it conceives him, and the many singulars which are the origin of our knowledge and thus man is called universal. In virtue of the relation which it establishes with the notion of animal, he is called even more precisely, a species. We thus have discovered the relations of reason called logical.

This order is discovered by the understanding, and is attributed to that which is said relatively; such are the relations which are attributed by the understanding to things as known, as the relation of genus and species; in effect, reason discovers these relations in

¹²⁹ Ibid.

considering the order which they have in the understanding to things which are outside, or again the order among concepts themselves.¹³⁰

Thus, logical relations of reason are distinguished from the other kind of relation of reason in this, that the objects to which these relations are attributed effect an order; the objects spring from what happens in our reason, from the act of reason itself, and the relations - such as principle to conclusion, genus to species, and the rest - are found there and exist: they are not simply put there. But the whole difference with the real order is that this order is formed by reason; the logical relations of reason do not touch upon things in their reality, but things as considered, according to the modality of existence which they take up in the understanding.

These are the relations which constitute the subject of logical considerations. In other words, the logician, in contemplating the act of reason, is measured by all that that act implies, by the whole order which is found hidden there. This order is, of course, an immaterial, an intentional order.

Thus, it is clear that logic itself is not formed; it is reason which forms and logic which then studies and contemplates what reason forms. In contemplating it, logic is found to be measured by what happens within, in the interior of the understanding. What we must not say - and this is a point to which we will return anew further on - is that logic makes a total abstraction from things or objects, that it is entirely cut off.

3. Relations of reason and the order formed by practical reason.

We have seen that it was necessary to distinguish between real relations and relations of reason: just as in the universe there is order (an order of thing to thing, or of things really ordered among themselves), independently of knowledge, so also in what we can call the universe of representation or of reason, there are all sorts of relations which are formed by reason.

Moreover, we know that one can manifest, as St. Thomas does in the *Summa Theologica*, the distinction between the act of reason itself and the relations which are formed by this act, in relying upon a likeness taken from art: just as in exterior acts we must distinguish between the operation itself and that which is constituted as a result of the operations, for example, the process of building and the structure which results.¹³¹ By such a likeness, we can find how to manifest the second of the four orders of reason to things which St. Thomas distinguishes in his proemium to his commentary on the *Ethics*.¹³² We can make this manifestation through the fourth, that is, we can manifest the order formed by reason in the exercise of its proper act through the order which reason makes in exterior matter. In the two cases, as also in the case of the third order - in which reason by considering introduces order into the operations of the will -

¹³⁰ Ibid.

¹³¹ ST IaIIae, 90, 1, ad 2

¹³² No. 1

there is a question of an order made by reason, contrary to the first order, which exists in things independently of reason. But we might ask: if these orders are made by reason, are they thus relations of reason?

In his commentary on the Summa, John of St. Thomas discussing prayer, related an objection which allows him ultimately to conclude that prayer is not an act of the practical understanding and that, consequently, it must be an act of the will. There is something very interesting for us in this objection, and especially in the response made by John, which relates to the question of the relation of reason; this will be an occasion for us to arrive at a more distinct knowledge of the relation of reason, on account of an opposite, namely: the order introduced by practical reason.

The objection reported by John stipulates that the order introduced by man in things or in exterior operations cannot proceed from the understanding, from reason. For since the relations formed by reason are consequently relations of reason, the understanding cannot be the cause of putting a real order into exterior things; it can only be the cause of an order of reason, of an order which is hidden in the interior of the understanding.

You say: this order that understanding forms in itself is only a relation of reason, because it is a relation made by reason; practical reason cannot therefore because of that, cause a real order, but only an order of reason.¹³³

But the conclusion of this objection goes directly against common experience: it is manifest that artificial things proceed from art, from practical reason and that there is in them an order which is real.

But this is false; for artificial things which proceed from practical reason through art imply a real order existing in things themselves: a house, for example, is a product of art in which the parts are ordered in a real way, and even the morality of human actions, which proceed from practical reason according to the rules of reason and prudence, are said to have a real relation to the rules of reason.¹³⁴

The objection said: if there is an order made by reason, there is thus an order of reason. We know that in the case of each of the three orders distinguished by St. Thomas in the beginning of his commentary on the Ethics, it is a question of order made by reason: it is not only the second, in which reason makes an order in considering its proper act; which is formed by reason: the third, in which reason en considering the operations of the will, and the fourth in which it makes an order in exterior things, are also this way. But the danger is to conceive the word "make" in a univocal fashion in the three order. This is where the objection raised by John o St. Thomas comes from: it likens the "make" of the latter two order to that of the second.

¹³³ John of St. Thomas, on ST IIaIIae, 83, XI

¹³⁴ Ibid.

Otherwise, it could not say: a relation formed by reason is a relation of reason. This inference is unjustified, because there is a place to distinguish between different ways in which an order can be formed by reason.

In effect, a relation can be formed by reason either for the sake of knowing, as for example, the syllogistic order of reason is formed in order to know the conclusion, a truth, or with a practical intention, that is, in view of an operation or work not immanent, exterior to the understanding.

We respond: there are two ways in which a relation can be formed in the interior of the understanding. In the first way, insofar as something is known, nothing else; in the second way, insofar as it is an object of intention, an end.¹³⁵

Basically, this comes back to the famous distinction between the speculative and practical understanding. They are principally distinguished by the end; as St. Thomas says, the end of the speculative understanding is truth considered absolutely, while the end of the practical understanding is operation.¹³⁶ But since logic directs the operations of the spirit, is it necessary to conclude, as certain philosophers have, that logic is a practical art? Certainly not, since operation has many meanings. The operation of which St. Thomas speaks in characterizing the practical understanding is certainly not the act of knowing, since it is opposed to it. Rather the concern is an operation realized outside of the understanding. With regard to logic, it directs the acts of reason, and thus immanent acts, not transitive; therefore it is relevant to the speculative intellect. It should consider the order of reason purely and simply; the order it considers is not at all the object of intention, an end.

For the practical understanding differs from the speculative by the end, since the speculative understanding is for the sake of knowing, while the practical is for the sake of a work. Consequently, a relation can be formed by the understanding either entirely for the sake of knowing the relation itself, and in this way the relation only has an existence as known, and is a relation of reason; or the understanding can form a relation for the sake of operating on account of that relation, having the intention of realizing that relation in things, and in this way we do not have a relation of reason, but a relation operable through reason. This is why the relation, or the reference, insofar as it is an object of intention, is not only a relation known, uniquely consisting in knowing, but is rather a relation which is an application of knowledge to things.¹³⁷

The relation which is the object of intention can thus be realized in things, in matter, and

¹³⁵ Ibid.

¹³⁶ St. Thomas, *De Ver*, 3, 3, c.

¹³⁷ John of St. Thomas, *Ibid*.

thus constitutes a real order, contrary to the relation of reason, which is only known, which is not derivable from and cannot be introduced into matter, or put in things. For example, we cannot introduce genus or specific difference into matter; not in any way.

Consequently, the operable relation can exist really; while the relation which is only known, or which results from knowledge, and which we do not propose to put in things, is a relation of reason.¹³⁸

The other relation is formed, also, by reason: it is very evident that practical reason implies an act of knowledge. But there reason is not content purely and simply to know the order; this order is conceived as something to be realized. And this is so even if for accidental and extrinsic reasons the craftsman does not put his project or intention into execution. For all the same it remains that the form, the order, is already conceived as a work to make and to put into things.

Moreover, practical reason does not only form a relation, an order, by knowing separately, but also by considering it as a work to make and to put in things. Consequently, it is very fitting that in artificial and moral matter the order which proceeds from practical reason is real.¹³⁹

And clearly it is fitting and good that practical reason, and not the will, relates to the conception of this order. For an order cannot be conceived without comparison; but comparing is proper to reason, to the act of knowing. The will as such does not order; it is a blind faculty.

And because one cannot conceive of this order without comparing one extreme to another, it is thus necessary that the deed of ordering relates to the comparing and knowing faculty.¹⁴⁰

Even if this order relates to practical reason, it still does not effect a pure being of reason; for example, a house, unlike a syllogism or enunciation, is not a pure being of reason; it is rather something to make in reality.

And that the understanding forms the order and relation in this way is manifest from the fact that the work to be done, for example making a house, is formed in the understanding of the craftsman but is not, however, a being of reason, but something realizable in things; thus equally the order put into the parts themselves of the house, for example

¹³⁸ Ibid.

¹³⁹ Ibid.

¹⁴⁰ Ibid.

between the stones and wood, is an order projected by the craftsman, and formed by the practical understanding; consequently, it is not a relation of reason.¹⁴¹

We have seen, concerning the relation of reason, that it is only formed for the sake of knowing, that it is only known, no more. Moreover - it is worth the trouble to emphasize this - St. Thomas, when he distinguishes in the proemium to his commentary on the treatise On the Heavens, between the four orders in art, - these by the way are obviously not the four orders distinguished in the proemium to his commentary on the Ethics, since they are within the artificial - calls the first the order of apprehension and says that according to this order of apprehension, the craftsman apprehends first the form of the house absolutely, before introducing it into matter.¹⁴² Is this to say, as certain ones believe, that we are dealing with speculative knowledge here? Is not the form known absolutely a *relation precisely as known*?

Not at all! The absolute knowledge of the form is the formation of the exemplar by the craftsman. It is thus an operable form, an order applicable to things. St. Thomas means by the form known in an absolute way the form separated from matter. For example, in conceiving the exemplar of the house, it is necessary to hold as given that one wants a house of stone, bricks, or wood. But it is only after one has composed or formed the house within the understanding that one then introduces that form into the matter. However, even before this form is actually introduced into matter, it is already in the realm of the practical. The first order of art, of which St. Thomas is speaking in his commentary on the treatise On the Heavens is already a knowledge of the operable as operable and thus an order which is clearly opposed to the order of reason formed by the speculative understanding.

In order to see all of this better it is important to comprehend that one knowledge can be practical in many ways, and to many degrees. We have already seen that the practical understanding is distinguished from the speculative understanding by its end: the end of the practical is not pure knowledge, but operation. Also, he who says practical says relations to a work.

A knowledge is called practical in act which is ordered to a work.¹⁴³

But as St. Thomas explains, the relation with the work can be accomplished in two ways: it can either be entirely actual, or simply virtual.

That is produced in two ways: sometimes in act; this is that which happens when knowledge is actually ordered to one work, as when the craftsman actually intends to introduce the form, which he before has conceived, into the matter. The knowledge is

¹⁴¹ Ibid.

¹⁴² St. Thomas, In De Caelo, proemium.

¹⁴³ St. Thomas, De Ver., 3, 3, c.

thus practical in act, just as the form from the knowledge. Sometimes, moreover, some knowledge might be ordered to an act, but not yet ordered in act; as when the craftsman conceives the form of a work of art, and knows one way in which it can be executed, but does not however have the intention to execute it; it is very certain that such knowledge is practical virtually, but not in act.¹⁴⁴

Knowledge which can be ordered to an operation is, to use an expression recounted by John of St. Thomas, a knowledge "derivable to the thing." This is still essentially practical knowledge.

When, on the contrary, knowledge absolutely cannot be ordered to operation, then is it speculative. Still there we can see two cases, insofar as the knowledge is or is not by nature operable:

When moreover knowledge cannot in any way be ordered to an act, then it is always speculative; this can happen in two ways. First, when the knowledge bears upon things which are not of such a nature as to be produced by the science which knows them, as when we know natural things; secondly, when the thing known can indeed be produced by the science that knows them, but are not considered as operable; that is, as things which come to be by an operation.¹⁴⁵

To consider a such thing not as operable would be, for example, to consider a house in researching its properties, its genus, and its differences, in brief all that is inseparable with regard to its reality, but which can be separated by the understanding. Such a consideration does not by itself enable someone to construct a house, since he would not consider as operable, that is, since he does not consider everything which is at the same time required for its production. And since such knowledge cannot be ordered to operation, it is not practical in act, nor virtually; it is only speculative. However, one can, as St. Thomas does, call it practical with regard to its matter, but speculative with regard to its end or mode. The doctrine is always the same, but the expressions used by St. Thomas can vary. It is thus that sometimes even virtually practical knowledge, which we have seen is still essentially practical, is called by St. Thomas speculative, in order to better distinguish it, in certain contexts, from knowledge that is practical in act:

The craftsman has of an operable thing . . . A speculative knowledge when he knows the ratio of the work, without at the same times having the intention of applying it toward actual operation.¹⁴⁶

¹⁴⁴ Ibid.

¹⁴⁵ Ibid.

¹⁴⁶ St. Thomas, De Ver, 2, 8, c.

d) Dependence of the subject of logic upon things.

This opposition of which we have spoken between the order formed by practical reason affects every relation of reason: this includes all the relations of reason, whether logical or not, which, although formed by reason, are not formed in the same way as those of practical reason, since the first hide in the interior of the understanding and are only formed for the sake of knowing, while the second are destined to be produced in things. But since the logical relations of reason most interest us here, this is the place to examine precisely how reason comes to form these relations called logical and to see in what way exterior things can contribute to this formation. Certainly we already possess many of the elements of the answer to this question, but it would be good now to attack the problem from a different angle, in a way which throws into relief the dependence of logic upon things.

1. Logic considers a purely intelligible object, known from the natures of sensible things.

First, this is the place to consider that the logical relations of reason are not sensible. But an examination of the nature of our understanding reveals that, by reason of its dependence upon the senses, this understanding can only know immediately the nature (quiddity or essence) of sensible things, and not of intelligible things.

Our understanding can conceive the quiddity of the sensible thing, but not of the intelligible thing.¹⁴⁷

Regarding intelligible things, it must be the case that our understanding reaches the possibility of the knowledge of their nature or essence only through a middle. But this mediated knowledge can only be obtained under one condition: the intermediates through which it must pass to obtain it must sufficiently express this essence, being sufficient to lead to it.

So that we can know what a thing is, our understanding must be carried to the quiddity or essence itself of that thing, whether mediately, or through certain intermediaries which sufficiently express its quiddity.¹⁴⁸

Before examining the case of those intelligibles which are logical relations of reason, let us see, for comparison's sake, the purely intelligible objects which interest the theologian, namely, the separated substances. As with every intelligible object, the possibility of having immediately knowledge clearly must be discounted, since our understanding can do nothing without a conversion or return to the phantasms, and no phantasms which the imagination can

¹⁴⁷ St. Thomas, De Train, 6, 3, c.

¹⁴⁸ Ibid.

represent are proportionate to intelligible natures.

Our understanding cannot, in this life, carry itself immediately to the essence of God and the other separated substances, since it related immediately to phantasms, to which it is compared as sight to color, as is said in the third book of the treatise *On the Soul*.¹⁴⁹

A mediated knowledge of the essences of separated substances cannot be accessible to us, since we can only obtain it from the natures of sensible things, and these known things do not sufficiently reveal them. They allow us to reach a knowledge of the existence of these intelligible natures, but no more: their essences remain hidden to us, inaccessible.

The known natures do not sufficiently expression the divine essence nor the other separated essences. Consequently, we cannot in this life know in any way the what it is of immaterial things . . . Thus, it remains that these immaterial forms are not known with regard to what they are, but only that they exist.¹⁵⁰

But it is not going to be the same with the natures considered by logic: we can reach - mediately - a knowledge of what they are, since the natures of sensible things reveal them sufficiently. For example, since I know what man is (that is, the nature of a corporeal, mobile being) and what animal is, I can know the relation of one of these natures to the other, and thus know what a species is and what a genus is, although those are purely intelligible natures.

There are certain invisible objects whose quiddity and nature are perfectly expressed through the quiddities of sensible things known. And when we know what these intelligibles are, although mediately, as when we know what man is, and what animal is, it becomes sufficiently clear the relation of one to the other. Thus what a species is and what a genus is are known.¹⁵¹

The only case in which we can know the natures of purely intelligible objects - even here mediately - is the case of the objects contemplated by logic. This is marvelous, and let us say, even encouraging. For logic is a very abstract discipline, but because of this possibility of reaching definitions concerning the nature of the relations of reason, because of arriving at their natures through sensible things, it is found to participate in the certitude of mathematics.

Certainly, logic possess an element in common with metaphysics, since they both resolve into the understanding and not into the imagination or the external sense, and for this reason, they are both very difficult. But in metaphysics we have something of which we can only attain a

¹⁴⁹ Ibid.

¹⁵⁰ Ibid.

¹⁵¹ Ibid.

knowledge of its existence, but in logic there is always the possibility to have evident understanding of the natures of the objects considered - of course, this is not to say that the whole world arrives there.

Thus we say that, if this evident knowledge can only be acquired through the knowledge of sensible natures, then logic depends in some way on things, and it cannot be conducted in complete abstraction.

2. The universal considered by logic comes after things.

One is led to the same conclusion in considering that the logical relations of reason, such as species, genus, and the syllogism, constitute, basically, different ways of being universal.

Universal means "one and the same, having a reference to many."¹⁵² For example, the notion of animal is universal, because the definition of animal is verified equally in man and brute: animal is something one and the same, implying a relation to many, but occurring in many species. There is a relation, an order, between animal and each species. But where does this relation come from? What is the cause of this order, of the universal as universal?

This cause is found on the side of the understanding; it is the understanding which abstracts the common from the singulars. And since this common thing is taken from singulars, since the universal, considered as such, comes from the abstraction of the understanding, it is absolutely necessary that this universal be posterior to things considered in their reality.

Since the relation of universality (namely, that something one and the same has a reference to many) comes from the abstraction of the understanding, it is necessary . . . that the universal be posterior.¹⁵³

Reason cannot form and cannot know without taking its knowledge from sensible singular things. And as logic precisely concerns the universal which reason forms, it must be posterior to things, since the nature of things or reality is entirely prior to this order which logic considers.

We know that for Plato, the inverse is true: the universal comes first. But Aristotle is opposed to this conception and conforms himself more to experience in saying, notably in the treatise *On the Soul*: "the universal animal is either nothing, or it is posterior."¹⁵⁴

3. Reason, in forming its proper instruments of knowledge, does not deform things.

¹⁵² St. Thomas, ST Ia, 85, 3, ad 2

¹⁵³ Ibid.

¹⁵⁴ St. Thomas cites Aristotle to this effect in the same place.

But if real things are not universal, but rather all are singular, while reason, in accord with its logical instruments, conceives them as universals, must we not admit that reason, in forming its proper instruments (logical relations), conceives things as they are not? But, every understanding which conceives things otherwise than as they are is false. Thus, logic deforms things, and we are prevented from seeing them as they are.

This objection is interesting. To respond to it, it is necessary to consider attentively this proposition: *every understanding which conceives things otherwise than they are is false*, and to see that this can have two senses.

It can say - and this is usually what we mean - that things are conceived to be in such a way and yet they are otherwise.

This proposition: the understanding which knows things otherwise than they are is false, is twofold. The adverb 'otherwise' could determine the verb 'know,' either in relation to the thing known or in relation to the knower. If it is in relation to the thing known, the proposition is true and the sense is the following: every understanding which conceives a thing to be what it is not is false.¹⁵⁵

But we can also mean something else, namely in relation to the knower. The proposition refers thus to things which are conceived in conformity to how they really are, but according to another mode, that of the understanding.

If moreover the adverb determines the verb 'to know' in relation to the knower, then the proposition is false. Indeed, the mode of the understanding in knowing, and the mode of the thing in existence must be different. For it is manifest that our understanding conceives existing material things in an immaterial way, not indeed that it conceives them to be immaterial, but that it conceives them in an immaterial way. . . . And in this way our understanding is not false.¹⁵⁶

In sum, the objection plays upon two senses of the statement *the understanding conceives things otherwise than they are*. The understanding, in forming its proper instruments for knowing, does not conceive things to be other than they are, if we mean that it attributes to real things the properties which do not pertain to them. But since the understanding receives the things that it knows according to its own way, that is, in an immaterial way, the natures known are clothed in universality, thus becoming the proximate foundation of an order of reason. Therefore it is true to say that the understanding conceives things otherwise than they are, if the adverb 'otherwise' determines the verb 'conceive' on the side of the knower, of the understanding: the natures known by the understanding as known are indeed other with regard to their mode of existence, than the real natures. But that does not prevent the first from constituting

¹⁵⁵ St. Thomas, ST Ia, 13, 12, ad 3

¹⁵⁶ Ibid.

a representation which conforms to the second, it does not prevent the understanding from having true knowledge.

Furthermore, as we saw before, logic is posterior to things, since it is measured by an order of reason which itself is measured by things. Therefore there is nothing surprising in the fact that what it studies, namely the instruments which reason forms, never deform things, even if the instruments are formed by us.

4. Signs of the dependence of logic upon things.

In conclusion, let us point out some effects which make apparent the dependence of logic on things.

1) The mode of attribution.

First, there is the mode of attribution. Things manifestly measure it:

The mode of attribution is proportioned to things themselves, to the subject of which the attribution is made, since . . . discourse is subordinated to things.¹⁵⁷

Indeed, it is very evident that one cannot, in giving an account of reality, either enunciate or attribute properties to things in any haphazard way. The way in which we make the attribution, composing the attribute and subject, is based upon the reality of things. And since this composition of subject and attribute is something which properly relates to the consideration of the logician, we are truly in the presence of a sign of the dependence of logic upon things.

2) Of logical principles furnished to metaphysics.

The chief role of logic is to furnish to the speculative understanding its instruments. St. Thomas indeed says that logic directs reason inasmuch as it furnishes to speculation its instruments.¹⁵⁸ These instruments, which reason needs for knowing, are such things as definition, division, and argument in all of its varieties . . .

The role of direction is fundamental, it is absolutely necessary, but logic can serve the understanding in even more ways than this. Not only can it furnish the instruments, it can also furnish the principles. The wise man, Aristotle for example, will devote a whole book in the metaphysics to an investigation of substance according to the logical mode. That is, he assumes there, for the sake of investigating things, principles which are properly logical. But the wise man, if anyone, is measured by things. But he could do this if logic were cut off from things. Book 7 of the Metaphysics would not make any sense if logic was not posterior to things and measured at least in a certain way by things.

¹⁵⁷ St. Thomas, I Sent, d. 19, q. 4, a. 2, ad 1

¹⁵⁸ St. Thomas, De Trin, 5, 1, ad 2

3) Dialectic prepares for science.

Finally, it is necessary to indicate that dialectic disposes us to science. Of course, the dialectician by his arguments does not attain to certainty, because he does not proceed from principles proper to the subject which he considers, but rather from common principles; but it is still true that his arguments will dispose to science, and thus will dispose to truth.

If dialectic was in no way measured by things, it could never dispose us to the truth. All of the dialectical topics enumerated in the the book Topics must possess a certain firmness.

And thus, in whatever way we consider logic, we always see that it is measured in a definitive way by things, that things constitute for it (although in an remote way, because the proximate foundation of logic is in the reason) an ultimate principle of truth.