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Summulae de Dialectica

An annotated translation, with a philosophical introduction by Gyula Klima

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and is known, and likewise the minor subsequently, and if they remain known together, and if, together with these it is known and [is actually] considered that the conclusion follows from these premises, then it is necessary for the [act of] knowing the conclusion to be or to come to be at the same time, i.e., without any intermediate interval, on account of the [acts of] knowing these premises. And I say ‘to be’ if the knowledge of the conclusion is generated in an instant, i.e., the whole [is generated] at the same time; and I say ‘to come to be’ if it is generated successively, in the manner of a form that has [several] grades [of intensity].153 And we should take it that together with the knowledge of the conclusion, the [acts of] knowing the premises remain [in existence] for some time.

8.4 The comparison of demonstration and dialectical argument, and of knowledge and opinion

(1) Now it is useful to consider the agreements and differences between demonstrations and dialectical arguments. For dialectical arguments and demonstrations are alike in that (2) first, both have to be arguments proceeding from a premise or premises that necessarily or probably entail the conclusion; (3) second, it is necessary for the premises of both to be better known in their truth or rather more readily believed to be true than the conclusion, to avoid begging the question [petitio principii]; (4) third, it is possible for both to be a necessarily and formally conclusive syllogism; (5) fourth, they agree analogically [in proportione], for just as a dialectical argument generates opinion so does a demonstration generate knowledge; (6) fifth, as it has seemed to some people, they also agree in another analogy, for just as it is not necessary for everyone who has and considers a dialectical argument as carefully as he can to have an opinion based on it, but he may rather have a contrary opinion, so too, it is not necessary for everyone who has a demonstration to have knowledge based on it, but he may take the opposite of the conclusion to be true.

153. An example of such a form is warmth, which comes to be successively, degree by degree, in a body that is getting warm.
This is the fourth chapter of this treatise. It has four parts. The first presents some agreements between demonstrations and dialectical arguments; the second presents their differences; the third points out the agreements between knowledge and opinion; and the fourth shows their differences.

8.4.1 The agreements between demonstration and dialectical argument

The first part contains six sections. (1) The first plainly states the aim of this chapter, and the remaining five present five agreements between demonstrations and dialectical arguments.

(2) The second section, therefore, presents their agreement insofar as both are arguments proceeding from a premise or from premises; from a premise, as with an enthymeme or an example, and from premises, as in a syllogism or induction, entailing their conclusion by a necessary or probable implication. For a demonstration requires a necessary implication, as will be explained later, but a dialectical argument does not require a necessary implication. Rather a probable one is sufficient, for an argument from authority does not conclude of necessity, nor does an example, indeed, neither does an induction or an enthymeme in its own right; and in general, the dialectical loci are not formally valid.

(3) The third section states that the premises should be better known. And this is clear, for it is by means of their cognition that they ought to make the conclusion known. But I say ‘better known in their truth’, because they need not be better known with respect to the formation of the premises and the conclusion.154 But I also add ‘or rather believed to be true’, for it is possible for the premises of dialectical syllogisms not to be true, since Aristotle says that nothing prevents some false propositions from appearing more likely to some people than true ones;155 but a false proposition cannot be better known in its truth; therefore, it is necessary, disjunctively, for premises to be better known in their truth, if they are true, or at least to be more believable on account of their probability, than is the conclusion.

154. That is, both the premises and the conclusion may be equally well apprehended, yet, before the actual demonstration is carried out, the premises are known to be true, but the conclusion is not.

(4) The [claim of the] fourth section is not about actuality [de  inesse] but about possibility [de possibili], for some dialectical arguments are syllogisms of this kind [i.e., necessarily and formally conclusive], but not all of them; however, all demonstrations are syllogisms of this kind.

(5) The fifth section presents the proportionality holding between the relation of dialectical argumentation to opinion and the relation of demonstration to knowledge. And we should assume from what was said earlier that according to its definition, argumentation is the reason producing belief concerning some doubtful matter, i.e., one that is apt to do so. And this belief is taken to be opinion, if the argumentation is merely dialectical, and knowledge, if it is demonstrative.

(6) The sixth section presents another proportionality holding between the relation of dialectical argumentation to opinion and the relation of demonstration to knowledge. But this is rather obscure. Yet what it states concerning dialectical argumentation is quite clear. For we often have probable arguments in favor of either side concerning the same conclusion, so much so that while some great philosopher who carefully considers the arguments for both sides, because of the probability of the arguments for one side, believes this side; yet another, on account of the probability of the arguments for the other side, believes the other. Both arguments, therefore, are dialectical, and probable, if they are able to influence great philosophers in this way. Nevertheless, in the one in whom the affirmative arguments generate an opinion the negative ones do not generate an opinion, and conversely, for otherwise there would exist two contrary opinions, which cannot exist together in the same subject, as is stated in bk. 4 of the Metaphysics. It is true, however, that the opinion of the one side can be weakened and lessened by the arguments for the other side.

But what is said here about demonstration and knowledge is less acceptable, hence it is against this point that Aristotle seems to posit a property or description of knowing, or of demonstration, in bk. 1 of the Posterior Analytics, when he says: "We call knowing understanding by demonstration"; again: "And I call a demonstration a syllogism producing knowledge, or even a syllogism on account of which, when we have it, we know"; and again, later: "For it is necessary to believe and to know the thing when we have a syllogism of the kind we call a demonstration." Therefore, it seems that Aristotle wants these two to be equivalent, namely, knowing the conclusion and being in possession of its demonstration.

156. See 6.2.2.
159. Ibid., I.2.72a25–26.
8.4.2 Their differences

(1) And they differ first because everybody who has the demonstration has to know the conclusion but not everyone who has a dialectical argument has to know the conclusion, indeed, he does not even have to believe it. (2) Hence follows the other difference, namely, that it is necessary for the conclusion in every demonstration to follow from the premises of necessity and on account of its form, but this is not required in a dialectical argument. (3) And from this it further follows that it is necessary for every demonstration to be a syllogism, but any other sort of argumentation can be dialectical. (4) Fourth, they differ because the premises of the demonstration have to be known, but this is not required of dialectical argument. (5) Fifth, it follows that every demonstration has to have a true conclusion from true premises, but a dialectical argument does not require this. (6) Sixth, every demonstration has to proceed from first, true, and immediate [propositions], or from ones whose cognition arose by means of first and immediate [propositions]; but again, this is not required for a dialectical argument. (7) And from these differences there still follow many more.

The second part lists the differences between demonstration and dialectical argument, and it has seven sections. The first presents the difference that everyone who has a demonstration has to know the conclusion, but this is not necessary [for someone who has a dialectical argument].

The first part of this difference is clear, if we are willing to agree with Aristotle, for he says in bk. 1 of the *Posterior Analytics*: “We call knowing understanding by demonstration”;\textsuperscript{160} and again, “I call a demonstration a syllogism producing knowledge.” Therefore, we say that this is a description of demonstration: “a demonstration is a syllogism producing knowledge.” And he also says that a demonstration, i.e., a syllogism producing knowledge, is “A syllogism on account of which, when we have it, we know”;\textsuperscript{161} and again, he says: “For it is necessary to believe and to know the thing when we have a syllogism of the kind we call a demonstration.”\textsuperscript{162}

And this indeed seems to provide the interpretation of the name [interpretatio nominis, i.e., nominal definition] ‘demonstration’; for something is called a ‘demonstration’ as if it were ‘the presentation of the conclusion’ [conclusionis monstratio]; and it is not the presentation of the conclusion as to its formation, for in this respect it had already been recognized before the demonstration,

\textsuperscript{160.} Ibid., L.2.71b\textsuperscript{18}–\textsuperscript{19}.
\textsuperscript{161.} Ibid., L.2.71b\textsuperscript{19}–\textsuperscript{20}.
\textsuperscript{162.} Ibid., L.2.72a\textsuperscript{25}–\textsuperscript{26}.
as was said earlier; therefore, it is the presentation of the conclusion with respect to its knowledge. And the demonstration would not present this knowledge unless it produced the knowledge of the conclusion. Therefore, if someone who had it did not know the conclusion, then it would not present the knowledge of the conclusion; therefore, the name ‘demonstration’ would not apply to it. But this should be presupposed as the precognition of the nominal definition [of the name ‘demonstration’]. Thus, Aristotle concludes from this assumption the properties that he later assigns to demonstration.

Nevertheless, despite these points, some people have raised serious doubts concerning this issue, for it is possible that someone has the syllogism available with true and primary premises that necessarily and evidently imply the conclusion and that are such that they [could] produce in him the knowledge of the conclusion, and yet, although he has the syllogism available in this manner, he is impeded from believing the premises, so that he does not believe them, and for this reason he does not believe on their basis the conclusion. Now, that it is possible for someone to be thus impeded from believing the first indemonstrable principles is clear from bk. 6 of the Ethics, for there we read: “malice perverts and makes one lie concerning the first principles.”

Therefore, although a bad person may have available the entire practical demonstration both in utterance and in mind, yet, he may not believe the first principles, nor the conclusion, and so he does not know the principles, nor the conclusion.

Furthermore, there are many first and indemonstrable principles that nevertheless require experience in order to be believed without doubt, as will be explained later. But many people lack experience because they are young or for some other reason. Therefore, these people do not firmly accept and believe such principles, even if they are placed in a perfectly formulated demonstration. Thus these demonstrations do not bring it about that they know.

Furthermore, free will may dispose a man to believe things that are far from evident, as are the articles of faith, and it can, by the same token, determine the intellect not to believe what great philosophers took to be self-evident first principles. For example, Aristotle believed that an expository syllogism in the following form is valid and self-evident: ‘This C is A; and the same C is B; therefore, A is B’; and likewise this, in the first mode of the first figure: ‘Every B is A; every C is B; therefore, every C is A’. The will, however, because the article of faith concerning the Trinity must be sustained, may in fact not believe these consequences.

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165. With the terms ‘Father’, ‘Son’, ‘Holy Spirit’, and ‘God’ these syllogisms are invalid.
And this is what Aristotle and the Commentator [Averroes] say about custom, namely, that customarily hearing falsehoods since childhood is the cause of neglecting and denying many principles of demonstrations.  

166 “How much power custom has is shown by the laws, in which many legendary and childish elements prevail over their cognition,” namely, [over their] demonstrative [cognition], “on account of custom.”  

167 So he [Averroes] adds that many people do not accept many demonstrations by assenting to them.  

168 “For some people do not listen if the speaker does not speak mathematically, whereas others don’t if he does not give examples, and yet others don’t if he does not cite the authority of a poet.”  

169 Thus they question even self-evident principles, whence comes the verse: “Who says this?”  

170 Therefore, these and similar things seem to be able to prevent someone who has the demonstration from having knowledge of the conclusion, or even of the premises.

These issues are very difficult. And it seems to me that one should talk about them in one of two ways, either [by saying] that someone who has the whole demonstration, not only in utterance but formed in the mind as well, does not have knowledge of the conclusion, or perhaps neither of the premises, or [by saying] that an entirely similar syllogism within me and within you is a demonstration within me but not within you—and I say “entirely similar” with respect to syllogistic form and with respect to the propositions as to their form and terms—for, besides all these features, the name ‘demonstration’ connotes that the premises are known, namely, along with certainty and with the evidentness of what is believed, which perhaps is present within me but not within you, as the above-presented arguments show. And I hold this alternative.

But in connection with the second part of this section it is quite well known that we often have several probable arguments for both sides concerning the same conclusion, and these we consider to be weighty and probable to such an extent that the arguments for either side would make us believe, indeed, strongly believe, that side, if we did not have the arguments in favor of the opposite side. But when we have the arguments on both sides, we often do not decide on either side because of the apparent probability of the arguments for the other side. And even if we do decide, nevertheless we have a weak

For example, the syllogism ‘The Father is God, and the same God is the Son; therefore, the Father is the Son’ is invalid, because the premises are true and the conclusion is false.


170. The reference is unclear here.
and vacillating opinion, barely carrying this decision into effect because of the probability of the arguments of the opposite side.

(2) The second section presents the difference [between demonstration and dialectical argument] that in every demonstration the conclusion is inferred from the premises of necessity and on account of the form [of the argument], whereas this is not required for a dialectical argument. For it properly pertains to demonstration to produce the knowledge of the conclusion by means of the knowledge of the premises, and it does this only because the known premises are known to entail the conclusion. Therefore, just as the premises have to be first, or proved from first premises, as has been said, as well as evident and known, and not merely probable, so also the consequence has to be first, or proved from first premises, as well as evident and known, as opposed to a merely probable consequence. Or, although perhaps it is probable, still, it is not evident or known unless it is formally valid or [can be] reduced to a formally valid [consequence], and thus it is not first and indemonstrable or proved by means of a first and indemonstrable premise in the way in which the syllogisms of the second and third figures are proved by means of the first figure. This is why it happens that many people take themselves to know a great deal, but in fact, because of their deficiency in logic, they know little, for although they know the premises, they do not know that the conclusion follows from the premises.

It is true that some people say that knowledge of the consequence is not required for knowing the conclusion, but [only] for knowing oneself to know the conclusion. But it still seems to me that this is required for knowledge of the conclusion. For assuming that Socrates knows some premises that are first, self-evident principles, and that he also has a necessarily concluding syllogism, [it is still possible that] because of his deficiency in logic he doubts whether it is necessary, and thus he will doubt the conclusion. And if he believed it not to be a valid consequence, he will say that the conclusion need not be conceded on the basis of those premises. If, therefore, doubting the consequence implies not knowing the conclusion based on these premises, then it follows that it is necessary to know the consequence in order to know the conclusion on the basis of such premises.

Furthermore, if concerning the aforementioned case someone were to say that Socrates had known the conclusion before he started doubting the consequence, but when on account of a sophistic argument presented to him he started to doubt that consequence, he could also doubt the conclusion and not know it, then it seems to me that we should say that this is an unacceptable characterization of the situation. For then the knowledge acquired by demonstration would be very weak, if, with the whole demonstration remaining in place, it would be lost on account of one piece of sophistic reasoning. But that
dialecticians and orators use several arguments that are neither necessary nor formally valid consequences is quite obvious.

(3) The third section presents the third difference, namely, that every demonstration is a syllogism. And this is so because no other species of argumentation is a necessary and formally valid consequence, as has been stated at the beginning of the treatise on the dialectical loci. 171

(4) The fourth section presents the fourth difference, that it is necessary that the premises of the demonstration should be known. And it is clear that it is not necessary for the premises of a dialectical argument to be known, for it is possible that they are false, and what is false is not known. But they have to be probable, or at least more probable than the conclusion; and, furthermore, if they are to produce opinion concerning the conclusion, they have to be believed, and believed more than the conclusion. But that the premises of a demonstration have to be known is clear, for otherwise they would not produce the knowledge of the conclusion. For however much they would be recognized with respect of their form and however necessary they would be, if they were also doubtful with respect to their truth, or were they to be believed, but not with certainty and evidentness, then by virtue of them there would never ensue a clear and evident knowledge of the conclusion.

(5) The fifth section presents the fifth difference, namely, that the premises and the conclusion of a demonstration have to be true. And this is so because they have to be known, and what is false is not known; but it is indeed possible for something false to be probable and believed.

(6) The sixth section presents the difference that the premises of a demonstration have to be first and immediate, or known on the basis of first and immediate [premises], or at least one of them has to be first and immediate, and the other known on the basis of first and immediate [premises]; but this is not required with respect to the premises of a dialectical argument. And [what is said in this section] is self-evident as far as dialectical arguments are concerned.

But to clarify what is said concerning demonstrations, we should realize that, as with other superlatives, something is said to be ‘first’ either because it is prior to everything else or because nothing is prior to it. In this context that proposition is said to be prior on the basis of which another is demonstrable, and that one is called posterior which is demonstrable on the basis of the other. But of those of which neither is demonstrable on the basis of the other, neither is said to be prior or posterior to the other. Therefore, in this context concerning demonstrations, a false proposition, or one that is true by accident and which is contingent, is neither said to be prior nor posterior to

171. See 6.1.1.
another, for it is neither demonstrative nor demonstrable. Thus, a proposition in the present context is not said to be first because it demonstrates all conclusions or some known or knowable propositions, but because it serves to demonstrate such a proposition or propositions, and it is not demonstrable by others.

And assuming this as the nominal definition of ‘first proposition’ in accordance with the present intention, it is easy to see that all premises of a demonstration have to be either first [propositions] or derived from first ones. For along with what has been said it is necessary to presuppose that a demonstrable proposition is not known unless it is demonstrated. This is clearly stated by Aristotle, and reasonably so, because the intellect is not disposed by its nature to assent with certainty and evidentness to a demonstrable conclusion; for otherwise that would not be a conclusion but a principle. Therefore, the intellect has to be made to assent to it with certainty and evidentness by some other premises, to which it so assents.

Then I argue as follows. A premise of a demonstration, along with the other premise, demonstrates everything that is proved by this demonstration. Then this premise is either indemonstrable or demonstrable. If the former, then it follows that it is first, and we have what we wanted to prove. If, the latter, however, then it is either demonstrable or demonstrated by means of other premises or it is not. If not, then it follows that it is not known; therefore, it demonstrates nothing. But if it is demonstrated, then the question is raised, as before, about the premises by means of which it has been demonstrated, i.e., whether they are demonstrable or indemonstrable. If the latter, then they are first, and we have what we wanted to prove, namely, that the premises of the demonstration given at the beginning were known on the basis of first ones. If, however, it is said that these premises are still demonstrable, then the question is raised about the premises by means of which they were demonstrable or are demonstrable, just as before. And we shall have to arrive at indemonstrable principles, and then we have what we wanted to prove, or we would go to infinity. But to go to infinity, in the sense that every demonstrative proposition is demonstrable, is impossible, for this would happen either in a circle, which will be refuted later, or it would involve a regress, which would be impossible, for it is impossible to go to infinity in the series of subjects and predicates, but there has to be a halt upwards and downwards and in the middle, as is sufficiently proved by Aristotle in bk. 1 of the Posterior Analytics.

But, again, it is easy to prove that the premises of a demonstration have

173. Ibid., L20.82a21–35.
to be immediate or known on the basis of premises that are immediate by the fact that in this context, ‘first proposition’ and ‘immediate proposition’ are equivalent, although these names are different in their corresponding concepts. For a proposition is said to be ‘immediate’ because there is no middle term by means of which it could be demonstrated, and one like this is called ‘first’ because it cannot be demonstrated.

(7) The last section remarks that there are also other differences that will be discussed later, and it is sufficiently clear.

8.4.3 The agreements between knowledge and opinion

(1) Since knowledge is the end and the product of demonstration, whereas opinion is that of dialectical argument, we should consider the agreements and differences of knowledge and opinion, in the same way as this has been observed in connection with dialectical and demonstrative arguments. Knowledge and opinion are alike first because neither is a proposition, but rather an assent given to one, i.e., that by which we assent to one. (2) Second, they agree because both of them are said to be sometimes actual and sometimes only habitual. (3) Third, they agree analogically, because an opinion is of some opinable proposition, whereas knowledge is of some knowable proposition. (4) Fourth, they agree because both of them, strictly speaking, are some intellectual act or habit. (5) Fifth, they agree in the analogy to the effect that just as not every opinion is acquired by means of a dialectical argument, so also not every item of knowledge is acquired by demonstration.

The third part states in five sections five points of agreement between knowledge and opinion. (1) The first is that neither knowledge nor opinion is a proposition but is some superadded assent, by which we agree to a proposition. And it is clear that we assent in this way, for every opinion is some belief or some credulity by which we hold or believe about a proposition that it is true, or that things are as it signifies, in the sense given elsewhere, and it is this belief or credulity (or whatever name you may call it) that we call ‘assent’.

Now, that these assests are not those propositions is clear, because contradictory propositions can exist in the same subject at the same time, as for ex-

174. Sophismata, chap. 2, Fourteenth conclusion.
ample in your intellect, although they cannot both be true at the same time, given that assents or opinions supporting both such contradictories are by nature incompatible with or contrary to their being in the same [subject] at the same time. Hence it is impossible for the same person to believe two contradictories at the same time, as is stated in bk. 4 of the *Metaphysics*. Also, it is possible for you and me to have in mind propositions that are entirely similar, both in matter and form, and for you to believe that proposition though I do not. So you have something more than I do, namely, a proposition with an opinion, but this is not with respect to the substance of the proposition; therefore, you have more on account of what is added. Or at least you are related to that proposition otherwise than I am, not with respect to the substance of the proposition but with respect to what is added. And this should be considered in more detail in [connection with] bk. 3 of *On the Soul* or the *Metaphysics*.

(2) The second section states that there is knowledge or opinion that is actual, namely, knowledge or opinion that exists with actual consideration and assent, and there is a merely habitual version of these, which remains even after every act of consideration stops. And this is sufficiently explained by Aristotle in several places.

(3) The third section states that every opinion is of an opinable proposition and every item of knowledge is of a knowable proposition. For nobody says that he knows or opines a man or a donkey except because he knows or opines a proposition formed with the terms ‘man’ or ‘donkey’, as when we opine a man to be honest or a donkey to be strong, and the like. But we should not say on this basis that we do not have knowledge [scientias] or opinions about animals or stones, or celestial bodies, although they are not propositions; or that we do not have knowledge and opinions about the subjects of sciences [scientiarum] and their attributes, which again are not propositions, but significative terms. We should say that what we immediately have knowledge or opinion of is the proposition to which we assent with knowledge or opinion. We are said, however, to have knowledge or opinion about the known terms because we know or opine the propositions made up from these terms. Furthermore, we say that other things, such as stones or timbers, are known or opined, or that we have knowledge or opinion about them, because they are signified by terms from which known or opined propositions are put together. It is in this way, and not in the other two ways, that we have knowledge about all things.

(4) The fourth section states that every item of knowledge or opinion has to be an intellectual act or habit. And since names are conventional [ad placitum], I do not prove this section except on the basis of the fact that the authors deny that the names ‘knowledge’ and ‘opinion’ may be extended to the cognition

and judgment of the senses, although in many cases we agree with them and act according to them. So, in bk. 3 of *On the Soul*, Aristotle says in connection with opinion that no beasts have belief, and consequently they have no opinion, because they do not have either intellect or reason. And if we do not concede that beasts have opinion, even less should we concede that they have knowledge, also on the further ground that the senses cognize only singulars, of which, however, Aristotle in bk. 7 of the *Metaphysics* states that one does not have knowledge, nor demonstration, nor definition. Nevertheless, if someone wishes to interpret the names of knowledge and opinion more broadly, so as to cover every [sort of] certain judgment, as far as knowledge is concerned, or to cover a judgment that is steadfast [*adhæsivo*], although not certain, as far as any sort of opinion is concerned, then it would not be unacceptable to concede that brutes have some sort of sensory opinions or knowledge.

(5) The fifth section states that not every item of knowledge is acquired by demonstration and not every opinion by dialectical argument. This is obvious concerning knowledge, since it is necessary to know and believe the first principles of demonstrations more than the conclusions, as is proved in bk. 1 of the *Posterior Analytics*; but we do not know those by demonstration. Again, we also have opinions about contingent things. And if this occurs without any previous reasoning, then I have what I wanted to prove. And if by previous reasoning, then this reasoning does not proceed by way of a necessary consequence from a necessary antecedent, for then the conclusion would also have to be necessary, which is against the assumption. But if that reasoning is to produce an opinion in us, then it is necessary for us to opine and to believe the antecedent and the consequence, if we wish to attend to this. If therefore we opine this without some previous reasoning, then I again have what I wanted to prove. But if you say that this comes about yet again by a previous reasoning, then I would proceed to infinity, which is unacceptable. Therefore, [some opinion is not acquired by previous reasoning].

We should note, however, that in order to save the [authoritative] claims [*dicta*] of philosophers we have to distinguish [several senses of] the name ‘knowledge’ in the way that the commentator does in bk. 1 of the *Posterior Analytics*. For taken in the most general sense knowledge is some steadfast

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179. Robertus Grosseteste, *Commentarius in Posteriorum Analyticorum Libros*, 1:2, p. 99. Apparently, Buridan here does not use the term ‘commentator’ as the honorific title of Averroes but as an ordinary reference to the author of what he regards as the most authoritative commentary on Aristotle in the present context.
 cognition of a proposition with certainty and evidentness in us, so that it can be distinguished from opinion (as will be explained later), and this applies whether a necessary or a contingent proposition is in question. And it is certain that not every such [cognition] is acquired by demonstration. But the name ‘knowledge’ strictly speaking is restricted to the intellectual cognition of a necessary proposition. And this cognition is indeed not only of conclusions, but also of indemonstrable principles, which are not acquired by demonstration. But even more strictly, the name ‘knowledge’ is restricted to the intellectual cognition of a demonstrable conclusion, excluding the cognition of indemonstrable principles. And in this way, in [connection with] bk. 6 of the Ethics, we distinguish the name ‘knowledge’ [scientia] from ‘understanding’ [intellectus], insofar as we call understanding the habit of [first] principles. 180
And thus every item of knowledge is acquired by demonstration.

Furthermore, most strictly, we restrict the name ‘knowledge’ to a steadfast intellectual cognition with the certainty and evidentness of a necessary and demonstrable speculative conclusion. And in this way we distinguish knowledge from understanding, art, and prudence in bk. 6 of the Ethics. 181
So in this sense, every item of knowledge is acquired by demonstration, but not every necessary and evidently demonstrated conclusion is some [item of] knowledge: for there are necessary and evident demonstrations in art and in prudence, as well as in moral philosophy and medicine, and the conclusions thus demonstrated do not belong to knowledge in the above-described manner, but rather to art or prudence. And Aristotle in the Posterior Analytics sometimes takes ‘knowledge’ [or ‘science’, scientia] in the second of the above-described ways, and sometimes in the third, and not most generally, as in the first way, nor most strictly, as in the fourth.

8.4.4 Their differences
(1) Now, then, in order to bring out the differences between knowledge and opinion, we say that knowledge differs from opinion first because every [act of] knowledge has to occur with certainty and evidentness, as is clear by its nominal definition, but it is not possible for opinion to be like this. (2) The second difference is that every [act of] knowledge has to be of a true proposition, but not every opinion is such. (3) The third

difference is that we cannot have knowledge of first principles by demonstration, but we can have opinion concerning them based on dialectical argument.

The fourth part is about the differences between knowledge and opinion. It contains three sections. (1) The first states the difference that knowledge [but not opinion] has to occur with certainty and evidentness. I say, therefore, first, ‘with certainty’. For certainty requires two things, one on the part of the proposition that is assented to, namely, that it be true; for it is not certain belief on the basis of which we assent to something false, but rather it is uncertain and deceptive; and it is clear that, taken in this way, certainty is required for knowledge, for that which is false we do not know. Another thing is required on our part, namely, that our assent be firm, i.e., without doubt or fear of the opposite side; and this is also required for knowledge, since a doubtful and fearful assent does not transcend the limits of opinion. For if someone assents to a proposition fearing [that] the opposite [may be true], he would never say that he knows that it is true, but rather that he takes it or believes that it is.

And I also say ‘with evidentness’ so as to indicate the difference [between knowledge and] that credulity that we believers ought to have concerning the articles of Catholic faith, e.g., that God is triune. That credulity has the greatest degree of certainty on the part of the proposition, for it is a maximally true proposition that God is triune. And it should also be the firmest, without any fear on our part, in accordance with the Athanasian Creed [Symbolum], at the end: “This is the Catholic faith. Everyone must believe it, faithfully and firmly; otherwise he cannot be saved.”¹⁸² But it is compatible with this perfect certainty that because of the lack of evidentness we do not properly have knowledge of [the content of] these articles. Improperly speaking, however, there is evidentness, because the cognitive power by its nature, along with its concurrent circumstances, is disposed to assent to the truth.

That a man can have firm credulity even concerning nonevident, unknown things, without any fear [of the opposite alternative], is clear from Aristotle, who in bk. 7 of the Ethics says: “Some people are no less convinced of what they opine than others of what they know.”¹⁸³ And this firmness of assent without any fear of the opposite arises in us in three ways: first, by evident-


ness, and this is scientific assent; in another way on the basis of will, backed by the authority of the Sacred Scripture, and this is the Catholic faith of the saints who choose to die to sustain it; and in the third way, [the firmness of assent arises] from some false appearance, along with the will’s being confined by it, as is the case with stubborn heretics, who also choose to die to sustain their false opinion.

It is true that, because of the aforementioned requirements demanded by the concept [ratio] of knowledge, some people, wanting to do theology, denied that we could have knowledge about natural and moral [phenomena]. For example, we could not know that the sky is moving, that the sun is bright and that fire is hot, because these are not evident. God could annihilate all these, and it is not evident to you whether He wills to annihilate them or not; and thus it is not evident to you whether they exist. Or God could put the sky to rest or remove light from the sun or heat from fire. And finally, they say that it is not evident to you concerning the stone you see as white that it is such that it is white, for even without the whiteness and the stone God can create in your eye an image [species] entirely similar to the one you have now from the object; and thus you would make the same judgment as you do now, namely, that there is a white stone here. And the judgment would be false, whence it would not be certain and evident; and, consequently, it would not be evident even now, for it is not evident to you whether God wills it so or not.

But these objections are solved on the basis of bk. 2 of the *Metaphysics*. For there Aristotle says: “Mathematical exactitude is not to be demanded in all cases, but only in the case of those things that do not have matter; for this reason this is not the method of natural science.” And consequently the Commentator remarks on this passage that one need not demand the kind of

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184. The allusion is clearly to Nicholas of Autrecourt. See references in n. 3 of the introduction.


187. *Aristotelis Metaphysicorum libri XIII cum Averrois Cordubensis variis in eodem commentariis, in Averroes, Aristotelis Opera cum Averrois Commentariis* (Venice, 1562–74; reprint, Frankfurt am Main: Minerva, 1962), f. 35vb K: “Et non oportet hominem quaerere ut modus fidei demonstrationibus naturalibus sit sicut modus fidei in mathematicis.” The critical text’s *sit nec* here obviously has to be emended to this edition’s *sic et*. Indeed, this reading also appears in several codices according to the critical apparatus.
belief in natural demonstrations [found] in mathematics. We shall therefore declare that there are many diverse kinds of certainty and evidentness.

For there is the certainty and evidentness of divine wisdom, to which no created cognition can attain.

And in the genus of human cognition there are several kinds of certainty as well as of evidentness. For as far as we are concerned, certainty or assent should not be called that of knowledge, unless it is firm, without any fear [of falsity]. But as far as the proposition is concerned one sort of certainty is that which pertains to a proposition so firmly true that it, or one similar it, can by no power be falsified. And in this way we should certainly concede, as they have argued, that it is impossible for us to have such certainty about an assertoric categorical affirmative proposition, unless it consists of terms supposing for God, or, perhaps if we admit natural supposition, of which we spoke elsewhere. But this sort of certainty is not required for natural sciences or metaphysics, nor even in the arts or morality [prudentia]. Another sort of human certainty on the part of the proposition, however, is that of a true proposition that cannot be falsified by any natural power and by any manner of natural operation, although it can be falsified by a supernatural power and in a miraculous way. And such certainty suffices for natural sciences. And thus I truly know, by natural science [or knowledge, scientia] that the heavens are moved and that the sun is bright.

Accordingly, it seems to me to be possible to conclude as a corollary that supernaturally it is possible for my [act of] knowledge, while it remains the same, to be converted into non-knowledge. For as long as the sun and the sky are moving in accordance with all their natural ways, the assent by which I firmly and with certainty assent to the proposition ‘The sun is bright’ is true, evident, and certain natural knowledge [scientia], endowed with the evidentness and certainty appropriate to natural science [scientia]. I posit, then, that if this [act of] assent, which is knowledge at the present time, remains in me for the whole day, and at nine o’clock God removes light from the sun without my knowing this, then that [act of] assent of mine will no longer be knowledge after nine o’clock, for it will no longer be true, nor will it have a true proposition as its object.

An analogous distinction can be made concerning evidentness as well as concerning certainty. For some human evidentness is such that in accordance with it the cognitive power is compelled either by its own nature or by some evident argument to assent to a truth or a true proposition that cannot be falsified by any power; but this is not required for natural science. Another [type

188. See 4.3.4.
of evidentness] is such that in accordance with it the cognitive power is compelled either by its own nature [or by some evident argument] to assent to a truth or a true proposition that cannot be falsified naturally, although it could be falsified supernaturally. And this is what is required for natural science.

But that no opinion is of this kind is clear, because this much is signified or connoted by [the term] ‘opinion’, namely, being short of knowledge in not meeting some of these requirements. But then you would ask whether, when I clearly see Socrates running, I know that Socrates is running or whether I merely opine this. And I reply that then I do not opine this, but I know. For everybody speaks in this way: “I know that this iron is hot, for I clearly feel that it is hot,” and “I certainly know that Socrates was running yesterday, for I saw him running.” But this knowledge is not knowledge in the second, the third, or the fourth of the modes distinguished above, but in the first mode. Nevertheless, that mode is correctly distinguished universally from opinion. And if the assent by which I assent [to the claim] that Socrates runs when I see him running will remain even after Socrates gets out of my sight, this will no longer be knowledge, but opinion. Therefore, this mode of knowledge soon and easily can be changed into opinion.

(2) The second section states that every [act or habit of] knowledge is [the knowledge] of a true proposition, but not every opinion [is such], since what is false is not known but may well be opined.

(3) The third and final section states that of the first principles one cannot have knowledge by demonstration, for it was said earlier that by ‘first’ and ‘immediate’ we mean ‘indemonstrable’. But one can have opinion about them by dialectical argumentation. And this is true of many principles that at first had been doubted, until they were made evident by the senses, memory, and experience. For these can be taken to be false, and later opined, on the basis of insufficient evidence, and finally evidently known, when experience has sufficiently been made complete.

Still, lest on account of certain of Aristotle’s remarks someone should have an occasion for error in this chapter, it is asked whether it is possible for the same person to have knowledge and opinion of the same thing at one and the same time. And Aristotle responds that in one way this is possible, and in another it is not. In brief, this should be understood so that with respect to that which is immediately knowable and opinable, which is a proposition, it is impossible for the same person to have knowledge and opinion about

189. This clause does not appear in the text, but both symmetry and Buridan’s doctrine clearly require it.
190. See 8.4.3.
the same thing at the same time; for it is not possible that you assent to the same proposition with certainty and evidentness and without certainty and evidentness at the same time, although this may be possible successively. But when talking about the remote object of knowledge and opinion, which is a term of which the proposition is composed, or the thing signified by this term, it is possible for me to have knowledge and opinion at the same time about the same thing, for I can so possess a true and necessary proposition, for example, that every man is an animal, and an impossible or a contingent proposition, for example, that every man is a stone or that every man is awake; one I know, whereas the other perhaps I opine. And this is obvious.

8.5 On the first indemonstrable principles of demonstrations

(1) After these points we should discuss the first and indemonstrable principles of demonstrable propositions. (2) For there are some such principles, if one cannot demonstrate in a circle, as we shall explain later, and if there is no infinite regress in [the series of] predicates and subjects, neither upwards, nor downwards, nor in the middle, as I assume to have been sufficiently declared by Aristotle in bk. 1 of the Posterior Analytics. For unless we were able to arrive at the indemonstrable [principles], it would not be possible to have knowledge by demonstration, and this art assumes this to be false.

The fifth chapter of this treatise is about the first and indemonstrable principles, and it contains four parts. The first shows that there are some such principles; the second deals with their number, or multitude; the third is about their necessity or contingency and their evidentness or nonevidentness; and the fourth shows how they come to be cognized and evident to us.

8.5.1 That there are such principles

(1) The first part contains the first section, which clearly states the aim of the chapter. (2) And it contains the second section, which shows that there
are some first and indemonstrable principles of demonstrations, or that there
is some [such principle], for given a demonstrable conclusion A, it is demon-
strable by two premises B and C. I ask, therefore, about one of them, for ex-
ample, about B, whether it is demonstrable or not. If not, then I have what I
wanted to prove, for then it is an indemonstrable principle. But if you say that
it is demonstrable, then it is not known unless it is demonstrated, and if it is
not known, then it did not demonstrate the conclusion, nor does it make it
known. And if it is demonstrated, then this will again be by some other prem-
ises. About these we ask the same as before. And so we should either go on to
infinity, which is impossible according to reason, and consequently nothing
would be known demonstratively, or we should make a stand at something
not further demonstrable, and we shall then have what we intended; alterna-
tively, there may be a reversion or circularity in the demonstrations, for ex-
ample, A will be demonstrated by B, and B by C, and again C by A; but for
now we assume this to be entirely impossible.

8.5.2 Their number or multitude

(1) There is, however, no one single first and indemonstrable principle,
but several. (2) Indeed, there are not many more demonstrable conclu-
sions than there are indemonstrable principles. (3) Therefore, there are
infinitely many such principles, for there are infinitely many demon-
strable conclusions.

The second part is about the multitude of indemonstrable principles. It prop-
ounds three propositions to be proved in three sections. The first is that there
is no single first and indemonstrable principle, calling that one ‘first’, as was
said above, which does not have prior and better known premises by which
it could be demonstrated. This, then, is easily proved. Let us take some dem-
onstrated conclusion: this is proved by two premises, for every demonstra-
tion is a syllogism. And if both premises are indemonstrable, then I have what
I wanted to prove. But if one of them is demonstrable, then this again will
be by two other premises. And one cannot go to infinity here, as has been
said. Therefore, I arrive at a proposition demonstrable by two indemonstrable
premises, and we have what we intended to prove.

And it does not count against this point that Aristotle seems to assign, in
bk. 4 of the Metaphysics,\(^{192}\) one best-known principle to the status of the first

\(^{192}\) Aristotle, Metaphysics IV.3.1005b19–22.
among all the others, namely, that it is impossible for the same [item] to be and not to be in the same [thing], etc.; and if this is the first and most evident and firmest among all, then it follows that there are no other first principles. The solution of this [objection] is that not all indemonstrable principles of demonstration are first in their generality, so that they would be most general, nor are they first in evidentness and firmness, so that they would be the most evident and the firmest. It is according to these criteria, however, that Aristotle posited that principle to be the first. But here we speak about [a principle as] ‘first’ only by denying [the existence of] something prior by which it could be demonstrated, not because of the lack of more general and more evident ones.

(2) The second section states that there are not many more demonstrable conclusions than indemonstrable principles. And not only this conclusion but also the one that there are no more demonstrable conclusions than indemonstrable principles would be inferred of necessity from the subsequent one, if that were proved; for if there were infinitely many principles, then there would not be so many conclusions without there being as many principles, indeed, [there would be] even more. For the name ‘infinite’ is expounded as ‘some, and there are not so many that there would not be more’. But even the present conclusion is proved as follows. However many middle terms of demonstrations there are, there are as many indemonstrable principles, and more. But there are not many more demonstrable conclusions than middle terms. Therefore, [there are not usually more conclusions than indemonstrable principles].

The major is justified as follows. If a demonstration is carried out on the basis of first and indemonstrable principles, then there will be a single middle term and two indemonstrable principles. If, however, both premises are demonstrable, then let us take the syllogism ‘Every B is A; every C is B; therefore, every C is A’; here, then, there is one middle term and no principle, but one has to prove the major and the minor beforehand. Let therefore the major be demonstrated thus: ‘Every D is A; every B is D; therefore, every B is A’; and the minor thus: ‘Every E is B; every C is E; therefore, every C is B’. And let us assume that we can stop here, so that this major and this minor have already been proved by means of first premises. It is clear, therefore, that

193. *Aliquot et non tot quin plura.* That is to say, however many things you may take, an infinity of things will always be more.

194. Here I amended the critical text on the basis of the critical apparatus. The critical text has *unum principium* (one principle), which, given the assumption that both premises are demonstrable, does not make sense. Two codices, however, provide the correct reading of *nullum principium*, which is what I have adopted in the translation.
there will be three middle terms here, namely, ‘B’, ‘D’ and ‘E’; but there will be four first premises, namely, two for proving the major and two for proving the minor. So it is universally true that if a demonstration is carried out by means of first premises, then there will be two principles and a single middle term, and if the premises of the demonstration require prior proofs, then it will be necessary, once those prior proofs have been completed, for there to be one more principle than there are middle terms.

But then the minor of the principal argument, namely, that there are not many more conclusions than middle terms, is justified, because we can see that several diverse conclusions are demonstrated by diverse middle terms. And thus, also, just as it is possible to demonstrate several conclusions by the same middle term, so, conversely, it is often possible to demonstrate the same conclusion by several middle terms. But to clarify even better the issue at hand, we should see in how many ways the conclusions can be multiplied beyond the number of principles or the principles beyond the number of conclusions. At first sight it appears that conclusions are multiplied beyond the number of principles, on account of the fact that the same syllogism can conclude to many [conclusions]; i.e., the same premises, arranged in the same way, can entail several conclusions, as for example the following two: ‘Every B is A’ and ‘Every C is B’ entail that every C is A, that some C is A, that some A is C, that no C is not A, and that not every C is not A. And thus on the basis of two premises one knows all these conclusions, and thus they are demonstrated, for I am assuming that they were doubtful before.

But I say that in the demonstrations of these conclusions, not only are two first principles required, namely, the two premises, but also several others, for a demonstration requires not only the evidentness of the premises but also the evidentness of the consequence. But that consequence is a proposition, albeit a hypothetical one. And so, if the consequence is evident in itself, then it is an indemonstrable principle; and if it is not evident in itself, then it needs to be demonstrated by evident principles. Therefore, in the demonstration from first premises ‘Every B is A; every C is B; therefore, every C is A’ there are three indemonstrable principles, namely, the two premises, and, on the part of the consequence, the following hypothetical proposition, or one equivalent to it: ‘If every B is A and every C is B, then every C is A’. But if from the above-stated premises you infer another conclusion, namely, ‘Some A is C’, then, if the corresponding consequence is evident, then it is a first indemonstrable principle that is expressed by the word ‘therefore’ or by the proposition ‘If every B is A and every C is B, then some A is C’. And if that consequence is not evident, then it needs to be proved, and it is proved by the conversion of the conclusion, which again either involves a consequence evident in itself, and thus it is an indemonstrable principle, or it is to be proved by evident [prin-
cles]. And thus it is clear that because of the multiplication of conclusions from the same premises the indemonstrable principles have to be multiplied on the part of the consequences.

But then, further, if we confine our consideration to the first premises only, leaving aside the indemonstrable principles arising from the evidentness of consequences, then there are some simple demonstrations that Aristotle in bk. 5 of the *Metaphysics* calls the elements of other demonstrations, and others that are composed of these simple ones. The latter are called 'simple' because they are not analyzable into prior demonstrations by prior proof [per prosyllogizationem] of their premises or one of their premises. And it is clear that these proceed from first premises. Therefore, in all of these there are two indemonstrable principles for one conclusion, and so more principles than conclusions.

But demonstrations that are analyzable into prior ones by prior proofs of the premises are called composite. And then it is possible in some cases for the conclusions to multiply beyond the multiplication of the indemonstrable principles if they are augmented by continuously assuming more than four terms. For in the simple demonstration based on the three terms A, B, and C, we get two propositions, namely, AB and BC, and one conclusion, namely, AC. But then assume a fourth term, D, subsumed under the minor extremity C, and we shall have three first propositions and three conclusions. And I say "first propositions," namely AB, BC, and CD, and I say "three conclusions," namely, AC, by the middle term B, and BD, by the middle term C, and AD, by the middle terms B and C. But, furthermore, if we add a fifth term under D (and let it be E), then in this way there will now be four first propositions, namely, AB, BC, CD, and DE, but we can point to six conclusions, namely, AC, AD, AE, and, further, BD and BE, and, furthermore, CE.

But in the augmentation of demonstrations that proceed by subsuming terms [not] "on the side" [ad latus], namely, not under the minor extremity, but under the middle term, this would not happen. For example, let the major extremity be A, and let the middle term be B; and subsume under it several of its species, namely, C, D, and E. In that case, then, by the middle B we shall have three conclusions, namely, 'Every C is A', 'Every D is A', Every E is A'. But also along with the first, while keeping the same major, there will be three first minor [premises], namely, 'Every C is B', 'Every D is B', and 'Every E is B'.

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196. See text at 8.3.6 n.138.
197. Sed etiam cum prima, eadem maiore manente, erunt tres primae minores, scilicet 'omne C est B', 'omne D est B' et 'omne E est B'. The reference in the first clause of this sentence is somewhat unclear (it probably refers to the original minor premise, say, 'Every X is B'); nevertheless,
(3) The third section states that there is an infinity of first principles. There are infinitely many demonstrable conclusions; therefore, there are infinitely many principles. That the demonstrable conclusions are infinite is clear in geometry because of the infinity of figures. For just as a triangle has a proper attribute that can be demonstrated of it, namely ‘having three angles equal to two right angles’, so also does a quadrangle, namely ‘having four angles equal to four right ones’, and so does a pentagon, namely ‘having five angles equal to five right ones’; and so on to infinity. Therefore, there is an infinity of demonstrable conclusions in geometry. And I say “there is an infinity,” i.e., there can be an infinity, so we need not be concerned about this in this context.\textsuperscript{198} And the same goes for the principles. And so it is as well in arithmetic, because of the infinity of the species of numbers.\textsuperscript{199}

But that this infinity of demonstrable conclusions entails the infinity of indemonstrable principles is proved as follows. All these propositions have diverse subjects that are not subordinated to one another with respect to predication, as is the case with the terms ‘triangle’, ‘quadrangle’, ‘pentagon’, etc., and they also have diverse predicates. Therefore, there are infinitely many subjects of demonstrable conclusions. But it is necessary, if A has to be demonstrated of B, since this needs to be resolved into immediate [propositions], that one immediate premise consist of A and some middle term, and another of B and some other middle term. Therefore, it is necessary that if there are infinitely many subjects or predicates of a demonstrable conclusion, then there are infinitely many indemonstrable first premises.

And this infinity is not incompatible with that finitude of the series of predicates and subjects that Aristotle was talking about in bk. I of the Posterior Analytics.\textsuperscript{200} For the finitude he is talking about and that his arguments prove is that, for any given predicate or subject, it is not possible that there should be infinitely many predicates of this subject, or infinitely many subjects of which these would be predicated. But there may well be an infinity of subjects none of which is predicated of another of them; and the same goes for predicates.

And these points clearly reveal the error of some people lecturing nowadays that the whole passage is clear enough, namely, that when we multiply the conclusions by subsuming subordinate terms under the original middle term (while keeping the same major premise), the required minors are equally multiplied, in contrast to the previous case, where subsuming under the minor term yielded more conclusions than premises.

\textsuperscript{198} Buridan simply does not want to go into the issue of actual infinity, which is irrelevant here.

\textsuperscript{199} Buridan talks about species of numbers, since for him numbers are concrete collections of concrete units. So, e.g., any group of three units, such as these three stones and these three people, are individuals of the species ‘number three’ (numerus ternarius).

\textsuperscript{200} Aristotle, Posterior Analytics I.19.82a15–22.83a2.
days who say that no evident proof is possible in terms of which we conclude from the existence of one thing to the existence of another, as for example when from the existence of motion we want to prove the existence of a mover or from the existence of the house the existence of the walls. For they say that there cannot be an evident proof unless it can be reduced to the first complex principle posited by Aristotle in bk. 4 of the *Metaphysics*; but this cannot be done in this case, for that principle is founded on contradiction, and there is never a contradiction concerning diverse things [in the claims] that this exists and that does not exist, for example, that motion exists and a mover does not; for a contradiction has to involve the same [predicated] of the same, both in reality and in intention. These people, therefore, assume something false, namely, that only this principle is evident and that every other principle can and has to be proved by it. But these claims are absurd and are made only because of the ignorance of logic. For, as Aristotle says in bk. 4 of the *Metaphysics*, “It is a lack of erudition,” i.e., a lack of logic, “not to recognize of what things one should demand a demonstration and of what things one should not.”

8.5.3 On the necessity and evidentness of some principles

(1) And not all principles are necessary, but many are contingent, (2) neither are all of them evident when they first occur or are propounded to someone considering them, but many are doubtful, or opined to be false. (3) But some are evident as soon as they are propounded, if the terms are known with respect to their signification, and the form of proposition is known.

The third part has three sections. The first of these states that not all first principles are necessary. And this immediately seems to contradict Aristotle, in bk. 1 of the *Posterior Analytics*, and in bk. 2, where he calls the habit of first principles ‘understanding’ [*intellectus*] and the habit of the conclusions ‘knowledge’ [*scientia*], and says that some habits may involve falsity, as for ex-

201. This is another jab clearly directed at Nicholas of Autrecourt. See references in n. 3 of the introduction.
203. Ibid., IV.4.1006a7–8.
ample opinion [opinio] and reasoning [ratio], but knowledge and understanding are always true. And the same point is clear from bk. 6 of the Ethics, where it is said that there are five intellectual virtues by which one can never say something false, and one of these is stated to be understanding. But this is what is necessary, namely, that which is always true and never happens [contingit] to be false.

But this is immediately solved by what has been said in the preceding chapter. For if 'knowledge' is taken in the first of the ways distinguished there, then it is indeed contingent, i.e., it is of a contingent conclusion, and the principles demonstrating it, or some of them, are contingent as well; and thus they are not always true, but they can be false. And what is said in connection with this concerning prudence will be discussed later. But concerning knowledge in the second sense, which is meant by Aristotle in bk. 1 of the Posterior Analytics, it is true that it is always true and necessary and that it relates to a true and necessary conclusion or proposition. And the understanding that demonstrates such a conclusion is also always true and necessary. But more on this later.

That, therefore, some self-evident and indemonstrable principle is contingent is clear from what is said about prudence in bk. 6 of the Ethics. For there are many contingent conclusions of prudence, which nevertheless are made evident and known in the first sense of knowing, although not in the second, third, or fourth sense. And they are evident and known on the basis of arguments that deserve to be called 'demonstrations' generally speaking, corresponding to 'knowledge' taken in the first way, for they make their conclusions known in this way, although they are not demonstrations correlated with knowledge in the other senses, which is what Aristotle is talking about in the Posterior Analytics.

The premises of such prudential demonstrations, therefore, are known with certainty and evidentness, since this is how they make their conclusions known, and they do not carry on to infinity in their premises. Therefore, they arrive at self-evident and known and indemonstrable premises. And thus these are to be called first and immediate and indemonstrable principles. Because the conclusion is contingent, however, those premises have to be contingent, or at least one of them, for if they were necessary, the conclusion following from them would also have to be necessary.

(2) The second section states that not every first principle is self-evident

206. See 8.4.3.
when it first occurs. And this is obviously true for moral principles, for it is possible to lie about them, namely, by denying them and assenting to their opposites; for malice, as is said in bk. 6 of the *Ethics*, corrupts and makes one lie about practical principles.\(^{208}\) In fact, even without malice, passionate young persons, because of their passions and lack of experience, do not concede them; indeed, they are not apt students of the moral sciences, as is stated in bk. 1 of the *Ethics*.\(^{209}\) This is not only true for art and prudence, but even for speculative knowledge in the second, third, or fourth sense. For a great number of first and indemonstrable principles in natural science are doubtful to us until we have had many experiences involving them, over a long period of time, as will be explained later.

(3) The third section states that some such principles are at once evident to us when they are propounded to us. And this is the case with that most general and most evident principle that Aristotle posits in bk. 4 of the *Metaphysics*\(^{210}\) and the principles that come under it, e.g., that it is impossible for a man to run and not to run, that it is impossible for the same line to be simultaneously equal to itself and not to be equal to itself, and that it is impossible to dissent from such principles, or to assent to their opposites, because of the evident repugnance involved in contradiction. There are also many others that are based on the evident inclusion of the concepts of the names \[propter evidentem rationum nominum inclusionem\] as for example that every vacuum is a place, if it exists, and that every pug is a nose, if it exists. For these are necessarily conceded on the basis of the nominal definition, provided the signification of the terms is known. And there are also many others that are based on what is evident to the senses, or their singulars are, as for example that something is immutable or mobile, or that there are many beings, or again, that this donkey is eating (which is immediately evident to me, since I see him eat);\(^{212}\) and so on for the other cases.

\(^{208}\) Ibid., VI.5.1140b15ff.

\(^{209}\) Ibid., I.2.1095a3.


\(^{211}\) I have taken this reading from the critical apparatus. The critical text here has: *propter evidentem rationem nominum inclusionem*—“based on the evident concepts of the names included.”

\(^{212}\) Given that ‘donkey’ (*asinus*) was also the widely used term for dumb or lazy students, this may well have been a jocular remark by Buridan when he noticed a student eating during his lecture. It may also have been a reference to a real donkey eating the hay on which his students were sitting in rue du Fouarre. Or it may have been just an imaginary example, of which no verification is required, as we are often reminded by Buridan.
8.5.4 How they are cognized

(1) Therefore, the evident cognition of principles is neither innate to us nor is it acquired by teaching in the strict sense, (3) but it is acquired by the intellect’s natural inclination to assent to them, along with the previous assistance of the senses, memory, or experience. (4) For some principles become evident to our intellect by the nature of the intellect only on the basis of previous sensation, but some on the basis of previous sensation and memory without experience, and some on the basis of memory and experience. (5) And some of these principles are singular propositions, some common; and of the ones that are common, some are particular or indefinite, and some are universal. (6) And the singular ones are manifest from experience by example, the particular or indefinite ones by the abstraction of a common concept from a singular concept, and the universal ones by induction.

The fourth part explains how the first principles are evident to us. And it contains six sections. The first states that the evident cognition of first principles is not innate to us, i.e., we do not have their cognition from birth, nor do we have them implicitly ingrained [nec est habitus eorum]. And this is declared by Aristotle in bk. 3 of On the Soul. For the intellect at the beginning is like a clean slate [tabula rasa] on which nothing is written. Therefore, there is no act of understanding in it, and, consequently, no habit [habitus] of it either, for habit is generated out of act. But Aristotle also proves the proposition stated here in bk. 2 of the Posterior Analytics, on the grounds that such evident cognition could not be hidden from us, given that we experience the fact that other, not-so-evident and certain [acts of] cognition of ours are not hidden from us.

(2) The second section states that these principles are not known and evident to us by teaching [doctrina] in the strict sense. And I call ‘teaching in the strict sense’ when something doubtful becomes known to us by an argument from better-known [premises], necessarily and evidently concluding on account of its form. For if by such an argument provided to us by a teacher we acquire evident knowledge of the conclusion, then that knowledge deserves to be called doctrine [i.e., the result of teaching], for it is by virtue of this doctrinal argument that the intellect is determined to a certain and evident adherence as regards the conclusion. But if there is no such argument, and we acquire the evident knowledge of the conclusion, that does not deserve to be called doctrine, for it is not by virtue of [such an argument] that the intellect

is compelled to admit this evidentness, but by its own nature. The first principles do not become evident to us by means of such arguments, however, for those arguments would constitute demonstrations, and the principles are taken to be indemonstrable.

(3) The third section states that the first principles themselves become evident to us by the intellect’s natural disposition \([\text{determinatio}]\) to assent to them. And this is clear from the preceding two sections. For since this evidentness is not innate to us, nor produced in us by some argument that sufficiently determines the intellect to yield this evident assent, and that it would infer of necessity on account of the form [of the argument], and we know also that there is no such necessary and formally valid consequence, it is hence necessary to concede that this disposition arises from the nature of the principle and from that of the intellect. For we should imagine this [to happen] in the way that fire is disposed and is apt by its nature to burn, if some combustible material is put next to it and nothing blocks it; and wheat is disposed to produce the head, the flower, and the kernel and the husk containing the kernel; and the swallow is disposed to make such and such a nest when it is time to lay eggs, even if without the use of the senses it would not be able to do this.

In this way, therefore, one has to say that the intellect is naturally disposed to assent with certainty and evidentness to the first principles. And this is what the Commentator means when he says in bk. 2 of the *Metaphysics* that we naturally have the cognition of the first principles concerning any genus of beings.\(^{215}\) Nevertheless, it is true that the intellect needs the assistance of the senses for forming the evident cognition of these principles, for all our intellectual cognition in this life depends on previous sensory cognition. For it is necessary for anyone who understands to consider [\textit{speculari}—lit., to look at] phantasms, as is stated in bk. 3 of *On the Soul*.\(^{216}\)

(4) The fourth section makes three claims. First, that some principles become evident to the intellect by means of previous sensation only, for in a well-disposed man the intellect is inclined to be moved immediately by the senses, and what is evident to the senses becomes immediately evident to the intellect. For example, it is evident to the doctor by the senses that this patient is in fever, given that his pulse is very fast and his urine is very red; and immediately, from the senses, these are also evident to him in terms of the intellect; and to this intellect these evident and indemonstrable [observations] serve as the principles of a demonstration, on the basis of which by his art he concludes that this patient is feverish and that he must not be given wine.

\(^{215}\) Aristotelis *Metaphysicorum libri XIII cum Averrois Cordubensis variis in eosdem commentariis*. bk. II, chap. 1, f. 29ra A.

In the second place this section states that some principles become evident to the intellect by the senses and memory, and not only by the senses. For, as Seneca says, “if you are prudent, command the present, foresee the future, and remember the past.”\footnote{Si prudens es, ordina praesentia, futura praevide, praeterita recordare. The reference for this has not been found.} So, I posit the case that Socrates sees Plato driving away his ox without permission, and he cannot resist him at that moment; then, the next day, Socrates sees Plato in front of the judge and remembers that the day before Plato robbed him of his ox, and he remembers this with evidentness, on the basis of which he consequently forms in his intellect the proposition that is evident, although indemonstrable to him, namely, ‘Yesterday Plato robbed me of my ox’; and this is now a principle of a prudential argument allowing him to infer and prove the conclusion ‘I must now explain how Plato robbed me of my ox, and ask the judge to make him return it to me’. And he does so by prudence.

But, again, this fourth section [also] states that some principles become evident to the intellect by previous sensation, memory, and experience. And this is clear on the basis of the following. Suppose a child sees a red, burning piece of coal and he touches it and feels the heat and the pain; and again, suppose he touches another burning piece of coal and feels the heat and the pain; and the next day he sees another piece of burning coal, and then, remembering the others, he immediately judges that it is hot and hurtful, and avoids it. Now this does not come about by means of the intellect, for a young puppy, which does not have intellect, would do the same; but what judges this is the estimative power [\textit{virtus aestimativa}]. But this is not properly called a sensory judgment [\textit{iudicium sensitivum}], for he never touched this [last] piece of coal, nor does he feel that it is hot and hurtful. But neither is this a judgment of memory [\textit{iudicium memorativum}], for it is not about the past, but about the present, namely, that this is [and not that it was] hot and hurtful. But this is called a judgment of experience [\textit{iudicium experimentale}]; and since the estimative power judges this at once, the intellect in a discerning man subsequently judges the same. And a man can sense and remember such things so many times that the intellect by a natural inclination assents with certainty and evidentness to the fact that this piece of coal is hot and hurtful, although he never touched it. And this is an indemonstrable principle of prudence that yields the conclusion that it is not good to touch it.

(5) The fifth section makes two more claims: First, that of the principles cognized by the senses, memory, or experience, some are singular propositions, as are the ones in the previous example, and others are common. For
the intellect from a singular proposition known to it is apt to infer a conclusion known to it. For example, since the proposition ‘This piece of coal is hot’ \([\text{Hic carbo est calidus}]\) is known to me, it also becomes immediately known to me that a piece of coal is hot \([\text{Carbo est calidus}]\).

Second, this section also states that of these common principles, thanks to the mediation of the ones known by experience, some are particular or indefinite, as has already been exemplified in terms of the principle that a piece of coal is hot or that some piece of coal is hot, and some are universal, for example, that every piece of red, burning, glowing piece of coal is hot. For the intellect gathers from memory with certainty and evidentness that it knew many such pieces of coal to be hot by sensing them, and in none of these sensations did it perceive one not to be hot, and with careful consideration it perceives no contrary circumstance or reason why the case should not be the same with others.

Therefore, although these [factors] do not formally entail this universal proposition, nevertheless, the intellect forms it and assents to it with certainty and evidentness. And it is disposed to do so \([\text{determinatur}]\) by its nature, and not by demonstrative teaching but by the aforementioned prior sensations, memories, and experiences. Therefore, this universal proposition is already a first and indefensible principle in natural science that nevertheless would have been initially doubtful to a man if he had never perceived fire or such coal.

(6) The sixth section also makes three claims: First, that a singular principle, known by experience or by the mediation of experience, also becomes evident to the intellect by means of an example; and this you will find explained in the treatise on dialectical loci, in the fourth part of the first chapter. Second, this section states that a particular or indefinite principle becomes recognized by the intellect, by the mediation of the senses or experience, through abstraction; and this should be explained in connection with bk. 3 of On the Soul. For the intellect, by the mediation of the senses, first forms a singular concept, just as the senses do; but immediately, by its nature, it can abstract from it and form a common concept. Furthermore, this section states in the third place that a universal principle becomes known, recognized by, and evident

\[218. \text{See 6.1.4}
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to the intellect through induction, by the mediation of experience; and this has also been clearly explained in the treatise on dialectical loci, in the fourth part mentioned above.\textsuperscript{220}

But then one may doubt whether such an example or induction should be called a dialectical argument or a demonstrative argument. And I reply that it is not demonstrative, for it is not a syllogism, absolutely speaking. But neither should it strictly be called dialectical, for dialectic does not produce certain and evident knowledge. Rather, it is an argument producing the knowledge not of a conclusion of a demonstration but of a principle. Therefore, it exceeds the nature of dialectical argument, for it produces not opinion but evident and certain knowledge; and it falls short of a demonstrative argument, for it does not conclude necessarily and on account of its form, and thus it is not able of itself to direct the intellect to this knowledge.

Nevertheless, it is true that if such examples or inductions were not sufficiently multiplied in several singulars, then the intellect would not rise up from this to assent to the principle with certainty and evidentness, but rather with trepidation. Therefore, examples or inductions of this kind do not then exceed the limits of dialectical arguments, for they produce only opinion.

8.6 On *dici de omni* [being predicated of everything], *per se* [by itself], and the universal, or *secundum quod ipsum* [with respect to what the thing is]

(1) Furthermore, before we start directly discussing demonstrations, it is useful to discuss *dici de omni, per se*, and *secundum quod ipsum*, or ‘universal’. (2) I say, therefore, that the *dici de omni* required for demonstration adds something over and above the *dici de omni* that is required for syllogism,\textsuperscript{221} since for a syllogism it suffices that the proposition is affirmative with a distributed subject, but for demonstration it is further required that the proposition also be true, at whatever time it may be propounded.

\textsuperscript{220} See 6.1.4.
\textsuperscript{221} See 5.1.1.