

Question 5: Whether every demonstration is a syllogism
productive of scientific knowing.

5.1 Since every all teaching and all learning arises from preexisting cognition, therefore we must understand about cognitions beforehand.¹ Now for demonstration some required principles are included in demonstration, and another principle is also required, called an axiom (*dignitas*), that is only included in the demonstration virtually. Also there are in demonstration the subject of which the attribute is concluded, and the attribute concluded of it. Hence, speaking of cognitions beforehand of the subject and the attribute and the axiom, which are not included in the demonstration, there are two cognitions beforehand, namely what it is and that it is, and three things cognized beforehand, namely the subject, attribute and axiom. Concerning the attribute it must be cognized beforehand what is signified by the name, concerning the axiom it must be cognized beforehand that it is, and concerning the subject it must be cognized beforehand what it is and that it is. And these are called cognitions beforehand because they must be known before scientific knowledge of the conclusion is obtained.

5.2. Concerning what it is, it must be known that according to what Themistius holds in his commentary,² “what” is two-fold, namely the what of the name and the what of the reality. And there is a difference between these, since knowing the what of the name does not occur without knowing how to refer the name to what it signifies, but since no one can refer a name to what it signifies unless he in some way cognizes the reality signified, therefore whoever has a cognition beforehand of the nominal essence has some cognition of the reality, even if it is imperfect. But knowing the what of the reality is knowing how to resolve the reality into its essential principles from which it is composed. Hence the what of the name is a concept through which the name is resolved into what it signifies, but the real essence is a concept through which the reality is resolved into its essential principles, for instance, into genus and difference.

5.3 And someone can know the what of the name even if he does not know the what of the reality, for example, if a boy is told to get a horse, he gets the horse and not a donkey or a cow, which could not occur unless he first knew what is signified by this name “horse.” And therefore he has the cognition beforehand which is the what of the name. But he does not know the what of the reality, for he does not know from what

¹Aristotle, *Posterior Analytics* I 1, 71a1-17.

²Themistius, *In Anal. Post.* A, 1; p. 3, 6-9. See Ps.-Scotus, *Super lib. Post.* I Q.4, p. 211.

essential principles the horse is composed, for he does not know that horse is composed from such a genus and such a difference.

5.4 It must be known that the cognition beforehand that is called what it is, is of the what of the name and not the what of the reality, for the Philosopher speaks here of the cognitions beforehand that are required in every demonstration. But it is not necessary in every demonstration to cognize beforehand the real essence of the subject, as for instance in demonstration that it is the case, for thus the same thing would be demonstrated and cognized beforehand; but still in demonstration why it is so the what of the reality must be cognized of the subject beforehand. But since it is not general in every demonstration that the what of the reality is cognized beforehand of the subject, for that reason the Philosopher does not assume that the what of the reality is cognized beforehand, but the what of the name, since this is generally true in every demonstration, that of the subject it must be cognized beforehand what is signified by the name.

5.5 But there is a doubt about this, since knowledge acquired through discovery can be acquired without speech, it does not seem that in such knowledge the what of the name must be cognized beforehand of the subject. It must be said that in knowledge acquired through discovery it is necessary to cognize the what of the reality, but this is not cognizing the utterance pronounced to signify such a reality, but having a concept of the reality representing such a reality imperfectly, and this concept can be called a name of the reality, since, as it is generally assumed, utterances signify concepts and concepts signify realities.³ Hence knowledge obtained through discovery is acquired through the senses, and through the senses a knowledge of a reality is first acquired, which knowledge must be presupposed in the knowledge afterwards acquired through demonstration.

5.6 And there is a doubt at this point, since a cognition beforehand what it is is only of the name, it seems that it must be cognized beforehand of an axiom what it is, since it is necessary to cognize beforehand what is signified by the axiom, just as it is necessary to cognize what is signified by the subject or the attribute.⁴ It must be replied that it necessary concerning nothing to cognize its nominal essence unless it is concerning that which signifies something under its own form. Now, even if a complex <expression, that is, a proposition,> has a what of the name, this is not its form, but the form of its parts.

5.7 Next there is another doubt. Which of these cognitions beforehand is prior? Is it the cognition beforehand what it is or that it is? And it must be said that in knowledge that is discovered that it is precedes what it is, but in knowledge that is obtained through teaching what it is precedes that it is. This is because

³Aristotle, *De interpretatione* 1, 16a3-4.

⁴Ps.-Scotus, *Super lib. Post.* I Q.5, 212-214.

knowledge that is discovered is acquired through the senses, and knowledge that is obtained through teaching is acquired through speech. Now through the senses we immediately perceive that the reality is, for instance, in seeing an animal or something else, and afterwards we cognize what it is. But in speech it is the other way around, for first it is necessary to know what it is that is indicated, and afterward we cognize if it is—for instance if goatstag is named for us, first it is necessary to know what is signified by the name, and afterwards one must cognize whether what is signified or by that name is or can be in the natural order.

5.8 Concerning the cognition beforehand that it is, there is a doubt whether it must be cognized beforehand of the attribute.⁵ And some say that it is not, since the being of an attribute is being in a subject, therefore to cognize beforehand that the attribute is is to cognize beforehand that the attribute is in the subject, and so it is known before knowledge of the conclusion that the attribute is in the subject, which is false. But this is no good, for philosophers first begin to look and wonder, then to philosophize, for instance, since they see marvelous effects, they seek the causes of such effects.⁶ For instance, since they saw the Moon to be eclipsed, they sought the cause of that. And so they discovered scientific knowledge, and unless they had seen the eclipse of the Moon they would never have sought out its cause. Therefore before they had scientific knowledge of the eclipse of the Moon, they cognized that the eclipse is, and so it is not absurd that the attribute be cognized to be in the subject before scientific knowledge is acquired through demonstration. Hence it must be known that it is not absurd that an attribute be known to be in a subject before the conclusion is known through demonstration. But since it still is not always cognized that the attribute is in the subject before knowledge is obtained through demonstration, and since the Philosopher here does not settle anything except what cognitions beforehand are always required in every demonstration, therefore it is not assumed that it must be cognized beforehand concerning the attribute that it is—and this is because it is not always necessary.

5.9 It must be known that in knowledge that is discovered, before the knowledge is had of the conclusion through demonstration, it is necessary sometimes to cognize of the attribute beforehand that it is in the subject, but otherwise than before the demonstration, for before the demonstration it was cognized beforehand that the attribute is in the subject as something looked at, but after demonstration that the attribute is in the subject it was cognized through a cause that had been investigated and concluded through demonstration.

5.10 It must be known that this cognition beforehand that it is is not speaking about existence, since

⁵Ps.-Scotus, *Super lib. Post.* I Q.6, 214-216.

⁶Aristotle, *Metaphysics* I 2, 982b12-18. Cf. Plato, *Theaetetus* 155D.

one can have knowledge concerning a subject that does not exist,⁷ but the being that must be cognized beforehand concerning the subject is being knowable. For before it is cognized that an attribute is in the subject, it is necessary to cognize beforehand that the subject is one of which an attribute can be concluded through demonstration, and thus it must be cognized beforehand that the subject is a knowable such that another can be known about it. Hence if it is assumed that some species neither has existence nor even that it has being in its causes, an attribute can still be concluded by demonstration of such a species. And therefore the being that is cognized beforehand of a subject is not existence, nor is it not being prohibited from being, for Antichrist has such being, and it must be being knowable.

5.11 Concerning the cognitions beforehand of principles included in demonstration, it must be known, according to the Philosopher, that the major premise is cognized before the conclusion in time.⁸ But the minor premise, if it is known that the minor extreme is contained under the middle term, the major being cognized, then it is cognized at the same time as the conclusion, and prior to it by nature, for the minor is the cause of the conclusion and the cause is naturally prior to the effect.

5.12 Concerning this it must be known that cognition is two-fold, namely cognition in a universal <proposition> and in a particular <proposition>.⁹ Something is cognized in a universal <proposition> when a universal <proposition> antecedent to it is cognized, and thus I cognize that this mule is sterile through this, that I cognize that every mule is sterile. A cognition in a particular <proposition> is two-fold, namely in act and in habit. I hold then that, when the major premise is cognized in a demonstration, at the same time the conclusion is cognized in a universal <proposition>, but the major is cognized in a particular <proposition> at an earlier time than the conclusion is cognized in particular. But in order that, at the same time as the minor is cognized together with the major the conclusion should be cognized, it is required that it be cognized that the conclusion is demonstrated from the premisses. And then, at the same time, he cognizes the conclusion in a particular <proposition>, but only in habit, and not in act, for that only occurs when, at the same time, he actually considers the minor premise and the conclusion.

5.13 And that it is necessary that it be cognized that the conclusion follows from the premisses is obvious, for the Philosopher suggested this when he said, “one cognized it at the same as the induction.”¹⁰ Hence

⁷Ps.-Scotus, *Super lib. Post.* I Q.7, 217b.

⁸Aristotle, *Posterior Analytics* I 1, 71a17-24.

⁹Ps.-Scotus, *Super lib. Post.* I Q.8, p. 219.

¹⁰*Posterior Analytics* I 1, 71a21.

in *mixtureibus*, the major and minor <extremes> being cognized and it being cognized that the minor extreme is contained under the major, it is still not necessary on this account that the conclusion be cognized, since some who cognize these things grant the premisses and deny the conclusion; and therefore it is required in addition that the relation that stands between the premisses and the conclusion be cognized.

5.14 AND IT IS ASKED WHETHER every demonstration is a syllogism productive of scientific knowing.

5.15 IT SEEMS NOT, for in a subalternate science there are demonstrations that do not produce knowing. Proof: for principles of such demonstrations are not certain, but only believed, and consequently they do not produce scientific knowing. Proof of the assumption: If the principles of a subalternate science were certain, either this would be from prior things or from the evidence of the terms. Not in the first way, for thus an artisan would have to prove his principles through what is prior. Nor in the second way, since the principles in a subalternate science are not cognized from the evidence of the terms, for in that way they would be cognized because the terms are cognized, and thus they would not be conclusions in a subalternating science.

5.16 In the same way, I want to speak of a subalternate science as it is distinguished from a subalternating science. In this way in a subalternate science there are demonstrations, but as such, their principles are not known through the principles of the subalternating science.

5.17 THE SECOND PRINCIPAL ARGUMENT: every syllogism productive of scientific knowing is from true premisses,¹¹ since nothing is known except what is true. But not every demonstration is from true principles, therefore not every demonstration is from a syllogism producing scientific knowing. Proof of the minor: for there are demonstrations that argue indirectly, and such are not from true propositions, since one premise is false.¹²

5.18 To this it is replied that there is a three-fold movement in a syllogism to the impossible. The first is a movement from premisses to conclusion, and afterward there is another movement from the falsehood of the conclusion, with true premisses, to the falsehood of the hypothesis, and thirdly there is a movement which is from falsehood of the hypothesis to the truth of its opposite. Hence, even if the first movement is not from true propositions, the second and the third are.

5.19 Against this, it is no solution, for neither the second nor the third movement is a demonstration,

¹¹*Posterior Analytics* I 2, 71b19-22.

¹²Cf. Ps-Scotus, *Super lib. Post.* I Q.11, p. 225. An indirect proof is taken to be an argument from a false premise, together with a remark appended to the argument, noting the absurdity of the conclusion and the consequent falsehood of one of the premisses.

nor is what is composed from these two, or from all three, for none of these is a syllogism. Therefore, if a syllogism to the impossible is a demonstration, it is necessary that the first movement alone be a demonstration. Since, then, that movement is not from true premisses, it follows that not every demonstration is from true premisses.

5.20 ANOTHER <THIRD> PRINCIPAL ARGUMENT: If every demonstration is a syllogism producing scientific knowing, and nothing is known except what it is impossible should be otherwise, as is clear from the definition of knowing itself, it is necessary that every conclusion of a demonstration be necessary. But this is false, since this is contingent, “a human being is capable of laughter.” Proof: because the subject is related to its attribute as material cause, and not as any other sort of cause, therefore the subject does not determine itself to its attribute, since nothing determines something by reason of its matter, therefore the subject can be without its proper attribute.¹³

5.21 If it is replied that the subject has the form of an efficient cause in relation to its attribute, it is argued against this. The efficient cause is related to its effect as actuality to matter in potentiality. If, then, the subject has the form of an efficient cause in relation to its attribute, and it is certain that it has the form of material cause, then the same in respect of the same is both in actuality and potential, which is absurd.

5.22 If it is replied that this is not absurd as long as it is a form of different things, hence the subject receives its attribute considered as matter, and causes its attribute considered as form, it is argued against this: The subject considered as matter is no more determined to one attribute than any other, since matter is in itself indifferent to every material form. Therefore, if the subject receives its attribute as matter, it will not from hence receive the ability to laugh any more than the ability to fart, which is false.

5.23 <ON THE OTHER HAND:> Aristotle opposes this.

5.24 <RESPONSE:> Concerning this question, it is first necessary to see what knowing is, and in how many ways it is said.

5.25 It must be known that according to Grosseteste,¹⁴ “know” is said in four ways: in general, strictly, more strictly and most strictly. The grasp of any truth, whether it is contingent or necessary, is called knowledge in general. Knowledge strictly so-called is grasp of a truth which holds uniformly, always or for the most part, and in this way natural contingencies (*contingentia nata*) and whatever is necessary is known. Knowledge more strictly speaking is grasp of something necessary, whether it be a principle or a conclusion.

¹³Cf. Ps–Scotus, *Super lib. Post.* I, qq. 16 and 25, Aquinas, *Exp. Lib. Post.* I, lect.

¹⁴*Commentarius in Post. Anal.* 1.2, ll. 9–24.

And knowledge most strictly speaking is grasp of a necessary truth the necessity of which is possessed through a cause, and in this only the conclusions of demonstrations are known.

5.26 It must be known that knowledge most strictly speaking includes four conditions. One is that knowledge said in this way is cognition involving certainty, and thus it is distinguished from opinion.¹⁵ The second condition is that it is from necessary truths, and the third is that its certainty depends formally on something prior, and the fourth is that it is caused from the application of such a principle to a conclusion. For it does not suffice that it be a cause in itself and be cognized absolutely, but an actual application must be made inferring its conclusion from it.

5.27 The two last are clear from the definition of the Philosopher, namely that “knowing is cognizing the cause,” as far as the third is concerned, and that it is its cause, as far as the fourth is concerned, and that “it is impossible that it should be otherwise” as far as the first two are concerned,¹⁶ that is, the necessity of the fact and the certainty of the cognition. This being seen, it must be known that demonstration strictly speaking is syllogism causing knowing. This cannot be proved from prior truths, since what is signified by a word cannot be proved. If someone proved this from the fact that demonstration is from what is primary, and true, etc., and therefore a demonstration is syllogism producing knowing, since it is proved that a demonstration is from what is primary and true through this, that demonstration is a syllogism producing knowing, the same thing is proved through itself, and this is circular proof.

5.28 <RESPONSE TO THE FIRST ARGUMENT:> To the first argument,¹⁷ it is replied that demonstration made in a subalternate science produces knowing, but it does not produce knowing without qualification, taking “knowing” most strictly so-called. Still, it does produce knowing. Hence we know in two ways, through alien, external testimony, or through its own, internal testimony. We know in the first way that there are cities and lands we have not seen, but this knowledge is not as certain as what we have from our own, internal testimony. Since, then, it is said that the principles of a subalternate science are not certain, it must be replied that they are, but they are not as certain as the principles of a subalternating science or as principles which are certain from the evidence of their terms.

5.29 And when you ask in what way the principles of the subalternate science are certain, it must be

¹⁵Cf. Themistius, *In An. Post.* A 2, Ps-Scotus, *Super liber Post.* I, q. 10.

¹⁶*Posterior Analytics* I 2, 71b9–12.

¹⁷Paragraph 14 above.

replied, according to the new expositor of *Metaphysics* XI,¹⁸ that the principles of a subalternate science can have evidence and certitude from themselves, so that a subalternate science does not wholly assume its principles from a higher science, so that it produces no belief itself in them, but it explains them from what is posterior, namely from the senses and experience, according to what some say. If belief does not suffice for someone denying it, then the higher science must prove it. Hence, briefly, demonstration in a subalternate science produces knowing, but it does not produce knowing as certainly as demonstration in the subalternating science.

5.30 And one can have a science more certain than another science possessed through demonstration, as is clear in the example of the conclusion of astrology. For concerning an eclipse of the moon, when a student believes what the master teaches, the master is certain through demonstration, and still he can cognize more evidently, namely by seeing the present interposition of the earth. Hence, concerning the same conclusion there can be both belief and certain knowledge, for someone can cognize the same conclusion through a demonstrative syllogism, which produces scientific knowledge, and through dialectical syllogism, which produces opinion.

5.31 AS TO THE OTHER <SECOND> PRINCIPAL ARGUMENT, it is replied that a syllogism to the impossible is only a demonstration in a certain respect. Hence in one way discourse in general that produces necessary scientific knowledge can be called demonstration, and thus a syllogism to the impossible is a demonstration. In another way, demonstration is taken more strictly as a syllogistic discourse producing certain cognition, and if the demonstrator uses demonstration thus, a syllogism to the impossible is not a demonstration.

5.32 AS TO THE OTHER <THIRD> PRINCIPAL ARGUMENT, it must be replied that the conclusion of a demonstration is necessary, and the subject cannot be deprived of its proper attribute. And when it is said that the subject does not have any except a material cause in respect of its attribute, it can be replied that this is false according to what the expositor Thomas says. For he says that the subject is related to its attribute in two genera of cause, namely material and efficient cause. And therefore the proposition in which the attribute is predicated of its subject is per se in the second way and also the fourth.

5.33 But it must be known that, as Avicenna has it in his *Metaphysics* VI, efficient cause is of two sorts, one in respect of being and the other in respect of becoming. An example of the second: an architect is said to be an efficient cause thus in respect of a house, and if such an efficient cause is destroyed, the effect is not necessarily destroyed. The other is efficient in respect of being, as the sun is the efficient cause of light in a

medium, and if such an efficient cause is destroyed or absent, the effect is necessarily absent. Therefore, if the sun is absent, the light in the medium is absent as well. Hence if the subject is the efficient cause of its attribute, it is an efficient cause of being, not of becoming. When it is assumed, then, that the subject is the material cause of its attribute, and when it is said that the subject can be deprived of its proper attribute, since something is not determined to it by a material form, it must be replied that the subject, insofar as it is the proper matter and the proper subject of such an attribute, determines the attribute to itself. Nor is it against the nature of matter to determine something, since prime matter itself determines that it is principle of destruction and even that it cannot come into being and is indestructible.

5.34 If you reply, if the subject determines its attribute to itself, then determining such an attribute to itself is in itself, and therefore either the subject determines this to itself or not. If not, then determining that such an attribute is in itself can fail to be in the subject. If determining this to itself is in fact in the subject, because it determines such an attribute to itself, therefore either the subject determines this to itself, or it does not. If not, it can be deprived of it. If so, then the subject determines to itself determining to itself that it determines to itself such an attribute, and so on to infinity.

5.35 To this, it is replied that if “determine” is understood as the reality determining to itself something that is necessarily in the subject, in this way we can say that the subject determines to itself that it determines such an attribute to itself, and even that it determines to itself that it determines this to itself, namely that it determines such an attribute to itself. And if this proceeds indefinitely, it is not absurd, nor will it be a triviality. For example, this is an insoluble <proposition>, ““A human being is” is,” since it predicates being of a proposition that is. And if being is predicated of this whole proposition, then this will be a true proposition, “““A human being is” is” is, ” since being is predicated of a proposition that is. Nor is it a triviality, even if it should proceed to infinity, since it is not a useless repetition of the same thing, since always it predicates being of what is.

5.36 TO THE OTHER <FOURTH> ARGUMENT, which proves that the subject does not have the form of an efficient cause in respect of the attribute, since in that way the same would be in actuality and potentiality at the same time in respect of the same. But it must be replied that potentiality is said in many ways, namely potentiality with actuality, and potentiality that precedes actuality. Actuality and potentiality before actuality are two opposites in every genus, and thus it is impossible that the same be both in actuality and potentiality in respect of the same. But actuality and potentiality with actuality are not opposites, and in this way the subject is in actuality and in potentiality in respect of its proper attribute. Hence if potentiality and actuality are in every way opposites, there can be no potentiality with actuality, as one opposite is not found

with the other.