

Nine Questions concerning Demonstration on the Posterior Analytics of Aristotle, restored to their original order.

by Averroës

translated into Latin by Abramo de Balmes¹ from the Hebrew (no Arabic text attested)

translated from Latin to English by John Longeway

Question 1: Concerning the three kinds of definitions in relation to demonstration.

[100va] The Philosopher says that one definition is the conclusion of demonstration, as he puts it,² and that another is a principle of demonstration, and another is the demonstration with a difference in the position of its parts. The meaning of Aristotle's statement is that the definition is drawn from the demonstration, or that the demonstration provides it.³

Now **al Farabi**⁴ holds that there are two definitions of one thing, both of them imperfect, and their aggregate is a perfect definition, and one of these two imperfect definitions is shown of the defined in demonstration through the other's being in the defined.⁵ For instance, we show concerning [100vb] the eclipse of the Moon, that it is an absence of the Sun's light because of the Earth's standing between the Moon and the

¹Fol. 100v–119r, 127v–128r.

²“As he puts it,” i.e., he does not intend this strictly, for he denies that a definition can be demonstrated.

³Apparently Averroës is concerned to deny that the third sort of definition is actually a kind of demonstration, and so he insists that Aristotle only means to assert that it is made up from the parts of a demonstration. The discussion is of *Posterior Analytics* II 8–10. For the proof of one definition through another, in which, Aristotle points out, one definition is part of a premise and is not proven, see 93a10–15. Aristotle does not regard such an argument as a demonstration. For the way in which a demonstration may exhibit a definition without demonstrating it of its subject, see 93a16 ff.

⁴In the Latin text the name is “Abunazar,” i.e. Abu Nasr al Farabi (ca. 879 - ca. 950).

⁵Averroës's chief concern is to argue that no definition is shown in a demonstration of the defined, indeed, of anything at all, considered as a definition. That is, no demonstration shows that such and such is the definition of so and so.

Sun. Now each of these is a definition of eclipse, but they are imperfect definitions, and their aggregate is a perfect definition.⁶ So **al Farabi** thought, depending on Aristotle, that such demonstrations bring together three species of definition.

In view of this let us look into the contrary opinion. For the definition put together from these two imperfect definitions is a demonstration with a difference in the position of its parts, of which one imperfect definition is the conclusion of the demonstration, and the other a principle of the demonstration.⁷ And in accord with this exposition one may answer in favor of Aristotle, that when he says the definition is not demonstrated, he intends the perfect definition, not the imperfect one.⁸ But when one considers, it seems this response is insufficient, for what follows in a given way in respect of the perfect definition follows in that way in respect of the imperfect definition as well.⁹ And therefore we find that **al Farabi** sets out on the path of Hippocrates [*suscipiat semitam Hippocratis*]¹⁰ when he deduces the definition through a demonstration.

But <Aristotle> responds to this, that since it is not [101ra] <commensurately> universal, it is impossible that it be shown through demonstration concerning what it defines, whether it be perfect or

⁶The demonstrative syllogism is this: The Moon is subject to the Earth's-coming-between-the-Sun-and-Moon. The Earth's-coming-between-the-Sun-and-the-Moon is (causes) an-absence-of-light-in-the-Moon (i.e. an eclipse). Therefore the Moon is subject to an absence of light, i.e. eclipsed. Here the conclusion and the minor premise both involve imperfect definitions of eclipse of the Moon, and the perfect definition, which is not demonstrated, but is implicit in the demonstration, is that an eclipse of the Moon is an absence of light in the Moon caused by the Earth's coming between the Sun and the Moon.

⁷The imperfect definition that is shown of the subject, the Moon, in the example, is "absence of light in the object", the imperfect definition that is not shown, but is a principle, i.e. the middle term, is "Earth's coming between the Sun and an object it illuminates."

⁸Thus far, exposition of Al Farabi's position.

⁹The point, it seems, is that if it follows that the perfect definition is not shown of the defined as such, as is confessed in this interpretation of Aristotle's intention, then it follows that neither are the imperfect definitions. Whatever argument establishes that the imperfect definition is not shown, it will apply to the imperfect definitions. This summarizes the argument to come, and will not become clear until we see why Aristotle thinks the perfect definition cannot be shown. But to anticipate, he will argue that the perfect definition is "shown" of its subject (the definition of eclipse of the Moon) as it has being in the Moon, as the Moon is, as it happens, eclipsed, not as the quiddity of eclipse belongs to the Moon, but as this quiddity belongs to some attribute of the Moon which is really distinct from the Moon's quiddity. It turns out that the imperfect definitions are in one instance shown, in the other assumed, to belong to the Moon in the same way, i.e., not quidditatively, as they are definitions, but as they define an attribute which is in fact found in the Moon, for similar reasons.

¹⁰Clearly a proverbial expression, but I don't know it. Perhaps the intention is that this is the sort of path that allows more than one item to travel along it. Probably some physiological path, such as that the air follows as it enters the lungs and is transferred from there into the veins, is intended.

imperfect.¹¹ So this much is clear when we proceed here as Aristotle does.¹² We will declare, what is also clear, that syllogisms do not tell us that the major extreme is in the minor and so is its definition, unless we grant that the major term is predicated of the minor term quidditatively (*in eo quod quid est*), and that the complex [expression, i.e. the sentence,] is formed as a definition. Now it is also clear that a syllogism does not tell us that the major extreme is in the minor *per se*, unless it is of the sort in which the middle term is predicated of the minor term quidditatively and convertibly with it, that is, unless the middle term belongs to the minor term as its definition. Now since this is so, one does not evade both of the following¹³—that is, concerning that definition which is a principle of demonstration and that which is the conclusion of demonstration, if these are not perfect definitions in such a way that we grant that there is more than one perfect definition of one reality, then either (1) each of these is an imperfect definition and the aggregate from them is the perfect definition; or else (2) one of them is perfect and the other imperfect, which occurs in two forms (*species*), either (2a) because the perfect definition is a principle of demonstration and the imperfect definition the conclusion, or (2b) vice versa.

And since we might proceed in each of these ways, Aristotle ordered the examples of these things to make apparent once more (*denuo*) the impossibility of accepting any of these options at all. For if there are two perfect definitions of one reality, and one of these is assumed in order to show the other, we have then begged the question, as Aristotle says,¹⁴ for the definition imparts distinctly that which the name imparts confusedly. Now it being thus, each of these two definitions imparts the signification of the name of the other, and when we used one for [101rb] showing the other, it is as if we had used two synonymous names, one for the exposition of the other, for it is necessary that definitions that are of one name in signification be synonymous, as names that signify one reality are synonymous.

¹¹The universality intended here is that defined in *Posterior Analytics* I 4, 73b25–27, “I call universal what holds of every case, and in itself, and as such.”

¹²The following line of argument comes from *Posterior Analytics* II 4, 91a15–33.

¹³That is, either (1) or (2) below must be granted.

¹⁴The text has, “*iam commissemus prologum, id est petissemus principium, prout ait Aristoteles.*” *Posterior Analytics* II 4, 91a26–b7. As Averroes indicates, Aristotle gives an example in the text involving different definitions of human being. In 91b8–11 Aristotle sums up the chapter as laying out a dilemma: either we assume that the syllogism showing the definition does not assert its premisses and conclusions as holding quidditatively, and so convertibly, and then we do not show that the definition is the quiddity of the subject, what the subject is, but only that it belongs to the subject, or else we assume the syllogism does assert its premisses and conclusion in this way, and we beg the question.

And if someone were to say that the two definitions that have this characteristic¹⁵ do not signify the reality defined in the same respect, this might be true in this way—because it is said that there are two definitions of one and the same reality which are not synonymous. This is the usual view, for instance, when it is said of the definition of human being that it is “rational animal,” and “bipedal social animal.” And then one of the two definitions is shown through the other, and there is no begging of the question, and even if they both signify one essence, it is through two different parts of it. But it must also be known that this demonstration falls short of deducing the definition as such, that is, as its extreme is predicated of the middle term quidditatively. And it is clear that such definitions are not predicated of one another quidditatively, that is, as they impart quiddity, for this is impossible, that social biped be predicated thus of the rational. But it is like the truth, because it is an accidental predication, except when one of these is prior to the other, that is, is one of its causes. But if one is prior to the other, it is clear that such definitions are not shown through demonstration of one through the other, at least not insofar as they are definitions, and this is because a syllogism composed from these provides a definition taken as a whole.

In the same way it is shown that one imperfect definition cannot be shown demonstratively through another if neither definition takes note of the quiddity of the other, but let it take note of the [101 va] quiddity of the defined, and thus it happens that if one of the definitions is imperfect, the other is perfect.¹⁶

Thus it is shown from this discussion, that a definition cannot be shown through demonstration, that is, that it cannot be the conclusion of a demonstration considered as demonstration. Since this is so, when Aristotle says that a definition is drawn from a demonstration, and that whenever something is sought what-it-is provides what is sought,¹⁷ this does not mean that a definition is deduced from a demonstration primarily and *per se*. Its meaning is rather that the demonstration provides the being of the reality inasmuch as it provides its

¹⁵I.e., that signify the same reality.

¹⁶That is, an imperfect definition can be quidditatively asserted of the perfect definition, since its portion of the total quiddity will be contained in the quiddity expressed totally in the perfect definition. But, of course, this does not occur in connection with demonstration. Rather, one imperfect definition is asserted of another, and the one does not express the other's quiddity.

¹⁷The manner in which the first assertion is true is discussed by Aristotle in *Posterior Analytics* II 8, for the second, one should look at II 1, where it is asserted that every question is answered through discovery of the middle term in a demonstration, and II 2, where it seems, at least, that the middle term is the quiddity of the conclusion's predicate.

cause and its being at the same time,¹⁸ and that it deduces the definition, using the reality's [other] definition,¹⁹ when the definition was not sought primarily in that argument,²⁰ but sought as something found in the being of the reality of which it is the definition.²¹ Because of this the definition is not known *per se*, as I will claim later. But the demonstration that provides the being of a reality and its definition is demonstration without qualification that provides the being of the reality at the same time as its cause, when it happens that the cause is the whole definition, not some part of it, and this occurs both in composite and simple questions.²²

In composite questions it happens in two ways, of which one occurs when the middle term, which is the definition, makes known the being of a reality that belongs *per se* to its subject. The second occurs when there are two imperfect definitions of the reality, and one is shown through the other, that is, through one definition the being of the reality is inferred at the same time as its other definition. In simple questions this happens in only one way, that is, when there are two definitions of this sort. Concerning the first case,²³ Aristotle thinks such a definition is a demonstration differing in the arrangement of its parts. The second and the third²⁴ are those which differ in the arrangement of their parts, and are each one of two definitions, one after the manner [101vb] of the conclusion of a demonstration, the other after the manner of one of the

¹⁸The reality is the attribute proved of the subject. In our example the being, and the cause of its being, of being eclipsed is proved of the Moon.

¹⁹So the definition of eclipsed thing as one suffering absence of light is deduced from its definition as being the interposition of an opaque body between it and its source of light.

²⁰That is, the point of the argument was not to show that one of these two definitions follows from another—indeed, this is simply assumed in the argument as the Major Premise.

²¹That is, the definition proved of the Moon, the definition of eclipsed, is found in the the being of the eclipsed, which includes not merely fitting the definition, but belonging to something as an accident, for the being of an accident is being in. So the eclipse is shown to be in the Moon. That it finds a place in the world, not the shape of its essence, is what is shown in the demonstration.

²²Composite questions are those asking whether the reality has a given property really distinct from it (whether human beings are capable of laughter, say), and why it has it, whereas simple questions are those asking whether the reality is a possible thing or essence (a vacuum is not a possible reality or essence), and what its quiddity is. It is supposed that demonstrations can be constructed to answer all four sorts of questions. To answer each question, it is assumed, one must know the real definition of the reality. Since the realities at issue here are attributes, and their being is being in something, even the simple questions presuppose their being in something other than themselves. The quiddity of an attribute is a being in, and the possibility of the attribute is the possibility that it be in something. For composite and simple questions, see chapter 1 of the second book of the *Posterior Analytics*.

²³That is, the definition mentioned in the first sentence of the paragraph.

²⁴That is, the two imperfect definitions mentioned in the second sentence in this paragraph.

principles.²⁵

Now an example of the first species of those demonstrations that provide a definition, that is, of demonstration differing from definition only in position, occurs if the eclipse of the Moon is to us unknown in its being, and we show it to be in the Moon through two propositions known to us, of which one is what is signified by the name “eclipse,” that it is an absence of light in the Moon, and the second is that there is in fact an absence of light in the Moon, and from this we infer that there is an eclipse, and the definition of eclipse at the same time.²⁶ And this is how it occurs when realities are not known to be, and their being and cause are simultaneously shown through demonstration without qualification. Now it is clear that this demonstration provides a definition *per se*, since we hold that demonstrations without qualification provide causes *per se*, and such a demonstration indeed occurs in this case, since the reality is not known to be.

Now when the reality is known to be, and it is asked only concerning its definition, a demonstration of this sort, which presents the definition *per se*, is not suitable, as has been said. But this is just the opposite arrangement of the demonstration, that is, that it is now possible to be, because the reality is known to be, and the demonstration provides its cause, that is, the demonstration announces why. For in this example of the eclipse, there are two imperfect definitions, of which one is known to apply to the Moon and to agree with the name of eclipse, and the second is known to agree with the name of eclipse but not known to apply to the Moon, but it is known to apply to the other definition, and we conclude what is unknown according to being to apply to the Moon through what is known according to being to apply to it. Then we infer through the aggregate of these that the being of the eclipse belongs to the Moon, for it happens in this demonstration that one definition in it is [102ra] a principle of demonstration, and the other the conclusion of the demonstration, and the definition that is put together from these two definitions is a demonstration differing in the arrangement of its parts.

Now if the reality is what is sought out to be known, this will not make it known to us. For example, if we seek whether an eclipse is in the Moon, and the common conception of the name of eclipse is known to

²⁵That is, one of the premisses. In a demonstration the premisses are principles, of course.

²⁶The proposed demonstration, which is not a demonstration of the highest sort, runs: The Moon suffers an absence of light, an absence of light is an eclipse, therefore the Moon suffers an eclipse. This is proposed as an example of a demonstration providing a definition by rearrangement of its parts. The point of advancing it is to show how a demonstration might provide a definition as such, though, of course, it does not *demonstrate* it. The definition provided is that of “eclipse of the moon,” and the definition is “An eclipse of the Moon is an absence of light in the Moon,” which involves all three terms of the demonstration, and so would count as a rearrangement of its parts. The demonstration also provides the being of the eclipse, that is, it shows that there actually is an eclipse. It does not, however, provide an understanding of the cause of its being, and so it is not demonstration of the highest sort.

us, that it arises on account of the privation of light in the Moon, and moreover this common conception is known to us, that the Earth is interposed between the Moon and the Sun, and if it is shown first that there is an absence of light in the Moon due to the interposition of the Earth, then the aggregate from these two realities shows the being of the eclipse. And in the first demonstration it happened that the first definition shares the condition of a principle of demonstration, and the second the condition of the conclusion, and the aggregate from these is the demonstration differing in the arrangement of its parts, because if the eclipse is already known to be, nothing can be ascertained to be true from these except that it is possible, given that one definition is inferred from the other definition without qualification.

So this is what escaped **Abu Nasr al Farabi** and the others. He believed that Aristotle had already entirely refuted his own assertion, and entirely turned away from the exposition of his assertion about this matter. Then, he not only gave another opinion as Aristotle's, but also set forth his assertion otherwise than is obviously Aristotle's intention. Aristotle gave clear examples of this, whenever we seek the simple being of a reality, as, for instance, when we seek whether there is nature.²⁷ We suppose that the name of nature signifies because it is a principle by which bodies are moved and rest of themselves, and we suppose that the names [i.e. "nature" and "that by which bodies are"] agree, by which nature is that by which bodies are, and we suppose that this saying is known of bodies as far as being is concerned.²⁸ And the second definition is not known to belong to bodies and is known to belong to this first definition. And then [102rb] this demonstration is composed: there are bodies, in which certain realities inhere by which they are, and in those bodies in which they are they are the principle by which the bodies move and are at rest, and it is concluded by us that a principle is in bodies, by which the bodies move and are at rest. And this, indeed, is the first exposition [or definition] of the name of nature. The first definition of this demonstration, then, shares the condition of a principle of demonstration, and the second is that of a conclusion of the demonstration, and the whole considered together is the demonstration with the parts rearranged, which provides the definition and being of nature, that is, that nature is the principle by which bodies are moved while they persist in being through it.

²⁷That is, whether things in the sensible world have natures which provide a principle of natural action. The opposing view would be that of the Atomists, tracing all motion of bodies to the action of other bodies, so that all motion would be, in Aristotle's terms, violent rather than natural. Modern physics since Newton, at least, would seem to deny that there is nature in Aristotle's sense.

²⁸So even though the nature of a body is that by which it is, and 'nature' signifies because there is that by which body is, this is not known, but only that bodies are, and that have some internal principle of motion.

So it has been shown from this discussion how it is we can hold that demonstration concludes a definition, and how it is this cannot be maintained, and what it is of which this is always so, that is, simple demonstration which provides a definition, and concludes a definition of the definition provided. Now in composite demonstrations both these realities also come forth, that is, it provides a definition and concludes a definition. But in a simple question it both provides a definition and concludes one always; and this happens when the middle term is in what is sought *per se* in its definition, and are not accidental realities. And that is the meaning of the words of Aristotle, that signs do not provide definitions,²⁹ although it happens, of course, that they imply a definition in realities that are unknown according to being,³⁰ but that is not a definition *per se*,³¹ as they do not provide the cause, even if the sign does imply the cause.

All of this happens in demonstrations without qualification, of which the middle term is the cause of the major term, so that it is in connection with this that we should understand the discussion of Aristotle in *Posterior Analytics* II [102va] to concern the power of definitions and of demonstrations, and concerning what is common to them in those which they provide. And concerning all these things, God be praised.

²⁹*Posterior Analytics* II 17, 99a3 may be the passage he has in mind. The issue there is whether a single cause must be postulated for the same feature in a variety of different items. So, to provide an example, must bravery be always due to the same thing, whether it occurs in a human being, say, or a lion? It is argued that if the conclusion is demonstrated in itself, so that it arises from a middle term which is an account, a definition, of the extreme term, then perhaps no other cause than that middle term can be entertained. So if I demonstrate bravery of a lion through a *definition* of bravery, the same account will hold for bravery in a human being. But if the conclusion is not demonstrated in itself, but is accidental or *in virtue of a sign*, it is assumed that there might be other causes for the feature shown to belong to the thing in other cases. So if I demonstrate bravery of a lion, not through the nature or definition of bravery, but through some inevitable concomitant of bravery in lions (perhaps through something bravery causes in lions), then it may be that the 'cause' of bravery here will not transfer to the case of humans. (Perhaps they won't roar or twitch their tails as brave lions do.) This pretty clearly implies that a sign is not a definition of what it is a sign of, but it does not say it outright. See *Prior Analytics* II 27 for an account of arguments involving a sign. Aristotle describes different sorts of signs, but a sign here is taken to be a cause of what it is a sign of, not a symptom of it, as in the example above. Perhaps something in a lion could cause bravery which is not found in humans, but then it would have to be a cause accidentally, not *per se*, and presumably is a particular way in which the *per se* cause, present in lions and humans both, expresses itself in lions.

³⁰That is, if the reality is not known to exist, but we nonetheless know that in such a reality, if it were to exist, A would be a sign of B, then A must follow from the *per se* cause of B, since that is the only way we could know this. The reality does not exist, so knowing it through observation rather than causal connections is not a possibility.

³¹That is the definition is not provided *per se*, it is not itself presented to us, but is only implicit.

**Question 2: Concerning the Middle Term of a Demonstration, whether
it is the Cause of the Major Extreme**

Now someone may raise a question about what Aristotle says when he establishes it as a condition for a demonstration without qualification that the middle term be the cause, that is, the definition, of the major term, and he says that demonstrations that provide both the being of a reality and the cause of its being *per se*, meet this condition. For **Abu Nasr al Farabi** says in his book that it is necessarily required that causes taken into a demonstration as the middle term should all be definitions or parts of definitions of both extremes, or of one of them, or of something that is somehow common to both. And he decides that simple demonstrations, in accord with this, are of three species: demonstration in which the middle term is the cause of both extremes, demonstration in which the middle term is the cause of the major extreme alone, and demonstration in which the middle term is the cause of the minor term alone. But **Avicenna** says that simple demonstrations are of two species. In one species the middle term is the cause of the major term's being in the minor term, and is caused by the major term, but is not its cause—so for instance, we say a human being is rational, and the rational is animal. And thus the rational is not the cause of animal without qualification, but the cause of animal's being in human being.

Now the things these two men say about this matter are closely related [102vb] in their meaning. For if a demonstration provides both the cause and being [of its conclusion *per se*], and its middle term is the cause of the minor term alone, it happens that it is posterior to the major term. For instance, we say every human being is rational, and everything rational is animal, and every human being is animal, and every animal is a body capable of nutrition, so animality is the cause of the capacity for nutrition being in a human being, but it is not the cause of being capable of nutrition without qualification, indeed the capacity for nutrition is one of the causes of animality [i.e. of human beings being animals]. (Unless perhaps **Avicenna** wishes that certain demonstrations of both the cause and being [of the conclusion *per se*] be discovered, of which the middle term is the cause of the major term's being in the minor term, even though it is posterior to both the major *and* the minor term in being, in his opinion. But it seems that this would be a demonstration of a cause accidentally.)

But this is more evident from this, that afterwards he speaks about the conditions on simple demonstrations, and about conditions on being causes that are assumed in these demonstrations, and he joins to such causes the requirement that they make those realities [i.e. demonstrations] perfect because they are in them, and [bring it about that they are] among the rest of human goods, so that these demonstrations arrive

at a cause why, and [whatever is pertinent to] this matter is among the conditions they must meet. But we hold that if this is to be true knowledge, as Aristotle said, the reality must be cognized through its *per se* cause by which it is, not through an accidental cause, and so it is necessarily required that the cause of this reality's being *per se* be the cause of the reality itself, so that the reality is *per se* through its *per se* causes, or so that the reality arises from those whether they are in the subject, or outside the subject. Now if this is the way it is, it is necessary that the cause of the major extreme's being in the minor be *per se* and primitive. Now this occurs when the major extreme is predicated of the minor by a universal predication, and the middle term in the same way of the major, and the minor. And therefore, when Aristotle says that it is needful that the premisses be universal, and causes [103ra] be universal, he intends that the predicates of these be affirmed of the subject, or denied of it, insofar as it is. And that is an equal and convertible predication, as is shown below.³² For example, a universal question is that by which it is asked whether everything animate³³ is an animal, but it is not a universal question that asks whether human beings are animals, for the animate, insofar as it is animate, is an animal, but it is not an animal insofar as it is a human being, for if this were so, every animal would be a human being.³⁴ Therefore, the cause of a predicate's being in its subject is not shown in universal questions, for the being of a predicate in a subject is *per se*, that is, insofar as it is that, from which the being-in of those predicated in the subject is *per se*, it is necessarily required that the cause of being in the subject be the cause of its being according to itself. For a reality which is the cause of being in a reality *per se* is the cause of its being

³²The passage in Aristotle is apparently *Posterior Analytics* II 16, 98b32–38, where the example of the cause of leaves falling from trees is considered. The passage is difficult, and it is only the beginning of the discussion, which continues in Chapter 17. Aristotle's conclusion concerning the matter is found at 99b4–7, where he states that there cannot be different explanations of the same attribute for different individuals of a single species, so that the cause is commensurately universal with the species in which the attribute caused occurs, but allows that an attribute can belong to several different species, and receive a different explanation under each species. (In fact, if he found several different explanations of the same phenomenon in different sorts of things, he would immediately identify them as different species, even if he had not done so before. They do not differ as mere individuals do within a species. Does that mean that anger in all human beings receives the same explanation? No, some individuals become angry for reasons peculiar to themselves. But it will be universal among human beings that one's character *can* take such a shape that one becomes angry for that sort of reason, so the underlying cause of becoming angry is common to all. Imagine a non-human animal that became angry through some causal process impossible to human beings, due to a different brain structure, or whatever.) So, he specifies in II 16 that the presence of a cause in a given species may explain some attribute, but its presence in a different species may not produce that attribute there at all. So not all congealing of sap at the base of a leaf produces falling leaves, say, but it always produces that in *trees*. So in trees the congealing of the sap is the commensurately universal cause, extending to all trees, of falling leaves.

³³Animate, as it develops, in the sense, "having an animal soul, so that it is capable of sensation."

³⁴It would be animate insofar as it shares some characteristic that human beings all have, which makes them animals, say, sensory powers, but not even a human being is animate (*per se*) insofar as it is a human being, but only insofar as it has sensory powers. One might say that, if all human beings have sensory powers, then it is animate *accidentally* through being a human being, that is, not through being a human being *per se*, but through something found in human beings not yet specified.

according to itself, as someone might say the animate is animal, and this because it is sensitive. So sense is the cause of animal, and it is the cause of being animate. But as for the being of those of which the predicate is in the subject *per accidens*, that is, not predicated of it insofar as it is, nothing prevents the cause of such a predicate's being-in not being a cause of the predicate in itself. So, when one asks whether a human being is an animal, and it is shown that it is an animal since it is rational, this being-in is not *per se*, nor is the cause *per se*. Now when it is thus, and the causes of these demonstrations are accidental, they do not provide true knowledge, which is sought by demonstration, that is, knowledge which is obtained through the *per se* cause. But that, which does not provide the knowledge that is the goal of demonstration is not a demonstration, and so these syllogisms, which provide [103vb] accidental causes, and accidental being, which they regard as demonstrations, are not demonstrations, and are nothing but veridical syllogisms, and not *per se*.

Now I intend, when I say “not *per se*,” that they are not *per se* strictly speaking,³⁵ universal. For *per se* is said in two ways, in a broad sense and strictly. Now said broadly it is a kind of *per se* which is described in the *Posterior Analytics*, when it is said that there are two kinds (*species*) of *per se*.³⁶ But said strictly, it is said of *per se* predicates which are equal to the subject, that is, which are predicated of it in itself. And that is what Aristotle calls by the name of “primitive predicate,” which he establishes as a condition of universal predication,³⁷ which is a condition on the premise of a demonstration, something we will examine below in accord with its definition. But since it is hidden from these men what he established concerning the conditions of demonstration, one of which is universal predication, and what he establishes about that condition, therefore this matter of demonstration without qualification is hidden from them.

So it has been shown from this discussion that necessarily, in a demonstration without qualification, the middle term and cause must be among the causes of the major term, and so demonstrations without qualification provide being *per se* through a *per se* cause. And of such causes Aristotle indicates they are one and that it is impossible that there should be two such causes of one reality. For if there were several, one cause might be removed, and since there is a necessary proportion of realities to their causes, the parts of the definition likewise would not necessarily be in what it defines. And so it is necessary that the species be put

³⁵Emending “pro rem” to “proprie.”

³⁶*Posterior Analytics* I 4, 73a35 ff.

³⁷*Posterior Analytics* I 4, 73b32 ff. To belong primarily here seems to mean the same thing as belonging as such, and a special sense of “belonging universally” is defined as “belonging in every case, in itself and as such.”

together from several things, which arise from one species of cause. That is, it is impossible, that a reality should arise from more than one matter, or from more than one agent, since otherwise the being of species would not arise necessarily from their causes. Now this whole business (103va) is contrary to what is known *per se*, and contrary to the principles assumed in this art, but this error comes from these men, since they have wandered from the conditions of universal predication, which Aristotle treats among demonstrative presuppositions, and among the demonstrative premisses. And especially **Abu Nasr al Farabi** has wandered from this discussion. And he proceeds in demonstration with a certain process, by which he thinks he will complete the number of species of the demonstration without qualification, without establishing this condition in them. And he so exhausted the men of our age in certain arts, without accomplishing anything, that they constructed long editions about his *Book of Demonstration*, of which there are too many. But the whole thing is error, and superfluous to this art, as we will show later, God willing.

Question 3: Concerning the Conditions on the Premises of a Demonstration.

Aristotle set out his views on the premisses of demonstration, and, among other conditions on them, he set these connected conditions, that they be necessary and *per se* and primitive, and [that which satisfies these three] he named universal predication. It is well to examine here what he means by primitive predication, and whether this condition is common to every sort of demonstration without qualification or not, and whether it is also common to both conclusion and premisses. And if it is common to all these, what is the reason by which this was decided to be a condition [103vb] for each demonstration in particular, and what is the reason why it is taken to be a condition for certain demonstrations.

What we found said about this in **Al Farabi** in the *Books on Demonstration* is what has already been explained, that a primitive predicate is what is not predicated of the genus of its subject. And according to this the subject's genus is a primitive predicate, and similarly accidents in the definitions of which the genus of the subject occurs. And according to this opinion, it is all right to take all these as predicates of the premisses of demonstrations, that is, both genera and common accidents, as well as definitions, differences and properties. And thus it is suitable in his view to take these as primitive.

But in **Themistius**, we find what was already explained in this place, <that primitive predication> is <so named> from this, that it is predicated of a reality without a middle term. So according to him, even though the <extreme terms of the syllogism> are connected <to one another by a middle term>, what is said in the conditions on first premisses <is> that they are predicates without a middle term.³⁸ And according to this there is no truth present when primitiveness is signified of the conclusion.

Moreover, we find that he accepts the reception of the genus in a demonstrative premise, and says that if someone does not accept this, he would have to allow no demonstration except through definitions alone. And he denies this business of the primitivity of the conclusion, since the conclusion arises through a middle term, and he says concerning **Alexander** that he understood by the signification of primitiveness of the conclusion that the conclusion is primary because it is shown through first principles.

But we hold that the primitivity that Aristotle establishes as a characteristic of predication must be a certain reality over and above being *per se*, which he had accepted earlier in his book, that is, when he spoke

³⁸On this account, a predicate is primitive *in relation to* its subject. So the minor term in a demonstration is a primitive predicate in the premise, but not in the conclusion.

of [104ra] the *per se* known.³⁹ Now if the primitive is what **al Farabi** says, that is, it is that which is not predicated of the genus of the subject, he had established earlier this condition on the premisses of demonstration, that the predicate is understood from what is assumed primitive in this sense, that is, nearest <to the subject>, and so there will be no difference between *per se* and primitive, for definitions and genera and differences are all primitive predicates. And in the same way, so are properties and accidents, in the definitions of which the nearest genus is received.

But if nearest and remote is understood through the names ‘primitive’ and ‘not primitive,’ there will arise two species, either that remote which goes beyond the genus, which we have been considering, or that remote which does not go beyond it. Now if it is understood of that remote which goes beyond it, the primitive will be a reality traced back to certain proper terms that are *per se*, but considering it in this way, remote causes will necessarily be numbered among those which are *per se*, and in the same way, and so will accidents in the definition of which the genus of the subject is found. And thus the arts will be mixed together,⁴⁰ which Aristotle and all his expositors deny.

But if it is understood through the ‘remote’ that it does not go beyond the genus, which seems to be Aristotle’s intention, there is certainly a difference between primitive and *per se*. But it profits nothing to establish this primitiveness as a condition, since every predicate predicated of the subject which is more universal than the subject, is either predicated of its genus, or else is not predicated of it in respect of what-it-is. And whatever reality is not predicated of something in respect of what-it-is, is predicated of it as some species of accident. For accident is said commonly and strictly, and according to the prior and the posterior, just as *per se* [104rb] is said commonly and strictly and according to the prior and posterior. Now that which is said commonly is what was defined earlier. But that which is said strictly was named ‘primitive.’ Since the matter stands thus, the ‘primitive’ that Aristotle intended is not the ‘primitive’ that **Al Farabi** intends, but the ‘primitive’ that **Al Farabi** says is either annexed to what is *per se*, or is of the genus of what is *per se* commonly said, which Aristotle had defined, that is when the predicate is in a subject which does not go beyond the genus of the art. For whenever something is predicated of any reality because it is predicated of its genus, it is a

³⁹Not much earlier—*Posterior Analytics* 14, 73a35 ff. The discussion of universality occurs at 73b25 ff., at the end of the same chapter.

⁴⁰The arts will be mixed together because the science of living things, for instance, will be included in the science of donkeys, the science of natural things in the science of living things, and so on. There would be only one science, the science of substance.

predication *per accidens* according to its proper reality⁴¹ in the mind of Aristotle, and is not a predicate of it *per se* according to its proper reality. For the predication of three angles equal to right angles of an equilateral triangle⁴² is, according to him, a predication *per accidens* according its proper reality, and is *per se* according to the common reality. And in the same way, the predication of equidistance of two lines [i.e. they are parallel and so equally distant from one another everywhere] on which there falls another line perpendicular to them both.⁴³ Now Aristotle has already shown of this that it is not primitive, but according to the opinion of **al Farabi** it is primitive. Now this is peculiar to his book. But if we were to say that through ‘primitive’ he intends this, that which is predicated without a middle term, this would certainly be true in the examples given. For the question in which it is said that the angles of an equilateral triangle are equal to two right angles is not primitive, and while there was a conclusion, it is accidental according to what is properly signified, for the angles of an equilateral triangle are not equal to two right angles insofar as it is equilateral. Now since this is not insofar as it is itself, therefore it is in it *per accidens*, through another.⁴⁴ [104va]

From Aristotle’s discussion it seems that just as he decided that it is a characteristic of premisses that they are primitive, so also he assumed this characteristic of conclusions. He explicated this matter in *Posterior Analytics* II, and explained it in a similar way, that terms are mutually convertible in demonstration taken without qualification, which treat the essential being of a reality, and the essential cause. For when the subject does not⁴⁵ convert with the major extreme, it is in it accidentally. This is according to what is signified strictly speaking. And in the same way, when the cause is not convertible with what it causes, it is an accidental cause of being.

Now since this is how things are, we hold that in demonstrations there are three realities differing by nature, of which one is what is caused, and the second its cause, and the third the subject in which the cause

⁴¹Proper reality, i.e. the reality of which it is predicated taken strictly, not the genus of that reality, which he calls below the ‘common reality’ of which it is predicated.

⁴²“*Gradatum*” – the meaning is given in Latham as occurring in the 13th century.

⁴³These are the two examples used by Aristotle, *Posterior Analytics* I 4, 73b37–39, and I 5, 74a13–16. Triangles in general, not just equilateral triangles, have three angles equal to two right angles, and there are parallel lines that are not perpendicular to a line drawn through them, but meet the line at the same angle, even if it is not a right angle.

⁴⁴To complete the argument, since it is through another that it is so, i.e. through triangle, this other will serve as a middle term.. So according to Averroës’s definition the examples are not primitive, and this agrees with Aristotle. Of course, so does Al Farabi’s definition, which holds that the primitive is what is not predicated of the genus.

⁴⁵The “not” is omitted in the text, but seems required by the sense.

is found. Now it is clear that these three realities are different by nature, because the first thing sought is the first thing desired naturally, and if it is in the middle term as its primary cause, by which its effect is in the cause's primary subject, it is not through any other cause. For example, it is shown of triangle that its angles are equal to two right angles. This is the primary thing sought, for this property is not found in triangle through its being in another figure used as a middle term. Rather, the middle term by which it is shown through demonstration is this disposition—what happens when one of its sides is produced is that the exterior angle is equal to two interior angles. This is the primary cause of this conclusion, so that there is no cause prior to it.

Now this being so, the first among things sought is not the first among the premisses.⁴⁶ And no ambiguity arises here for us, as happened for the other expositors, for it is agreed that it is first among conclusions when it is because of the middle term, that is, because the major term [105ra] is predicated in it of the minor by reason of its predication of the middle term. But this ambiguity arises for them, because they didn't distinguish what is primarily sought by them and the primitive among premisses, and because they took this under one signification, that is, that it is a predicate without a middle term, this ambiguity arises for them, and this complication, since the predicate is in the conclusion through the middle term. And this was so serious a problem that some of them omitted to place the condition of primitivity in these questions.

But the whole business is contrary to what Aristotle said, and contrary to the reality itself. For there can be a doubt about this, and it can be said that according to this the premisses of a demonstration, and demonstrable questions,⁴⁷ do not contain accidents into the definitions of which the genus of the subject is taken, and in the same way, genera are not contained in the premisses or questions themselves. We hold concerning accidents in the definitions of which the genus of the subject does occur, that their subject is not absolutely <the subject> of any attribute, which is predicated of it by primitive predication. Since this is how things are, when it is useful for us to assume it is *per se* true, it is suitable for us to infer its being and cause in the way Aristotle relates. And it stands in the same way with realities of this genus, that is, the subject is not separated (*absolvatur*) from any attribute of which the genus is predicated, in virtue of what-it-is.⁴⁸ And in the

⁴⁶That is, a primitive conclusion will be, of course, provable through a middle term, but it will be the first item in the series of things thus provable, so that its premisses are primitive in the strict senses. The conclusion proved from the primitive premisses is the first thing sought.

⁴⁷I.e., the conclusions of demonstrations.

⁴⁸That is, a negative conclusion can be shown no more than a positive one.

place attributed to him Aristotle brings us close to this rule, by which the primitive is found in them, for it is known *per se* that premisses with definitions as predicates are primitive.

But some might object, “since, according to you a predicate is in each subject [*cuique subiecto insit praedicatum*] which is found in the definition of the predicate [*de eo in definitione, cuius praedicati sit suum subiectum*], and each attribute convertible with that predicate is in that subject as well [*et etiam attributum convertibile cum illo praedicato*], therefore accidents *per se* [105ra] would have only one species, for in all of them is the subject which is taken into the definition of the predicate. What profit is it then to distinguish accidents into two species, that is, into that into the definition of which its subject is taken, and that into the definition of which the genus of its subject is taken, not the subject itself?” But we reply that this distinction’s rationale is from what is better known to us, not from its reality in itself, for it is better known to us that number is taken into the definition of even and odd, than it is that the attribute numerable, by which even and odd is established, is taken into it, but this attribute is, as it were, unknown. But this is the custom with premisses, that they be written with an inscription of the better known, and it is not helpful to provide in them the causes of the premisses. Now if we were to say that every accidental predicate is *per se* of which the subject is found in the definition of the predicate, already the cause from essential accidents is what is better known to us, since these are essential. From this inscription, for example, it is better known to us that even and odd are essential accidents of number, and if the proper nature of these two attributes is not known, since our knowledge of this comes from our knowledge that the relation of these opposites to the genus is the same, i.e. the relation of a property to its subject, therefore it is thought that demonstrations of which the premisses are not primitive are better known to us than those of which the premisses are primitive. But since we have known such demonstrations, it will be possible that we should move from these to primitive demonstrations according to that rule which Aristotle hands down. And likewise it is a true rule to lead forth what is primitive and *per se* to Aristotle’s mind, [105D] not to lead forth what is *per se* according to **al Farabi’s** opinion. And since this journey is not necessary in genera, for it is possible that we settle questions of demonstrations without qualification, when we have led forth the subject of an attribute in which the genus is predicated of it in what-it-is. For instance, that human being is animal insofar as it is human being, and it is a certain animal, and this is not remote when this characteristic is established of the genus, namely, that it be the first sought without being the first of the genus, the first which is predicated in what-it-is, but it is predicated of the species naturally with this mediating, that is, when it is predicated without qualification. [105E]

But if we put genera in demonstrations without qualification as middle terms, this would be impossible,

since the being of the reality of a genus does not from the being of its genus. Now if someone were to say, that a genus is inferred from another, more universal genus, this is understood to deviate from a characteristic of demonstration without qualification, namely, that the middle term be the cause of the major extreme; for when the lower genus is shown of it through demonstration because of the higher genus, then the middle term is the cause why the major extreme is in the minor, not the cause of it in itself. Now it was shown by us in the preceding question of this treatise that it is necessary in demonstrations without qualification that the middle term be the cause of the number of causes of the major without any doubt.

Since all this is so, as we have noted before, in demonstrations without qualification the middle terms are either definitions or differences of the major extreme alone. What is sought usually arises from those realities which are accidents in an existing subject. And therefore the greater part of demonstration without qualification arise through essential accidents [105G], as Aristotle says. But demonstrations in which the being of the causes of the subject is sought are signs, for there are no causes of proximate causes.⁴⁹ But remote causes are the first things sought of what is caused, when their causes are proper. That is, those are the things first sought concerning those things caused, in which their causes are proper, that is, in which they are proximate causes.⁵⁰ But those proximate causes are not causes of them without qualification, but are causes of their being in the subject, in which they are caused according to some species of accident. For example, if someone shows that a human being [105H] is composed from elements, because it is composed from the four humors, this showing is not the first in human being, and neither does it occur through a middle term which is the cause of the major extremity in the subject in which <the major> is *per se*, for if this is how things are, the middle term is one of the causes of the major extreme's being <in its subject>, but the reality here is the converse, that is,

⁴⁹What is envisioned is an attempt to demonstrate that the proximate and proper cause of the subject are present and bring the subject about. "There are no causes for proximate causes," that is, there are no causes why they cause their proximate effect. So this demonstration can only be produced by referring these proximate causes to some remote cause of the subject, which produces them, and thereby produces the subject. But a demonstration from a remote cause is not a demonstration why-it-is-so, but only a demonstration that-it-is-so.

⁵⁰What is to be explained in the demonstration is the thing caused by a certain proper and proximate cause, considered *as such*. That is, it is to be explained why this proper and proximate cause causes this. Now this cannot be done in general, for it is a first principle that such a cause produces its effect. But it can be explained in a particular case by explaining how it is that the proximate cause arises from a more remote cause in that particular case, i.e. at that place and time. The remote cause will not be proper to the subject, for it will produce the proper cause only under certain accidental circumstances which will not always hold.

the major precedes the minor. In the example the minor precedes the major, but accidentally.⁵¹ Therefore, if such are called demonstrations they are demonstrations accidentally, for being and its cause is in them accidentally.

But when we wish to establish what is sought [105I] we will first show that a body of similar parts is composed from four elements, for it is a homogeneous composite from the four elements, insofar as it is homogeneous. But we said this through a sign, since it is not found here in the premisses according to a cause, the showing of this is intended when it was a proximate cause, if it does not happen that this is shown through some other of the four causes, from which is inferred the being of the cause sought, as the final cause is shown through the formal cause [105K] when it was better known than it. And thus it is possible that the material cause is shown through the formal cause. In these cases it does not convert—the material cause does not imply the final or formal cause. But such demonstrations are not potential definitions, and their middle terms are in a way causes of the major term, and in a certain way the major term is the cause of the middle term, and hence there is neither essential relation between the parts of these demonstrations which we established are characteristics found in the premisses of demonstrations, that is, neither is the predicate in the definition of the subject, nor the subject in the definition of the predicate. For this characteristic is necessary in demonstrations as their intent is the setting out of a definition, **and therefore whoever deviates by establishing this sort of characteristic without this intent, and strives to place these two characteristics by a universal establishment in all the premisses of demonstrations, does not proceed rightly. We have found already that Al Farabi did this, for he shows thus, that when those things were sought [105M] demonstration without qualification, which is a potential definition, or potentially part of a definition, does not occur in them.** But these are the first things intended in this book, since verification (that is, knowledge (*notitia*) whether it is), is due to formation (that is, knowledge what it is), and the end is this formation. As was shown in the *Prior Analytics*, unless it happens that the cause sought is a composite cause, and has a definition, and then it is possible that its definition or part of its definition be found in the showing of its being, and at the same time [106A] it conveys both definition

⁵¹Here, the minor term is “human being,” i.e. the subject term, as usual, the major term is “composed from elements,” and the middle term is “composed from four humors.” What is to be explained is why a human being is composed from the four elements. Being composed of four elements is not in human being as its *per se* subject, but rather in composite body in this way. Being composed from four humors, on the other hand, may be a predicate true of human being *per se* in the second way. Being a composite body follows from being composed of four humors, but it does not cause it in reality. Rather, in reality being composed of the elements is one of the causes of being composed of four humors (it causes this in a human being, perhaps). We might say, “it is composed of four humors because it is composed of four elements arranged in such a way (in the way in which they are arranged in a human being).” So the explanation here is ‘accidental,’ and does not follow the natural progression from cause to effect, but moves from effect to cause.

and being, and thus it is expedient that primary, *per se* predication be understood in this book. And hence it is necessary that they be numbered not from that part whence **al Farabi** imagines he numbers them, and he led men after him into confusion and useless labor, and infinite ambiguities with the deviation of these from knowledge of the species of true demonstration. Now the cause of all this is the distance of this man from the speculation of Aristotle about these things, and his deviation from Aristotle's path. [106B] And so it seemed useful to us to examine these species of demonstration, which **al Farabi** takes note of in his book, asking which of them are demonstrations without qualification according to Aristotle, and which are not demonstration.

Let us give, then, the first species of his first genus of demonstration. The first genus is that in which the relation of the major to the middle term is the same as the relation of the middle term to the minor term. The first species of this genus is, that A be definition of B [106C] and B be a definition of C. And he said about this species, that it allows us to infer one of two conclusions, either that A is the definition of C, or that it is the definition of part of the definition of C. And indeed, that such a demonstration concludes that A is the definition of C, cannot be true, as Aristotle shows, since a demonstration of a definition cannot stand firm. Thus, if it concludes this, it concludes it accidentally. But when it concludes that A is the definition of part of the definition of C, it is known that the conclusion is not primitive. If that is how things are, [106D] the middle term is not the cause of the major, and if it is granted that it is the cause of its being in the minor term, it is an accidental cause, not an essential one. The truth is that it is not the cause of the major in itself, nor of its being in the minor term, but it is the cause of the minor term alone. But when it is the cause of the major term being in the minor, it is not its cause in itself, for it is an accidental cause, for whatever is the cause of the essential being of a reality is a cause in itself, as was shown in our treatise on the characteristics of causes of demonstration without qualification. And thus this demonstration, which does not provide knowledge (*notitia*) of the reality unless it is by reason of an accidental cause, is a false demonstration, not a true one. [106E] Also so, also, this is possible in composite matters. But forms do not have definitions <in terms of parts>, because they are simple, and so it is not possible that there be a definition of all the parts of the definition.

Now the second species of this genus is, that A be the genus of B, and B be the genus of C. Note that the conclusion of this demonstration is not primitive, nor through a cause, and in the same way there is no cause of it without qualification, that is, no cause of the major extreme, but there is cause of its being in the minor. And also, since the universal is better known to us than the proper, it is a difficulty here that the proper is known and the universal is unknown.

The third species is, A is a difference of B, and B a difference of C. And concerning this note that the

conclusion is not primitive, since a difference does not have a difference primitively. And it is difficult that there be a difference of a difference, since it is simple. For what has a difference is composite, and that is the species. Now cogitative is not the difference of rational, for it is part of the capacity of reason, and also, it is not a demonstration without qualification and *per se*, [106G] for its middle term is posterior to its major term, and not its cause, but it is the cause of the major in the minor. And thus, according to this there is an accidental cause of demonstration.

But the fourth species is the contrary of the first, and it is that B be the definition of A and C the definition of B. And he said that this concludes that C is the definition of A, or the definition of some part of its definition. Now that is not even a syllogism, much less a demonstration. This is not possible, that a definition of a reality or of a part of its definition should be known in itself, and the predicate be unknown. [106H] For if it were thus, it would be possible for there to be a demonstration of unknown species. Now what is found in nature is contrary to this, namely, the defined is known to be, and its definition and the definition of parts of its definition are unknown, and hence there is established that characteristic of demonstration, that its predication follow the course of nature.

The fifth species is, that in the definition of A there is a genus of B, and in the definition of B a genus of C. And he says that this demonstration immediately concludes an essential accident, and that what it concludes is <sometimes> primitive, and <sometimes> not primitive, and <sometimes> proper, and <sometimes> not proper. [106I] Note that what is not primitive according to this opinion is not *per se* according to Aristotle's intention, for in this species, **al Farabi** intends it is possible that it not be primitive when an accident is the predicate of the genus of the subject, for instance, if one takes as the predicate of an equilateral or *gradatus* triangle the equality of the angles to two right angles—but all this is accidental. Things being so, it does not remain that these are <demonstrative> premisses according to Aristotle's intention, unless it is primitive or proper according to [106K] the opinion of **al Farabi**. Still, even though it be primitive according to this meaning, Aristotle thinks it is not primitive, and when it is not primitive according to that meaning which Aristotle accepts, then it is an accidental predicate, and the cause is not *per se*. But when they are proper, it is then possible that they are primitive according to the meaning that Aristotle accepts, which we have already set forth, and it is possible they are not so, <for they are not> unless there is a connection between the middle term and a primitive major, and the characteristics of demonstration without qualification are found, that is, unless it is in the major term and the question is primitive. [106L] But the subject of an accident *per se* is sometimes the cause of the accident *per se*, and sometimes it is <the cause> through a cause

existing in it, but when it is <the cause> through a cause existing in it, it is not a primitive cause of the major extreme. Therefore it is not true through this combination <congerie> <of statements> unless the subject is something which is the cause of the accident *per se* and without a middle term. In it there is a place for examination whether we should say that the middle term is from those which run the course of the difference <? = are of the same extension with the difference?> of the major extreme, for then it would be a demonstration without qualification, or whether there is a <wider?> cause there which concludes its being in it according to this reality.

The sixth species is [106M] that A is in the definition of B and B in the definition of C.⁵² Once more, this is not a demonstration, for this is not a natural predication, and it is a difficulty that the passion is known and yet what has the passion is unknown. But reality is the other way around, namely, what has the passion is known, and the passion is unknown. And if this is possible, it is possible that the being of species which are not perceived by vision should be shown through demonstration. Now this is a useless syllogism from a sign, but it is a demonstration in its configuration, just as a picture of a human being is [107A] a human being in its configuration, but there is not found in it the functioning of a human being.

These are the species which he calls to mind in this genus, of which it is shown that none is a demonstration without qualification, unless there be a seventh species, since the middle terms of these are not definitions, nor parts of definition of the major term, which is a characteristic of demonstration without qualification in Aristotle.

But the second genus which we find in his books, proceeds by begging the question <*processu prologi seu petitionis principii*> for it presupposes the conclusion itself. For instance, it is said A and B are two definitions of C. [107B] And thus it concludes That A is the definition of C. And thus the combination which he assumes here is not a useful complex <nexus> for any inference at all. But this <i.e. usefulness for some inference> is something that belongs <*res quae accidit*> to demonstrations, so this does not merit numeration among the species of demonstration.

The first species of the third genus is, A is the definition of B, and B is the genus of C. For instance, we say every (C) human being is (B) an animal, and every (B) animal is (A) a sensitive body capable of nutrition. And this is a syllogism from a sign, and it is a demonstration of the cause, that is, why, accidentally, not of two realities at the same time, that is of its being in the minor and in the major. And it is demonstration

⁵²This is the fourth species in the *Epitome*.

per se.

The second species of this genus is, A is the definition of B and B is the difference of C, which concludes the definition of the difference of a reality of that reality. For instance, every (C) human being is (B) rational, and everything (B) rational (A) grasps things by cogitation and consideration. It concludes, every (C) human being (A) grasps things by cogitation and consideration. And this is not demonstration of the cause, neither *per se* nor accidental. Now what I mean when I say accidental is that the middle term is the cause of the major term's being in the minor term alone, and not the cause of the major term, and by *per se*, what embraces [107D] both realities at the same time. Now the middle term of this complex occurs in neither of these two ways with these differences, which have no definitions except through a similitude, since ultimate differences are not composite. For one who conceives *<comprehens>* these either speaks equivocally of rational and irrational, since his conception is more proper than reason, for there is a certain conception of the rational through cogitation, and a certain conception not through cogitation. And so this definition is lacking in two ways, for whatever genus is taken into it is equivocal, and whatever difference is taken into it is more proper than what has the difference.

The third species of this genus is, A is the definition of B, and the definition of B is C. In this too the predication is outside natural usage, since the combination arises in the third figure, and no demonstration arises in the third figure except accidentally. And the inference in it is accidental, for when we granted that there are two definitions of one reality of which one is in the other accidentally, in the way in which two passions are in one reality, this combination is not found among demonstrations of the cause, that is, why-it-is-the-case, nor among demonstrations of being, that is, that-it-is-the-case. By nature it is a characteristic of both of these that the predication be in accord with the natural usage, for in what is naturally unknown ignorance is increased in accord with natural predication, for if this is the subject naturally, and the predicate naturally, and it is possible to know the being of this predicate, one cannot be ignorant of the being of the subject, from which the being of the predicate is known through its being in the subject, since it is only in the subject. Because of this the knowledge of its being is necessarily connected with the being of its subject, and because of this [107G] it was decided that it is a characteristic of natural predication that it is necessary in demonstrations. *He concealed what he did because this fact about its dispositions was concealed from him. <occuluit autem illam ille qui eam occuluit, quia latuit eum haec res de eius dispositionibus>* And it prepares the ground for this, that if it is a characteristic, this is not because it is necessary, but because it is better, and so *<perinde>*, as I think, **al Farabi** was silent about it *<subtacuit (?) eam>* in his book.

The fourth species is, A is the definition of B, and part of the definition of B is the genus of C. And he says in his book that sometimes this concludes being alone, and sometimes it concludes being and the cause at the same time. Now this is absurd, since its middle term is not the cause of the major term's being in the minor, and it is a demonstration of the cause, that is, why-it-is-the-case, accidentally. Also, it is not the cause of the being of the major term in itself, as a *per se* demonstration why-it-is-the-case is, since its middle term is posterior, and to both extremes at the same time. And **Abubachar ben Alzayg**, that is, **Avempace**, desired to reconcile this peacefully, but did not succeed, for his reconciliation led back to another genus, for it is from what is similar to those which furnish being and cause, as we said, every fish when swimming moves in the water. Now an example of this which furnishes being, is, as we say, every horse swims, and everything swimming moves in the water, where he intends that there is a distinction between these, because swimming is a difference of fish, and prior to it, although swimming is posterior to horse. But if we grant this, we convert the combination into another genus, which is, A is the definition of B, and B is the difference of C.⁵³ But in truth this combination is not a demonstration of the cause, but it happens that the middle term in it is prior to the minor term, even though it is the cause of the major term's being in it.⁵⁴ Now it deceived this man because of what was understood from the words of **al Farabi**, namely, that in demonstrations without qualification it is necessary that the middle term [107K] be the cause of both extremes, or of one of them, and hence he thought this converted, when it did not convert.⁵⁵ But **Abu habat harahmam bin tharis [ben Thahir]** says on this matter that it provides the cause by using the middle term, that is, in an essential accident existing equal to the genus of its subject, which is taken into its definition. So he thought that when a reality is thus, it signifies a genus of the subject, since an accident signifies that by a denominative name, and he thought that a denominative name signifies an accident and its subject. But the reality is that the middle term in this place signifies an accident, and its subject, which is the genus of the minor extreme. Since it is so, the middle term is prior to the minor term, which signifies its genus.

⁵³In the *Epitome* Averroës says of this case that one gets a demonstration when something is added that brings the middle term down to the same level of generality as fish, and that is here taken as the difference required in the definition of fish. That fits the fish example. One might wonder if one could add something to the genus of C which is an accident, but still proper to C, so that a description of C results, instead of a definition.

⁵⁴So swimming is prior to fish, since it is part of its definition, even though it is the cause of the definition of swimming being in fish.

⁵⁵That is, he thought mistakenly that if the middle term is cause of both extremes or one of them, it would have to be a demonstration.

But since the middle term was equal to the subject, and more proper than the genus which is taken into its definition, it does not signify that genus, and it provides being alone. Now this is an error, for the subject, which signifies a denominative name, is not the predicate of the premise, of which the predicate is a denominative name. If it were, denominative names would signify two genera, that is, both substance and accident. And **Avicenna** takes note of this point, so that he thinks that, when we say “every human being is able to laugh,” the predicate is composed from substance and accident. But a denominative name signifies the accident, and that it is in its subject, not the accident and its subject, for if it did, then when a denominative name is predicated of an accident, and it would not be exemplary of the primitive *<exemplaris primitivi>*. Moreover, if we were to admit that this place provides the cause, which belongs to another combination, namely, that B is the genus of C, not as [108A] **Avempace** thought. Now the opinion of **al Farabi** is like the truth, whatever is defined, the parts of the definition are embraced, and the genus of the minor extreme is the middle term, and it is noted that it depends on the middle term, and when the major extreme is that of which the predication is possible of the genus of the major extreme, then it provides the cause and being, for it is the cause of the minor extreme, and of the being of the major in the minor, but if it is the cause of the minor, it provides being alone.

The first species of the fourth genus is, when A is the genus of B, and B is the definition of C, and he says that in this way the genus of the definition of C is inferred, and this, when it was not known in the definition of C.⁵⁶ And here the genus would be remote. And in this way it is an accidental demonstration of the cause, for the definition of the species is not the cause of its genus’s being without qualification, but is the cause of its being in the subject, and the major is prior to the middle term. Now the reason for this is that the question was not primary, and therefore its major premise is not primitive.

And the second species is similar, which is, A is the genus of B, and B is the difference of C, in which the major premise is not primitive, and the middle term of which is an accidental cause.⁵⁷

The third species is, A is the genus of B, and B is the definition of C. And here the predication is outside the natural use, since this combination is in the third figure, the inference of which is accidental, which is, the genus is in the definition, for this is like a difference being in a difference. And in the same way, it leads to no

⁵⁶The example given in the *Epitome* is: Every (C) man is (B) a rational animal, every (B) rational animal is (A) a body capable of nutrition.

⁵⁷Averroes also refers this part of the division to al Farabi in the paraphrase of *De Caelo*, near the beginning of Book II, f. 177 col. 4, according to M. Steinschneider (on Alfarabi), p. 45.

conclusion unless the genus is remote.⁵⁸ And therefore he says that it provides being alone, for it is like being alone, so that the cause of the reality is the subject of the conclusion, that is, that which is usually the middle term leads back to the subject.

The fourth species is, A is the genus of B, and C is part of the definition of B. And it is also noted that this concludes being, since its middle term is posterior to both extremes.

The fifth is, as A is the genus of B, and the genus of C is part of the definition of B.⁵⁹ And he says in his book that this furnishes a demonstration, which is not so. And the whole business hangs on whether we accept the admission of accidental causes, which are not primitive, in demonstrations without qualification.

Of the fifth genus the first species of which he is mindful in this genus is, A is a difference of B, and B is a genus of C.⁶⁰ And he said about his that it is a perfect demonstration, which provides both being and cause, and concludes the difference of the genus of its reality. Now if it is numbered among demonstrations without qualification, it is among those demonstrations of which the cause is accidental, for its middle term is not the cause of the major term, but is the cause of the minor term alone. It is not the cause of the major's being in the minor, that is, a cause of being this accident. And thus it is most imperfect of demonstrations of *per se* <inherence>, of which the causes are accidental, for the middle term is not any of the four causes of the major being in the minor. Also, the difference is *per se* in what has the difference, not in the species, which falls under what has the difference, because it is the middle term having the difference.⁶¹ Therefore a question about this is not a primary question, nor is the minor premise a primitive premise. So it is not a demonstration without qualification in accord with Aristotle's intention.

The second species is, as A is a difference of B, and the definition of B is C, which is a predicate outside natural usage, and its conclusion is accidental according to the universal signified. Therefore it does not merit being included under syllogisms [108G] of the sign, nor under demonstration.

The third is, A is the difference of B, and C is part of the definition of B, which furnishes being, since the middle term is posterior to both extremes, **and it is expedient if in A there is something other than C, since**

⁵⁸The example in the *Epitome* is: Every (C) number from which a pair is derivable is (B) even, and everything (B) even (A) has some quantity.

⁵⁹The example in the *Epitome* is: Every (C) animal (B) has senses, and whatever (B) has senses (A) can grasp things. This is the third and last species listed under this genus in the *Epitome*, the third and fourth species here being omitted there.

⁶⁰The example in the *Epitome* is: Every (C) man is an (B) animal, and every (B) animal (A) has senses.

⁶¹The middle term is, of course, the genus, to which the difference belongs *per se*.

about the differences of C, which are in them, is B *<et expedit quod in A sit aliud quam C, quia de differentiis ipsius C, qua eis insunt, est B>*.

And the fourth species is similar to this, and one ought not to consider what he said, that it furnishes being and cause, because the middle term is posterior to both extremes. And if something prior to them is assumed *<as the middle term>*, this would lead it away from this species *<si ponatur prior altero ipsorum educeretur inde ipsa species>*.

In the sixth genus the first species of those he took note of is, the definition of A is B, and B is the genus of C,⁶² which demonstration provides being and cause, since the middle term is the definition of the major extreme, and it is of the number of demonstrations which provide what it is and whether it is at the same time. But what is sought in it is not primitive, and neither is its minor premise. But when we wish what is sought in such a demonstration to be primitive, it is expedient that an attribute be in the subject, by which what is sought is primitive, but when that attribute is found, it is transferred from this combination to another combination. Now the species of demonstrations in which the middle term is the definition of the major extreme, which provides as what is sought what it is and why it is, is well known to be among those things sought concerning the accident. [108I] Now what is found among what is sought about the substance is what is to be considered, and the object of a profound search *<et altae indaginis>*, for what is sought about the subjects is the genus or difference or definition. But about definition it is well known that it is not concluded through definition, and about difference, if it has a definition, it is concluded through its definition. And these are the things primarily sought in this combination, and its primary cause. But there is no primary cause of the genus in what falls under the genus, nor is it firm in these which are under it, unless the universal name of the attribute be found, of which the definition of the genus is predicated in itself. The genus is not predicated afterwards of the species in itself if it is also predicated of it essentially, since there is a difference between saying in itself *<in quantum est>*, and saying essentially *<in eo quod quid est>*. For animal is predicated of human being essentially, and it is not predicated of it in itself, since it is a predicate of horse and other things as well. The expositors doubted concerning the predication of the genus, whether it was primitive or not. And it is well known that that is not primitive, since that is primitive which is predicated of the subject insofar as it is that subject.

⁶²In the *Epitome* the example given is, every (C) human being is (B) capable of nutrition and has senses, and everything (B) capable of nutrition that has senses is (A) an animal.

The second species is, the definition of A is B, and B is the difference of C,⁶³ and this is demonstration without qualification, for it infers the difference from what has the difference through its definition. Its premisses are primitive, and its conclusion is primitive, and it is of that species from which definitions are derived, and they cross through this species and the preceding, for it is called definition of the difference of the defined, since the difference of C is truly A, because the definition of A is B, and B is the definition of the difference of C.

The third species is, the definition of A is B, and in the definition of B is C. And this too is demonstration without qualification of the definition.

And the fourth species is similar, since an attribute is brought forth from the subject,⁶⁴ which is the exposition of all. And, as I say more universally, demonstrations from which definitions are derived are of this genus, and hence this genus is the noblest part of demonstration.

The first species of the seventh genus is, B is in the definition of A, and B is the genus of C, and this is a demonstration which is included in what is accidental, since the genus is not predicated [109A] of that which is under it by primitive predication.

The second species is, B is in the definition of A, and B is a difference of C. And this is demonstration without qualification, for it is not included in that which is accidental, and its middle term is a certain cause of the major term, and a cause of its being in the minor term.

The third species is, B is in the definition of A, and the definition of B is C. And this is not demonstration of being, that is, demonstration that-it-is-the-case, nor is it demonstration without qualification, for its middle term is the subject of the defined, and its natural combination is in the third figure.

The fourth species is, B is in the definition of A, and B is in the definition of C. And this is demonstration without qualification, for the conclusion is primitive, and so are the premisses, and its middle term is the cause of the major.

The fifth species is, in the definition of B is the genus of C, and this also conveys a demonstration without qualification, in which the accidental is not mixed, since it concludes concerning the attribute C in which its first exposition arises.

⁶³In the *Epitome*, the example given is, every (C) human being (B) has thought and consideration, and everything (B) having thought and consideration is (A) rational.

⁶⁴There seems to be some mistake here. The third and fourth species seem to be the same. In the *Epitome* the third and fourth species are quite different from both species presented here.

The first species of the eighth genus which he takes note of is, that A is part of the definition of the genus of B, and B is the definition of C. And this is demonstration without qualification, for its middle term is the cause of both extremes, but it is mixed with the accidental, since the predication of A of B is not a primitive predication, since A is a predicate of B not as such, and this is when A is not equal to B, but when it is predicated by a primitive predication, it is a demonstration without qualification, which is entirely free from mixture with the accidental.

The second species is, that part of the definition of A is the genus of B, and B is the genus of C. And the accidental is mixed in this, and its conclusion is not primitive. [109E] For example, whoever shows the equality of the angles to two right angles in a right isosceles <gradato> triangle using triangle.

The third is, that part of the definition of A is the genus of B, and B is a difference of C. And this is a demonstration without qualification, for its middle term is the cause of the major and minor extremes, and it is not mixed with the accidental, since A is predicated of B in itself, that is, by a primitive predication according to the opinion of Aristotle.

The fourth is, that in the definition of A is the genus of B, and the definition of B is C. And this is not entirely demonstration, not of the sign <i.e. that-it-is-the-case> nor of the cause, that is, why-it-is-the-case, for its conclusion is accidental, and its minor premise is a predicate outside natural usage, and its combination is in the third figure.

And thus none of these genera which **al Farabi** takes note of, beyond that species of the first genus, contains demonstrations without qualification, in which the accidental is not mixed, except for these three genera, the sixth, the seventh and the eighth,. The sixth genus provides being and definition, and the two others provide being and part of the definition, which runs the course of the difference. And now this is seen by us to be the fourth genus in which demonstration are constructed, which provides both being and part of the definition, and is the converse of the difference joined with the other relations <et est conversa differentiae cum reliquis habitudinibus>. And this genus is certainly not found in his book. And they arise in these two species of demonstration without qualification, in which nothing accidental is mixed. The first is, that B is a difference of A, and B is a difference of C.⁶⁵ The second is that A is a difference of B, and the genus of C is in the definition of B.⁶⁶ But when we wish this [109 G] to be a demonstration it is necessary that the minor premise be primitive.

⁶⁵That B is a difference of C is the converse of the difference.

⁶⁶That C is in the definition of B is the converse of the passion mentioned a line or two below.

This genus, which fell from **al Farabi**'s book, which is the converse of the passion joined with the rest of the relations *<est conversa passionis adiunctis reliquis habitudinibus>*, is not demonstration of being, that is, that-it-is-the-case, nor a demonstration of the cause, that is, why-it-is-the-case, for the predication in it is outside natural usage. But the rest of the species, which are thought to have fallen from those genera which **al Farabi** enumerated,⁶⁷ are included *<i.e. discussed>* in these genera, and it does not seem good *<non est visum>* to protract longer the discussion of these which he takes note of here. So it was shown from this discussion that these genera of which **al Farabi** takes note are contained in three species of syllogisms, either (1) under syllogism, which does not merit to be called syllogism, unless it is from its form alone, and is that from which it is impossible to show anything sought and not yet known, or (2) under syllogism which is from premisses mixed from the *per se* and the accidental, which is called posterior, or (3) from syllogism which is composed of premisses in which nothing accidental is mixed at all. And these syllogisms, since their middle terms are the cause of the major term, and are at the same time the cause of its being, are demonstrations without qualification, as we have said. Since accidents are found which are in the major of the genus of these genera, which consider these arts, it is noted that here there are certain premisses that are true but not *per se*. And since of those which are *per se* of properties in individual genera, which are considered, some are primitive, and some are not, because it is not first numbered among those which are accidental, which fall in that genus, and it is known that in demonstrations which are contained from these, which are *per se* and not primitive [109K], there is mixed what is accidental. But those which are constructed from what is *per se* and not primitive are not entirely mixed with the accidental, nor do they depart from the genus, which is found in true common syllogisms, which are not *per se* nor accidental to the genus which is found in the syllogisms, which are *per se* and proper to that genus, but are not primitive.

Since things stand thus, true syllogisms are of three species, syllogism constructed from premisses accidentally true, and syllogisms constructed from premisses true *per se* and without qualification, and syllogisms constructed from premisses which are in one way *per se* and in another way accidental. And since it is thus, we find that now there is agreement concerning the realities of this art, that it is wholly inexpedient to enumerate true syllogisms that are not *per se* under demonstration. And in the same way there is no debate whether demonstrations in which nothing of the accidental is mixed are primarily said to be demonstrations,

⁶⁷That is, when **al Farabi** indicated that something in a genus was a demonstration *provided that* certain additional criteria are met, Averroës often indicates that if those criteria are met, it doesn't actually fall in that genus at all. It seems to be these cases he has in mind.

and that those are the noblest species of syllogisms, and that those among them which are primary are numbered among demonstrations. But demonstrations which are mixed from both <the accidental and the *per se*> at the same time, seem, in the opinion of **al Farabi**, to be numbered among the species of demonstration, and it is well known that, in accord with his own opinion, Aristotle does not number them among demonstrations, for he calls them accidental, and there is a certain relation of these to false syllogisms, just as there is a relation of the true which are not *per se* <to the false>. And this is obvious from his words elsewhere in his *Posterior Analytics*, as we have said, and it is the sequence of his words, namely [110A], one will not show it in every case that the angles of the triangle are equal to two right angles, even if he showed <it> concerning individual <kinds of> triangle one by one, that is, concerning equilateral and equiangular <and so on>. He will not <then> know any of the triangles to be of this disposition, unless it be in a sophistical way. **His intention is, that we knew having three angles equal to two right angles of something other than triangle itself, and when this is known of some reality of three angles, this is more useful elsewhere in those places from which this disposition appears about these.** But that the reality itself in itself must stand thus is known when the way is set forth by which human beings agree, that they do not introduce true accidental syllogisms without qualification to demonstrations themselves. But this appears since they aim at speculative knowledge, intending that beings be known through scientific knowledge joined to the works of nature, which agrees with the science by which something is accomplished—and there is no distinction between these two kinds of science, unless it be that an art knows and makes <a reality> at the same time, but in a speculative science nature produces the reality. Now that is natural the functioning of which is in agreement with knowledge joined to the works of nature, as one who acts intends that his knowledge agree with the action done. But we know reality is such that when something accidental is mixed in with an artisan's knowledge, whether it is near or remote, that knowledge is accidental to his art, and it does not apply to his work if the work is not proper to his art. And therefore it appears to us with the highest evidence, that syllogisms which arise in the functional arts are constructed from primitive and *per se* premisses. But if they are not, the work coming forth from <such a syllogism> is no doubt in error. And hence the heresies of the medical [110D] methodists, who gather experiences, no doubt necessarily produce error when work is done, because the syllogisms of these men are from premisses that are not primitive, nor proper, but common. And therefore there is what was demanded by Galen of Thessaly, who was himself the prince of these heretics, about this proposition, that all confess concerning the functional arts, namely, that knowledge of these is not useful, which is mixed with the accidental. Since things are thus, since we assumed that natural science must be relevant to functional science

<*cum posuerimus quod scientia naturalis oporteat quod sit circa scientiam operantem*>, from this it seems that science is true which makes known the reality as it is, but as for that which makes this known through what is accidental, it is known that it does not make it known as it is, because it will not agree with the science that which produces it.⁶⁸ For it was shown in *On the Soul* that this science is that by which human being is made a substance, and that science, when it is mixed with the accidental, does not lead to human happiness, since the science of intentional beings, which are not intended *per se* <*cum scientia intentionum entium qua non intenduntur per se*>, is like the science of things done accidentally, and not intended by the artisan, and one's ignorance does not tell against these. And through this differs that-it-is-the-case through a proximate accident, and a more remote accident coming from the genus belonging to it. For example, since he who holds a demonstration is established about human being being composed from four elements, since he is a human being, or since he is an animal, for he knows human being not in accord with the definition by which its being is from the elements. And for him this demonstration is established about human being, which is composed from homogeneous bodies, it established for him a demonstration concerning what is necessary, by which it must be that animal is composed from [110G] homogeneous bodies. And then it establishes for hm a demonstration concerning what is necessary, by which it must be that animal is animal, for he knew that a human being is composed from elements in the way in which it is composed form them, and this is knowledge agreeing with work, and this is necessity, which leads to the division of one and the same art into common and proper parts, as happens in natural science. And, if the rules <*canones*> treated in this book, from which it is intended that true knowledge come to be, by which we are supported <*substantificemur*> and arrive at our ultimate perfection; and this knowledge is not knowledge which is mixed with some species of accident, and it is knowledge by which a human being is like the High and Blessed God in quantity, by which his nature is that which it becomes like, and his science of beings is carried across. And thus it is useful that the species of demonstration which are in this book are demonstrations that lead those having them to this knowledge. For these realities can be shown through two premisses, of which one is that demonstration arise from those in which it is contrary to that which is accidental, and the second is it is without qualification simple of each being, since it is not mixed with anything contrary to it. For example, since there is a contrary to health, sickness, it is necessary that health be simple without qualification, in which nothing of sickness is mixed. And hence Galen believed that health and

⁶⁸The argument is that knowledge of natural science should lead to the ability to produce the effect known. But if we know it through an accidental cause, then we will not be able to produce it, or at least not reliably. So we must know the *per se* cause to have true knowledge in a natural science.

sickness are found, and a middle state between them. Now since we supposed these two premisses, it must necessarily be demonstration without qualification in which the accidental is wholly unmixed. But the major premise of this syllogism is obvious, though the minor is shown through two premisses, of which one is, that demonstration [110K] stands on those which are *per se*, and the second is, that what is *per se* is contrary to that which is accidental. And thus it must be that demonstration stands on what is contrary to the accidental. Now this which stands on a contrary, is of contraries. So these are the facts that moved Aristotle to institute these characteristics of demonstration, and whoever does not understand this by demonstration, does not understand it at all, just as whoever does not understand health unmixed with illness by health <does not understand health at all>. Now since he agreed with this fact about the character of demonstration, Aristotle recognized the attributes and characteristics into which these demonstrations are resolved, and agreed with them. And he proved these things in his book, and how marvelously noble was what he passed on to us, due both to its place <?>, and the degree of human happiness <it imparts?>, for human happiness is not gained except through such demonstrations. Now the reason for ignorance of the opinion of Aristotle is ignorance of the facts which led Aristotle to prove these things in his book. And hence, he shows nothing through those syllogisms in which the accidental is mixed, even if he finds them to be *per se*. But that these syllogisms are incorrect in the opinion of Aristotle, appears from the definition of false syllogism without qualification, which is an elenctic syllogism, which is thought to be a syllogism even though it is not one, that is, which is thought to be demonstrative even though it is not, or is thought to be topical even though there is no topic <it falls under>. And since there are many characteristics of demonstrative syllogisms, it must be known that if anyone thinks any of these characteristics, or more than one of them, that they are in it [111A] even though they are not, that syllogism is false, not demonstrative. And it is well known that the greater the concealment and falsity of the characteristic or characteristics is, the more fallacious and more worthy to be pronounced a sophistical syllogism, and <again>, the more it appears <*expedit de syllogismo quod*> that a syllogism is true when it is not true, <the more it is> to be called sophistical. Now since it is thought about such of the characteristics of the premisses of demonstration that they are so when they are not, thus also, the syllogism about which this is thought, that it is *per se* when it is not, it is reasonable that it be called sophistical. For *per-se-ness* is a certain characteristic of the premisses of a demonstration, just as truth is a characteristic. But the sort of syllogism that is from mixed <premisses>, because it is *per se* and accidental, it is more conjectural that they are demonstrations, than that they are lying syllogisms, and in the same way, of syllogisms accidental without qualification it is more conjectural that they are false, and are outside those according to conjecture. And hence

Aristotle called demonstration false syllogism <*vocavit demonstrationem falsigraphum syllogismum*>. And so these are in this way more truly named false syllogisms, or if one things about them in a different way, that is, as they are thought to be, they are more truly of this sort. And so the truth of those characteristics of the premisses of demonstration which Aristotle draws out, and the refutation of those who deviate from the way of his doctrine, and pervert and disturb the truth about this, has been shown from this discussion.

Perhaps an excuse for **al Farabi** on this matter is that his book is not complete, for people say that it was discovered after his death, that is, that he left something out.⁶⁹ For he does not complete in his book all those species [111D] which he undertook to enumerate and consider. And, also, if accidental species are found among them all, not the four species which we have indicated, perhaps you might think, that this way is more useful and more to be chosen than that of Aristotle, because this is an imaginary fact, not true, and so utility is not proved through its relation to having this <i.e. having the characteristics of demonstration>, and to all of this.⁷⁰ And so it is useful, as those who deviate from Aristotle in these matters say, that he should describe <*ferat*> the middle among the ways <of arriving at knowledge>, and this leads them to deviate from his opinion, for these realities are obtained from <the middle way> in most cases, and <Aristotle> perfects and completes them, as **Alexander** says. But that we find these species of demonstrations are not suitable to be found everywhere, this, I think, Aristotle granted, and it seems that what he does not agree to, is that we know by this species of demonstration. It is better that we know it in this way by a knowledge mixed with that which is accidental, than that we are ignorant of that, just as, when it is impossible for us to know this even by a mixed knowledge, it is better for us to know it according to a truth that is not *per se* than to be ignorant of it without qualification. But all of this happened after it was verified by us that there was no way for us to the discovery of the demonstration. And whoever lacks this principle leading to the characteristics of <demonstration>, as has been said, will not see how he can be helped. And just as a judge <who> thinks that the characteristics of purity of water and of purity <without qualification> are the same, makes a grievous error in judgment, so those who think that the characteristics of these two demonstrations are the same make the most absurd error in the art of demonstration. And this is so even though we admit that these species of syllogisms, [111G] that is, those mixed with the accidental, are demonstrations. May the name of God, who directs us to the truth,

⁶⁹The assertion seems to be that Al Farabi's work on demonstration was discovered among his papers after his death.

⁷⁰That is, one might think that Aristotle's account of demonstration is well and good, but that the conditions he lays on it cannot ever be met, so that it is purely imaginary that we should ever have such demonstration, and so we do well to aim for something less exalted and more obtainable.

be blessed, and may he rule on high forever. Amen.

**Question 4: Concerning the characteristics required for the necessity
of the premisses of demonstrations.**

Aristotle set it out that for the premisses of a demonstration to be necessary they must have three characteristics (*conditiones*).⁷¹ The first is, that the predicate be in the whole subject all the time, the second that the predication be *per se*, and the third that the predication be primitive, that is, that it be in the subject without any other intermediate reality, and that it be a proper predicate in it.

Now, certain men who are our seniors have raised doubts here⁷² about this, holding that it is not required that the premisses of necessary demonstrations be *per se*, if it is not granted that everything necessary is *per se*, and they say that whoever concludes that the premisses of a demonstration are *per se* because they are necessary draws the conclusion from two affirmatives in the second figure,⁷³ for the combination of speech is thus: The premisses of a demonstration are necessary, and those which are *per se* are necessary.⁷⁴ And it was thought that **al Farabi** referred to [*declinet ad*] this, when he said in his book, “I intend here by the necessary the *per se*, for now [*nam iam*] it is thought that not everything necessary is *per se*.” But if it is not necessary that the necessary be *per se*, consistent with this, neither does it follow that the necessary is primitive.

But the way Aristotle says that *per se* and primitive are properties of [11K] necessary premisses assumes the rule here⁷⁵ that these necessary premisses should be made known, and this enables us to see what is intended by “necessary.”⁷⁶ So, we hold that if it is signified by the name of the necessary, then its predicate is in the whole subject always—and nothing is understood from this this interpretation of the matter except what is customary, what is understood when the phrase first occurs to the mind. And so it is known that it is not needful that it be *per se*, any more than it is needful that it be primitive. As it is signified through that necessity

⁷¹In the margin the source of this is identified as *Posterior Analytics* I, Texts 7–11.

⁷²Where Aristotle set this out, i.e. in commentary on this passage.

⁷³In the margin reference is made to *Posterior Analytics* II, Text 15 (?) And c. 44.

⁷⁴The point, of course, is that this is not a valid syllogism.

⁷⁵In the passage in Aristotle at issue.

⁷⁶The point is that it will be *argued* by Aristotle, via a demonstration, that the necessary premisses of a demonstration are also *per se* and primitive. So it is not assumed in the definition of necessary that they are. So **Al Farabi**’s approach to the issue is wrong.

which belongs to such premisses, when it is assumed that the subject is then the predicate must be, and it is not needful that, when the predicate is assumed then the subject is.⁷⁷

Now this being the case, such propositions are in a way necessary, and in another way <merely> possible. Indeed, its necessity is that by which, when the subject is, so is the predicate, but they are possible because, when the predicate is, it is possible that the subject is, even if it is not. And so they are necessary in an intermediate way, not necessary without qualification. It is like saying, “Every rational thing is an animal, and every animal is a body,” for when it is rational it must necessarily be an animal, and it does not follow from being an animal that it is rational, unless it be that it is possibly so. The power of *that* sort of proposition is the power of the proposition asserting that everything that is self-moved is an animal.⁷⁸ These also think that such are not included in demonstration, it being established that such propositions are not necessary without qualification, but are mixed from the necessary and the possible. And so what produces understanding of the name is necessary without qualification, with which nothing of its contrary, that is, possibility, is mixed, as through the name of health health is understood, with which there is no admixture of illness. This “necessary” is characteristic of a proposition in which the subject being assumed the predicate must be, and the predicate being assumed the subject must be. And so these [112A] are propositions in which possibility is wholly unmixed, and this is how things are connected to their definitions and proper causes, that is, when they exist, the caused does also.

Now when this is understood by the name “necessary,” it is well known that it must be *per se* and primitive, and the predicate must be in the whole subject and always so. But it is known that demonstrative syllogisms must be composed from such necessary <premisses>, for the nature of the reality, knowledge about the being and nature of which is sought at the same time, is constructed from such. And this agrees with the work of nature itself, and is <that> in which no possibility is mixed, nor anything wholly accidental. And this is scientific knowledge, which is related to natural realities as the knowledge of the artisan is related to artificial realities. And this is the knowledge which is the principle of work in nature itself, as the knowledge of the artificer is the principle of work in his art, and this is that by which the last are connected with the first and the first with the last. And this is scientific knowledge, the principle of cognition of which is the end of the work,

⁷⁷That is, this is not needed for the premisses to do their job in the syllogism.

⁷⁸That is, the proposition that the self-moved is animal is entirely necessary, for the predicate implies the subject and vice-versa, for it is strictly a property of animals that they be self-moved.

and the principle of the work is the end of thought. If this is scientific knowledge, by which all beings prosper, and the perfection of the work of humanity itself, then it arrives at as much of this knowledge as is appropriate to the nature that arrives at it, as it is shown elsewhere concerning these things. And it obtains this if its premisses are from such necessary premisses, and so it must be that the end of the art of logic is the investigation of the properties of premisses which are of this sort, and of their characteristics making them known.

And so these three characteristics, which Aristotle calls <together> predication in-every-case, are characteristics most proper to the premisses of demonstration, and of the noblest of those species which human knowledge attains among us. It makes known the reality itself according [112D] to what being it is. Indeed, whoever knows the reality through premisses lacking in some of these characteristics knows it in another way than it is, and so he does not know it through necessary realities, from which the essence of the reality is constituted. And it is known that whoever deviates from this part of the teaching, and finds these conditions hidden from him, now has hidden from him as well what the scientific knowledge sought in this art is, and that is the reason why Aristotle develops by resolution the characteristics of the premisses and syllogisms which are marked out for them.

Now the most notable and excellent of these three characteristics, and the most important in connection with this matter, is that they be primitive, and Aristotle intends equally to make known this condition and the ways of making true that happen to us in connection with it, and to hand down a rule by which we might be led even while it is hidden from us. For just as a topical syllogism is prior, according to our knowing, to syllogisms arising from per se premisses, it is the same way, it is thought, with syllogisms which are from per se premisses that are not primitive and syllogisms from per se, primitive premisses—that is, such syllogisms⁷⁹ are better known to us, since thought falls under them naturally. And as topical discussion comes before syllogisms per se, so those that are per se come before primitive syllogisms. And as this art hands down the rules by which we are carried from probable to per se premisses, so it hands down the rules by which we are carried from the per se to the primitive, and that is the end of the science of realities.

Now moreover, it is signified that primitivity is the stronger characteristic of demonstration, because if someone should cognize something in a practical art which is known by speech, and apply it without these premisses, his work would doubtless be mixed with error, for his functioning will be mixed with what is

⁷⁹The former sort, which have per se premisses that are not primitive.

accidental. And so it is reasonable that the intention of Aristotle be understood thus in this place, and it must be exposted thus. [112G] And Themistius was confused about the response to this question, and did not exposit this place as it ought to be exposted.

The end

Question 5: In what way there is a movement from one art to another.

Aristotle⁸⁰ said that if demonstrations are transferred from one art into another art—by transference of a demonstration he means that one major premise occurs in two arts in the same position <within the two sciences, say, as first principle or as conclusion>,⁸¹ not that two premisses are the same in two arts in such a way that the subject investigated in these is one and the same— now when this is the case,⁸² there is no transference <really>, and such are not numbered among demonstrations unless one of them falls under the other,⁸³ and when this happens there is <only> one art. Transference, then, occurs when the middle term and the major extreme <but not the subject> are one in the two arts.⁸⁴ Now Aristotle argues in this place, that if it should happen that the middle term is in the minor *per se*, and the major term is also in the middle *per se*, and the per seity does not extend beyond the genus which is under consideration, it would then needs be that the demonstrations would not be transferred, for it is impossible that genera and differences should agree in

⁸⁰In the margin, “I Posterior, co. 54.” The discussion is of *Posterior Analytics* I 7 – 9. The words given here do not occur in these chapters, but probably the reference is to the opening of Chapter 7, which simply asserts that one cannot prove by crossing over from another kind, for instance, using Arithmetic to show something in Geometry.

⁸¹So what is meant is that a major premise is shared by two demonstrations, one concerning, for instance, angles (B), and the minor premise concerns some specific sort of angles (right angles (A) in Geometry, or angles between visual rays (A') in Optics). The claim will be that the proposition in question, then, might be demonstrated or have the status of a first principle in the demonstration of one of the arts (Geometry), but will have the status of a supposition in the other, (Optics). So: “Every B is C, every A is B, therefore every A is C” may occur in the one art, and a second syllogism with the same major premise, “Every B is C, every D is B, therefore every D is C,” in the second. If the status of the major premise is the same in the two arts, the two turn out to be the same art, and one of the minor terms, A or A', falls under the other as a species.

⁸²That is, returning to the initial conditional phrase, when a demonstration is transferred from one art to another . . .

⁸³This is because the two demonstrations share not only the major term, but the middle term as well, and, as we shall see immediately below, the minor premise in each must be *per se*. But if both minor premisses are *per se* and have the same predicate, then they fall in the same science.

⁸⁴That is, it seems, the subject in the second science falls under the subject in the first science, and so the demonstration of the attribute of the subject in the first science is borrowed in the second, and applied to some portion of that subject. Now if this is what is intended, it seems to occur in all the sciences—what we prove of a circle we apply to circles of a certain sort later on in Geometry, for instance. (This seems to be what is meant by two premisses being “the same in two arts in such a way that the subject investigated is one and the same,” which Averroes says Aristotle does not intend to discuss here.) So it must be that the subject of the second science falls under the subject of the second accidentally, so that the special kind of circle is differentiated from circle in general by some characteristic accidental to circles. Somehow, it will have to be made out that circumscribing a triangle, say, is not accidental to being a circle, whereas being made of bronze is, to make this work. Perhaps we could point out that circles could not exist unless there were circles circumscribing triangles (for the assumptions used in the definition of circle lead us to the conclusion that there are triangles, and circles circumscribing them), but they might exist even if there were nothing made of bronze (for the assumptions used in the definition of a circle provide no information about the material constituents of the natural world—it cannot be proved that there are bronze things from the principles of Geometry).

a *per se* predicate.⁸⁵

Now there are doubts about this whole business, of which one is a doubt, given that he establishes his conclusion, as we admit, by assuming that *per se* premisses would not be found outside the genus about which the speculation occurs. Now Aristotle establishes in his book that *per se* is of two species: (1) proportionate *per se*, and these do not extend beyond the nature of the genus, as, for instance, even and odd, which are in number, and (2) the *per se* which extends to more than one genus. [112K] Thus we say that “things equal to the same reality are equal to one another,” and “similar things, when they are permuted, are proportionate.” These concern more than one genus, and used in more than one art. This being so, here a transfer of demonstrations is possible, and they (the demonstrations) all agree in truthful showing, and are not *per se* of one art.

Now a second⁸⁶ is, because we find many partial arts, which are under one art, which investigate one predicate, of which the inferior takes major premisses, which are shown in the superior, as the art of Geometry and the art of Perspective, which falls under it. For Geometry examines into equidistance, which is of lines as such, and the perspective art that equidistance which belongs to radiating lines, when it uses geometrical premisses in a suppositional way.⁸⁷

Now Aristotle answer these two doubts. To the first he replies that those premisses, which they regard as universal, are common. That is, the name alone is universal,⁸⁸ and hence when the artisan limits them, and makes them proper to his subject, they are rendered *per se*, and proportionate, and he secures it for the artisan (*percipit artificii*) who does this. For example, Geometry, in place of this dictum, “things equal to one reality are equal to one another,” says, “lines equal to one line are equal to one another.”

To the second doubt he answers that the proposition understood is not in the same position in the two sciences, but is in the higher science as a conclusion, and in the lower science as a premise. Now it occurs in the two sciences, but it is transferred from one place, and its disposition in the higher science is not that in its subalternate science. But the disposition of all sciences in respect of all [113A] sciences that take principles

⁸⁵As observed in the last note, if we really read this as applying to genus and difference, although his point is valid, and what animal is *per se* and commensurately, horse is not, then general conclusions cannot be used as premisses of arguments about the species falling under them, and even Geometry will not be a unified science. So this is presumably an inexact way of putting the point he wants to make.

⁸⁶Emending the edition, which has *tertium*, “third.”

⁸⁷That is, as things supposed without proof, on the basis of Geometry’s authority.

⁸⁸The subject is not, for there is *no* common nature in the different subjects falling under the axiom. This is clear because the axiom is cross-categorical, and the categories are the highest genera that even pretend to cover a common nature.

from them is posterior to them in being, or prior. For example, when Perspective shows equidistance, which Geometry shows through the same premisses, there is a transfer of demonstration, and therefore, when Perspective assumes those premisses and uses them in its science, they are accidental, and from them the predicate is verified concerning those lines inasmuch as they are lines, not inasmuch as they are radiating lines. And therefore if Perspective examines equidistance, it does not cross over in its examination to that position from which Geometry examines it, but when it touches on this it presupposes it, taking it from Geometry. And hence it is shown that it is not characteristic of the artisan to examine his principles in their proper form, unless they are known <by him> *per se*.

Now if the transfer of the demonstration is true, this becomes possible <that the artisan does not examine the borrowed principle>, and one need not say more about the answer to this doubt. But, concerning the answer to the first doubt, it is thought that there is more to say, for an ambiguity is present here. For someone could say that neither 'equality' nor 'proportionality' is an equivocal name, but they are in quantity inasmuch as it is quantity, since **al Farabi** says here that equality is of quantity *per se*, although he seems to hesitate about this elsewhere, when he says, if equality is not an equivocal name, it must be that propositions are found common to more than one art. Now if this is so <i.e., they are not equivocal names>, demonstrations can be transferred in the sense that an art can examine principles, and principles of which it is customary to say that it assumes and receives them from another, since there is nothing preventing this—for it is possible that those principles are such that they are to be shown through such premisses <i.e. premisses common to several arts>.⁸⁹ [113D] Now they need a certain further condition, namely, that those principles that are shown in another science are not examined by an artisan when these principles are shown through equivocal premisses.⁹⁰ And I wonder, also, what difference there is between demonstrations of modes not *per se*, which can be transferred, and between these <*per se* demonstrations>. For since there are two species of the *per se*, how is the species which cannot be transferred, the species of those which cannot move beyond the genus about which they speculate, to be discerned from those which wholly fail to be *per se*, as the

⁸⁹That is, they can be shown through premisses about quantity, which are common to several sciences, and nonetheless are sufficient to demonstrate *per se* the principle about equality belonging to quantity. The discussion of quantity as such will turn out to be appropriate to several sciences, for instance, both Arithmetic and Geometry. The usual approach, and the one adopted by Averroes, is to hold that the science that examines equality and quantity as such would be Metaphysics, and neither Arithmetic nor Geometry, which borrow their axioms, including those concerning equality and quantity, from Metaphysics.

⁹⁰This, it is implied, is an ad hoc fix for the problem, of course.

demonstration of Bryson concerning the quadrature of the circle does?⁹¹ Moreover, if we assume ‘equality’ is an equivocal name <to escape these consequences>, ‘one’ and ‘being’ will also be equivocal, and ‘contrary’ and the other predicates belonging to the metaphysical science, and propositions of the metaphysical science would be topical, not demonstrative, and so they would not be appropriate to one subject. These doubts, then, hang on these two statements, that ‘equality’ is an equivocal name, and that it is not an equivocal name.

It is useful for us to examine these matters, and we hold that unless equality is an equivocal name, it is necessary that it have a proper subject which is not an equivocal name, but this could be nothing other than quantity, so that it is said that quality is a property of quantity. But if there is one genus according to one reality, by which it is said to be the subject of the arts, because it is one it must needs be that the speculative parts of the parts of quantity are the parts of a single art, and this would be the art that considers statements, and which produces explanations about number [113G], and the art treating of time and place, which is the natural art, and all would be parts of one art, for all these are species contained under one genus. Just as the art that considers moveable beings, and the species of the moveable, is one and the same art, that is, the art of the science of Physics, and similarly the art which speculates about magnitudes is one and the same art.

Now all this together is absurd and impossible, and given that, it follows that ‘quantity’ <the subject of equality> is a truly equivocal name, even though it is one equivocal, as is well known, that is, one genus.⁹² And thus, since equality is not of one subject, it is not said univocally, for it must needs be that the parts of definitions of things that are said univocally are necessarily univocal.⁹³ Now if it is said that hence ‘one’ also, and ‘multitude,’ and ‘contrary,’ and the other such predicates of the propositions of First Philosophy, are also equivocal, and a universal art does not exist that speculates about being considered as being, let us reply that a genus of any one art is necessary, but it may be one either according to analogy, or univocally. Thus, when

⁹¹Bryson’s proof, at the beginning of *Posterior Analytics* I 9, is asserted to be from immediate principles which are not commensurately universal within the Science, as though one were to attempt to demonstrate a geometrical theorem using only axioms common to several sciences, and no premisses proper to Geometry itself. But now it apparently cannot be objected that such a failure in commensurate universality means that a principle is not *per se* and appropriate to the science.

⁹²Quantity is one of the ten categories, and so a highest genus. But it is equivocal because it characterizes, and therefore names, things falling under different genera, for instance, places and times. So it is itself one genus, and perhaps Arithmetic would be the science of quantity, but then Arithmetic would apply, accidentally, as it were, to both places and times, which do not share a common genus.

⁹³Since equality is not a substance, but a relation, its definition will specify at least the genus of those things to which the relation belongs. But the relation belongs *per se* to quantity, which can be applied to both places and times, and so is equivocal. So a part of the definition of equality is equivocal, and so equality is as well.

truthful analogical predicates are said about it <about being> they are said analogically, as when one and multitude are predicated of being, for the relation of the signified being to a species of being is the relation of the signified unity and multitude <to that species of unity or multitude>. But when <the subject> is said univocally, truthful predicates are said univocally.

But quantity is not a genus in the manner of one of these significata [*quantitas vero non est genus secundum unum horum significatorum*], that is, neither univocally nor analogically. And therefore the mutual relation [*mutua proportio*] of the significata of equality is not the mutual relation of the parts of quantity [*partium quantitatis*], as [*prout*] the relation of the significata of unity and multitude and capacity and act is the mutual relation of the beings [*mutua proportio entium*] denominated [*quae demoninantur*] through these predicates. [113K] Now although every genus of an art is one genus, either analogically or through the significatum, quantity is not like this. It is known, therefore, that it is not the genus of one art. Since this is so, equality, which is predicated of it, is an equivocal name. /// Now if someone were to say, “whatever, then, is the difference between these propositions, and between the propositions Aristotle uses, since they are not introduced into demonstration in the way these propositions enter?” — we reply that there is a condition of such propositions included in demonstration, namely that the predicate and subject of these be as it were said analogically, though there is not a true analogy. And therefore, often they are included in these arts, and they can be numbered among the subjects <of an art>. But if it is a subject and a predicate, both said according to true analogy, and included in one art, as if they were equivocal without qualification, it could not be in any way one proposition, nor included in the demonstrative arts.

Now the propositions of Bryson, since their predicate and subject are not said according to true analogy, nor according to an analogy as it were true, are not included in the demonstration of several arts, nor of any one art. And therefore **al Farabi** said about it that it is topical, for an equivocal proposition veridical perfectly of equivocation in no way is included in the art of demonstration. But the proposition of Bryson is <not?> as it were analogical, for the difference of the signified equality which there is between a straight line and circular line is a stronger kind of difference, than what is signified of equality, which is between different straight magnitudes, so that it is said as it were purely equivocally. [114A] Now Aristotle considers auscultation in *Physics* VII, which makes a comparison between straight and circular, but geometry now is accustomed to use this comparison of this species of true propositions, which are not per se, that is, which are not introduced at all in any of the demonstrative arts, neither in one, nor in several. From those which are not per se, some are transferred from one art into another are veridical, as those are which are transferred from the science of

geometry to the science of physics, or conversely, if it is true that certain veridical <propositions> that are not *per se* are introduced into some demonstrative arts, and such are not contained in them. Now some are true propositions which are contained in one art, and are those of which the predicate is said in the way the subject is also said, if it is said univocally, univocally, but if it is said analogically, analogically. But if the predicate and subject are said in a way analogically, these fall under arts different in number, as equality does, but those which are deprived of analogy of the predicate and the subject, and even of analogy in a way, do not fall at all under any demonstrative art.

So it is shown in what way proper propositions arise in these arts, and how they do not arise properly. My intention is to find one proposition which is used in several arts. Now when a particular art considers some reality, it considers also that universal art superior to it, as the science of physics considers natural contraries and naturally connected things, but does not consider the one itself, insofar as it is one, nor the species into which [114D] the one is divided, nor what falls under these, nor does it consider accidents insofar as they are of the one itself, but <it rather considers> substances, and genera which are subject of a certain fixed accident. Now this being the case, the two arts do not agree in the middle term, nor in the major term. But we find **al Farabi** in a confused discussion about this matter. For, when he speaks of that in which the arts agree, it is possible that it agree in the major term, and is not trespass, even if they don't agree in the middle term, for instance in that which he grants, that common propositions in the arts, some are common in both terms at once, as he says in his book, and he thinks that those which are *per se* sometimes are more universal than its genus is.

That also which he says, that two arts of which the subjects are two realities under one genus, and do not concern the whole consideration, because not only are the subjects of both discovered in their definitions, but also they show through demonstration the genera of those subjects of certain things inferior to them. Now if its their first subjects depend on accidents *per se*, and genera, it is possible that both of these show one and the same reality of both their different subjects universally through two different middle terms. This is not true, for any two arts that are under one genus are one art, when in their subjects that genus is divided by a first division, as is the division of mathematical bodies into circular and straight bodies, for the art which considers straight and circular are two parts of the consideration of mathematical bodies without qualification, but when the body [114G] is not divided in its first division, they do not consider the genus of both, unless it is in two different ways. And thus I say the more universal arts that are subalternate to another art fall under it through addition and diminution, not because there are certain species in the number of species of that genus. I mean

through addition and diminution that the particular arts are rendered particular through the subject, of which it considers the universal superior, rather than that through the condition of that added to it, as is the disposition of natural science in respect to mathematics. For mathematics considers imperfect body, that is, body abstracted from motion and rest, but natural science speculates about this with an addition, that is, that by which it is moveable and resting. This being agreed, because whatever two arts fall under one genus not through addition or diminution, but through division of the body in them through differences, are from which one art is constructed, and it is known that if there are two arts which show through demonstration a common genus by either, these two arts give bounteous (wasteful?) demonstration, which are two arts under one art, which is that considering that genus. For that genus is divided in that first division, as body is divided into *soperimetrum* and round. Now all this means that the book of **al Farabi** on demonstration was not yet complete, for given his skill in the art, this is rather to be thought concerning **al Farabi** than that these things were hidden from him. But the other arts use logical propositions insofar as they are part of the art of logic, and being presupposed according [114K] to the way in which certain arts use these propositions, they are revealed in the other arts. Now it was said in what what this is done, and there is no transference of demonstration, and thus it was shown from this that it is impossible that demonstration be transferred from one art into another, according to the opinion of Aristotle, and what **al Farabi** says in the end of the chapter, in which he spoke about what is common among the arts. And hence it is shown where and when and in what way this is possible, that demonstration are transferred from one art into another art, and where it is not possible. For it is not made true, that demonstrations are entirely transferred, unless that use is called transference by which certain arts use certain propositions which are shown through demonstration in another art, but this is not a strong assertion.

The End

Question 6: Concerning demonstration that it is the case.

[114M] **Avicenna** takes no notice of demonstrations that it is the case, and this is when the subject of these was composite, not simple, for he thought that the middle terms of demonstration that it is the case are accidents of the minor extreme, and this is not in his view a way that leads to the truth, this accident predicated of its subject according to necessary being, unless it is through thinking about the cause by which that predicate is an accident in its subject. Since the cause is what one strives to infer through this kind of demonstration, it happens to us here when we seek to show [115A] it to be from the accident caused by it, that the showing is circular, in truth or rhetorically, when the cause is not thought. For example, it is impossible that someone should strive to show that there is an increasing light of the Moon according to lunations little by little unless it is true according to him, as we have said, that the light of the Moon increases gradually through lunations *per se*, or that in which the light gradually increases according to lunations is spherical. Now the necessity of what we have said, that the light of the Moon increases in this way little by little is not established until the cause becomes known, that is, that it is spherical, but this being shown, the showing <that the light of Moon increases etc.> is completed. [115B]

And it works out in the same way in the species of demonstration that it is the case from a remote cause, that it is not made known that it is necessarily in the subject, that is, the extreme in the minor, unless by reason of the proximate and proper cause. And in accord with this it is not numbered in our opinion with the species of simple demonstration, that is, demonstration in which the premisses are immediate.

Now he argues to these two propositions: (1) that every predicate that is necessarily in its subject is necessary by reason of a cause which is in its subject, since it arises from this cause. (2) Now that which is necessary by reason of a cause which is in the subject is something the necessity of which is known due to scientific knowledge of this cause. Therefore, when we do not think about the cause by which the accident is in the subject it does not, for us, reach to the accident being necessarily in its subject. For example, because from our statement that every crow is black, we do not reach a necessary statement, unless we know how the complexion of a crow determines the necessity of its color. Otherwise, when we state that every crow is black because we perceive no white crows at all, it would be [115D] as if someone who lived in Ethiopia were to state that every human being is black since he perceives no human beings except black ones.

Now all this is a weak response to give for the Peripatetics, and makes its science totter, for most of the causes of natural science make known realities posterior in respect to us, and all natural realities are

composite. Now the composite is better known to us than its causes, as Aristotle says. We hold that when there are differences taken up in definitions, and in realities which cannot take the place of differences, unless it is the defined itself, since the differences are not separable from those of which they are differences, indeed, from their being there follows necessarily the being of the definition itself, which is contrary to the disposition of a part, which is the locus of the genus.⁹⁴ And since it is known *per se*, that accidents are related *per se* to their subjects in their definitions, or to the genera of the subjects in which their differences are, because it follows from these two propositions that accidents are necessary *per se* in the subjects of which they are predicated, and from this point of view, the soul thinks, when it takes in its definition, the subject of these, inasmuch as they are its differences, even if it will not think the proximate cause of it.

And therefore it happens that we assert the sentence that rectitude and circularity are not without magnitude, even if we do not think about their cause, neither that there is snubness without a nose, even if we do not know the cause of snubness, and we pronounce that every number is even or odd, even if we have not yet settled ourselves on the cause of this. But surely evenness and oddness are not accidents, and they are not differences. Thus, necessarily, it seems to us when we think that the subject [115G] is in the definition of the predicate inasmuch it is difference. And it is known that this does not occur with accidents that are more universal than their subject, but it does occur with accidents coequal to their subjects. Hence, as Aristotle says, it is not established for us concerning an accident in the definition of which the genus of its subject occurs, that it is necessarily in that subject, until it becomes known to us *per se*, that that genus is divided in the first division of the genus, inasmuch as it is that genus, into that accident and its opposite. If, for example, the genus of crow, which is an animal, were divided in the first division into white and black, and the other intermediate terms among them, now the truth will present itself to us that every crow is black. But since it is divided into white and black only remotely from the genus, if it is so divided, and blackness is among the accidents of crow *per se*, therefore something is known which leads us to the necessity of its being an accident of a subject found in its definition. It is proximate to its genus, or the subject itself, and this is left, that it concern accidents in which it is divided primarily and *per se*, for then the genus has to be added to the definition of those accidents.

And so, when **Alfarabi** assumes that it is possible that the genus is found in the definitions of things which are not opposed to one another, it is not advantageous that this be understood as the words themselves are sounded, for the genus is found in the definition of the predicates by reason of their being opposites, but

⁹⁴So, the difference does not exist separately from the species, and is not a part of the species, strictly speaking (so that it might exist separately), but only the genus is.

when realities do not have opposites, or they have opposites but we do not think that, then it is not established for us that the predication is necessary, for the necessity is established [115K] when the definition is.

Now the words of **Avicenna** saying that “whatever a necessity concerns on account of some cause, <we will know>⁹⁵ that necessity when we have known that cause,” is a proposition which we grant, and we think that the cause by which we cognize necessity of that is the subject itself, when it is in the place of its differentia (*vice differentiae illius*). But if he adds a condition on the proposition, that is, when he says on account of some *first* cause, we do not grant him this proposition, because now we might well have knowledge on account of a cause that is not first, and this when it is as it were first, and not more remote, as it were the second cause, and this is the disposition of the subject in respect of the accident, for the subject is the cause of the accident on account of the cause by which the subject is established. Now we do not deny that knowledge arising from acquaintance with this cause, that is, the nearer cause, is safer than knowledge proceeding from this more remote, second cause. And therefore it establishes <truths> about the proximate reality⁹⁶ from what reports the cause of its being,⁹⁷ and as I say, <from> more universal <causes>,⁹⁸ so that the cause makes known the being of the reality, that is, its being without qualification, without making known its <own> cause.⁹⁹ Thus we cognize many realities to be without cognizing the proximate cause,¹⁰⁰ but when we know that cause, this knowledge is confirmed.

Avicenna since this is implicit for him in demonstration, that knowledge <is> through the cause, thought that it would not occur in it the name of true science. Now this is the custom of those who thing that true certitude is what <is> new, and here is the error. Now Aristotle shows in his book that certitude is an excess of cognition, and that through thing the arts are distinguished from one another, that is, what we say

⁹⁵I supply these words to the text, since I can't make sense of it without them.

⁹⁶The reality nearest the knower? The attribute seems to be meant.

⁹⁷That is, the subject.

⁹⁸That is, causes that are remote in another way.

⁹⁹The subject makes known the attribute without making known the subject's cause.

¹⁰⁰This whole paragraph is confusing because what he identifies as the proximate cause is not in fact the nearest cause (the subject is nearer the attribute than the causes of the subject are), but the first cause. This is compared to the more universal, i.e. higher genera rather than the proximate genus, in another kind of demonstration that it is the case. The point of the paragraph is to clarify the last remark in the previous paragraph, that the necessity of the attribute is known when the definition of the subject is known, despite the fact that this is not the proximate = first cause.

about the species of demonstration, because whoever infers the prior through the posterior, is that which we call of the species, which infers the accident connected through a non-proximate cause. [116A] For the non-proximate cause establishes according to the mode of necessity the predication of its subject of which it is predicated, when it is established that it has it added in its definition, even though it is not proximate. Now that which is led from this power by abnegation of these suppositions, and the destruction of their principles, in which the Peripatetics agree, is the esteem of he who is the best of scientific men. But it is God who directs one to what is right.

Question 7: How the definition is better known than the defined.

It has been said that the definition is necessarily better known than the defined, and this can be understood in four <different> ways. The first is, that the confused concept of the definition is better known than the confused concept of the defined. The second is that the distinct concept of the parts of the definition is better known than the distinct concept of the defined. The third is, that the confused concept of the parts of the definition is better known than the distinct concept of the defined. And the fourth is that the distinct concept of the parts of the definition is better known than the confused concept of the defined.¹⁰¹

(1) Assume that our understanding of this is that the confused concept of the¹⁰² definition is better known than the confused concept of the defined. Then, we know this—when we define a reality prior both in being and in our cognition, through a reality posterior according to both realities at the same time, that is, according to being and cognition, then we have already received the reality so that it can make itself known, and it is necessary that this concept be either [116D] a true speech-beforehand, that is, begging of the question, or similar to a true begging of the question.¹⁰³ Now this happens, for instance, when someone would define the Sun as a star shining in the daytime, and here the concept of daytime is used to make known the concept

¹⁰¹A distinct concept of the defined would include a distinct conception of its definition. A distinct conception of a definition would include a distinct conception of its parts. A confused concept of the defined would be a concept of the defined, so that it would clearly identify it (through a proper description? Or through its being causally produced by contact with the defined?), but it would not include a distinct conception of the defined's definition. A confused concept of the definition would fail to include distinct concepts its parts, so that the genus and difference would not be known distinctly, that is, one could not define them.

¹⁰²The text has "of the parts of the definition", but it seems that "parts of" is out of place here. At least, it doesn't echo the statement of the first of the four senses in which a definition may be taken to be better known than the defined. On the other hand, a confused concept of at least one of the parts of the definition would, be precisely what we would expect in a confused concept of the definition. Its parts would have to be conceived somehow if it is to be a concept of the definition at all. The example here provides a genus which is correct (the Sun is a star) and a confused concept of the difference (visible in the daytime). There is some difference, and this is a characteristic that is reciprocal with it, so that the difference is seized on by this concept (just as the defined is seized on by a proper description) but the fact that 'daytime' is defined in terms of Sun means that it is only confusedly conceived. Perhaps a distinct conception of the difference would be 'unique on the innermost sphere containing stars,' from which it would follow that it would be so bright in comparison to the other stars, which are so much more distant, that the others could not be seen in the daytime. Thus the confused conception here is a property following on the real difference, and the circularity is a sign that it has some cause not yet identified.

¹⁰³'Speech-beforehand', '*prologus*', appears to be an attempt to render an unusual synonym for '*petitio principii*'. When he says 'or, as it were a begging of the question', this is because he is aware that begging of the question involves propositions arranged in an argument, in which some proposition is both presupposed and shown in the argument. Here we are dealing with concepts, but the relations among the concepts are similar to the relations among the propositions in a question-begging argument. The posterior concept is used to as part of the prior concept to construct itself, just as the posterior statement (conclusion) is used as part of the prior statements (premisses) in the argument to prove itself.

of the Sun. Now the path is, the concept of the Sun is perfected through the concept of daytime, even though it is prior to it according to cognition and being, and whoever grasps the understood concept of the Sun through the concept of daytime, acts as if he were to receive in the understanding some reality from itself.

(2) And something absurd would happen in the same way if we were to understand that on this assumption the distinct concept of the parts of a definition is better known than the distinct concept [116E] of the defined, which is, that the realities of which the definitions are known *per se* would make known all the definitions of their parts *per se*.¹⁰⁴ Now this is absurd, <for> thus there is also this second understanding, namely that the distinct concept of the parts of the definition is better known than the distinct concept of the defined.¹⁰⁵ And it also happens thus in definitions which are composed from posterior realities, because a property is not better known than that of which it is a property, and this <begging of the question happens> inasmuch as it is known through the property.¹⁰⁶

[116F] (3) But the third understanding, which is, that the confused concept of the parts of the definition is better known than the distinct concept of the defined, runs with the course of nature, for a part of a composite is better known than the composite, and letters are better known than syllables.¹⁰⁷ But we know that if we understood what was said <to mean> that it is necessary that the parts of the definition be better known than the defined, something is signified which does not happen to us in definitions, and in this way there arises begging of the question, or as it were a begging of the question. For it is possible <on these assumptions> for some reality [116G] to be prior to another reality in being and cognition, while it is posterior to it at the same

¹⁰⁴So it is assumed that a distinct concept of the defined involves a distinct concept of its definition, and therefore distinct concepts of the parts of its definition. The point here seems to be that we all know that we gain a definition through experience of the thing defined, precisely when we first distinctly conceive it, so that the distinct conception of the defined is gained first, and is the source of the definition. So the distinct concept of the defined is better known than that of the definition. This truth, combined with the assumption, leads to the absurdity.

¹⁰⁵The point is that a circle is established, A being better known than B, and B than A, on the assumptions made in this case. The logic seems unnecessarily complicated to make the point, but Averroës has already uncovered one circularity in the consideration of the first case, so he wants to continue to develop the theme.

¹⁰⁶Again, a circularity, for the definition of the property includes notice of the sort of substance in which it must inhere, and so it is circular to use properties to define a substance.

¹⁰⁷The point is that one comes to know a composite distinctly by knowing its parts, and a confused knowledge of its parts is here taken to be enough. So one might know an amoeba distinctly by knowing all its organelles and their organization and functions and interrelations. One need not know the structure of the organelles, or, if some knowledge of this is required, one need not know the structure of their sub-structures, right on down to the structures of the atoms. The objection of Averroës is that this does not apply to learning about the parts of a definition, that is, the genus and difference, as opposed to learning about the parts of a reality like an amoeba. He thinks that his discussion already, in particular that of the previous case, makes this clear.

time in both ways. But when we receive its confused concept in the concept of something prior, a distinct concept is better known than that, because simpler things are better known than composites, since they furnish a more perfect concept of this prior thing, for the distinct concept of a reality is more perfect than its confused concept.¹⁰⁸ Unless <perhaps a confused a confused concept is better known and prior to a distinct concept when> it is not known that the posterior is in the prior because it cannot be taken into a prior concept, nor, indeed, can the prior be taken into the concept of the reality which is known to be in it. And in this way [116H] the confused concept of day is better known to us than the distinct concept of the Sun.¹⁰⁹ And so when we cognize a distinct concept of the Sun through a confused concept of day, we already know it latently through what was manifest. And in the same way, when we knew the confused concept of the defined through a distinct concept of the definition, we knew it latently through the manifest. Whichever of these two possible meanings is understood of definitions, it readies us for investigation of it, and do we not say, even before something is to be investigated, that the concept of the parts of a definition which makes it known, and leads <*agunt*> to the concept of the defined through the definition, is better known than the definition, or than the defined, or than both? We say in the same way that in certitude the premisses are better known than the conclusion, and this is the way in which we say that the parts are better known than the whole, and particulars better known than universals. For it does not come out of this sort of better known that it is better known by nature, and

¹⁰⁸Why say that no confused concept is every better known than a distinct concept? Surely, one might object that one begins with a confused concept and arrives at a distinct concept later, so the confused concept comes earlier in the development of knowledge, but Averroës would respond that the process by which this happens is no sort of argument or demonstration, nor does it correspond to a relation of inclusion between the concepts involved. A distinct concept of the defined includes distinct concepts of the definition and its parts, but a confused concept of the defined does not. So the movement from the confused concept of the defined to any distinct concept at all is like the movement from 'premisses' to 'conclusion' in a non-deductive argument in which the conclusion is only probable. Presumably Averroës would say that frequent experience of the thing under the aegis of a confused concept of it sets up the situation in which we first recollect the distinct concept (i.e. receive the distinct concept from the Agent Intellect), but the distinct concept cannot be constructed or derived from confused concepts. Rather, when one comes to have a distinct concept it replaces the confused concept.

¹⁰⁹The point is perhaps clear from the example. We have a confused concept of day, not because the parts of the definition are wrong, but because there is a confused concept of Sun included in it. If a distinct concept of the Sun the were to be substituted, then we would have a distinct concept of day. So we have the first point, namely that the distinct concept of the posterior, the Sun, does not in fact occur in the confused concept of the prior, day. And we have the second point, for the confused concept of day does not occur in the distinct concept of Sun. So how is it that the confused concept of day is prior to the distinct concept of Sun? Presumably because it summarizes our experience of day through the senses, and prepares the Intellect to receive the distinct conception of the Sun from the Agent intellect. It is *causally* prior, but in no way logically so, or in any way analogous to the priority of the premisses to the conclusion in a demonstration.

what is latent is less known by nature, and it is the same with premisses and conclusion.¹¹⁰ Rather both are known by nature, [116K] that is, for example, concerning a whole and its parts, for the knowledge of the parts is of greater priority according to this species than the knowledge of the whole, and it happens in the same way with particulars and the universal. And so, the universal, which is shown through particulars in induction, is not unknown by nature, but it falls under particulars in cognition, and particulars are more manifest. But the difference between them does not lead to this, that the better known is known by nature and what is latent is unknown by nature. And it happens in just the same way in the relation between premisses and conclusion. [116L]

And it is well known that, if active knowledge of the concept of formation,¹¹¹ that is, knowledge what it is, is better known than the formation itself¹¹² in the way in which we have said, that the premisses are better known than the conclusion. For in formation a begging of the question can happen, which is similar to that which happens in making known in knowledge that it is.¹¹³ And this would be a sophistical begging of the question whether it is, and a begging of an incorrect principle about what it is. And we find that **Al Farabi** understood it thus in this place in the *Topics*, and therefore he transferred what he <Aristotle> says about this from the *Topics* to the *Sophistical Refutations*.

[116M] But if the concepts leading to what it is through its definition,¹¹⁴ and the concept which arises from these,¹¹⁵ are <both> of the genus 'making something known', and these two concepts each exceed the

¹¹⁰Though it only happens sometimes, for instance in a demonstration that-it-is-the-case, but not in a demonstration why it is the case. But considered as premisses (not as premisses of a demonstration without qualification), they only precede the conclusion causally, inasmuch as belief in the premisses leads to belief in the conclusion, and in a logical sense, inasmuch as there is a valid inference from premisses to conclusion. It is only considered as premisses of a demonstration without qualification that the premisses are by nature prior to the conclusion. Thus, premisses are, *qua* premisses, better known *to us* than the conclusion, not *by nature*, but because our knowledge of the one leads to our knowledge of the other.

¹¹¹The "concept of formation" seems to be a quidditative concept, one that includes an understanding what the thing conceived really is.

¹¹²I.e., knowledge that the thing is.

¹¹³The point seems to be that knowledge that it is the case, of a confused sort, leads to knowledge what it is (one must know it exists, and have experience of known examples of it, before one can seek and find its nature), but a distinct knowledge that it is arises only from a distinct knowledge what it is.

¹¹⁴I.e., confused concepts of the individuals as falling under the kind in question.

¹¹⁵I.e., the definition, a distinct concept of what it is.

other in more and less,¹¹⁶ we know that from this species there does not arise a true begging of the question. For in this case, since it uses the less <known> in what is more known,¹¹⁷ it is not said, because it does not define wholly,¹¹⁸ that in the assumption of that definition there is a true begging of the question. But it is said that it does not render it <the definition> better known than the defined <through which it becomes known>, and it does not render it better known by [117A] using what it is <*circa ipsum quid*> in a way similar to a begging of the question. And so <Aristotle> numbers this species of begging the question as the destruction of a definition, and in this way it does not fall within the *Sophistical Refutations*. And therefore we find Themistius introducing this locus in the summary of bad examples of definition in the *Topics*. But the Philosopher introduced it in the locus of destruction of a definition.¹¹⁹ From this work it is judged that **Al Farabi** thought it was incorrect <*falsigraphus*>, but also what the Philosopher says in this book, that what truly follows from it follows, and what it is.¹²⁰ But the premise is still known from what is said in the *Posterior Analytics*, that it is impossible that we proceed from a concept known by nature to a concept unknown by nature, unless there is conjoined to it a certain certification through a known concept. For if the defined is known to be in itself of a definition unknown by nature, it is at least necessary that it be shown through demonstration, that there are realities that lead to what it is, for if the realities are known by nature, and it is known that there are parts of their definitions, the definitions of such realities will be known *per se*. [117C] But if the defined is unknown in its being and in what it is according to definition at the same time, we know that realities leading to what it is according to definition can still <*sed*> furnish its what-it-is through definition, since they furnish its being. In this way, then, that-it-is arises from agent realities, along with their production of what-it-is, and this is the disposition of demonstration without qualification, which furnishes the being of the reality and its definition at the same time, as is shown in *Posterior Analytics* II. And therefore it is not possible, [117D] when the being of the defined is known *per se* and the definition unknown, that its definition should

¹¹⁶Though, of course, in different ways, one being better known to us, the other by nature.

¹¹⁷I.e. the less known occurs latently in the more known.

¹¹⁸That is, the concept of that which is to become known occurs in the better known only confusedly, and so is not wholly defined in that better known concept.

¹¹⁹Perhaps the reference is to *Topics* VI 1, 139b6–17, and the following chapter, where Aristotle speaks of types of incorrect definition. The first type involves obscure language, including speech that is ambiguous, metaphorical or otherwise non-literal.

¹²⁰The problem is not that the definition gets it wrong, or does not deal with what the thing is, but that it conceives it obscurely.

furnish whatever is known to us by nature, for if this were possible, it would also be possible of this what-it-is which is naturally known that it furnish *per se* what is naturally unknown. Now since this is how it is, there must be some reality other than this syllogism, from which is led forth that which is by nature unknown, and as I say in every case, definitions are known, when three knowables are known of what they signify, of which one is, that the defined is a being, the second, a definition is in the defined,¹²¹ and the third that that is the definition. When all three of these knowables are by nature unknown to us, then also is the definition by nature unknown, and in that case a syllogism is necessary to lead out the definition. And thus the loci in which it is shown that one reality is in another are loci which define. And so these three ways are in every case ways in which the definition is led forth, and in every subject matter, and they are ways which Aristotle hands down to us in the *Topics*, when the topics preceding it determined that there is no way to show it <i.e. to demonstrate it>. And Aristotle shows this in the *Posterior Analytics*, that a syllogism which furnishes the definition's being in its defined, and this which is composed from absolute loci is impossible, because it furnishes the definition *per se*. But it is possible of that syllogism which furnishes the being of the defined when its middle term is the definition. But this reality now lies hidden in a begging of the question. So, since this is how things are, when we grant that this species of begging the question falls in definitions, [117G] it is necessary that they be numbered among the loci of faulty definitions, not among the loci of destruction of definitions. Now if someone says, how can Aristotle introduce this, then, among the places of destruction of definition in the *Topics*, we reply that since it is a mark that just as it is necessary that that-it-is be from known realities, so also what-it-is, as Aristotle said in the *Topics*. And thus it agrees with this book in the loci of destruction of definition, which is how Aristotle does it. But when he speaks in the *Posterior Analytics*, then he numbers it among the locus of faulty definition, and therefore the mind of Themistius is disturbed, and he thought that it must be numbered in the *Topics* in the locus of faulty definitions, and the mind of **Al Farabi** was perplexed, and he thought that it is true to the destruction of definition.

Now that I have shown this, let us go back, and consider what we have seen concerning what is signified—and would that we might know the signification which would procure an understanding of what is said, namely, that the parts of a definition are better known than the defined, and that the concept of the parts of the confused definition must be better known than the confused concept of the defined, or better known than the distinct concept, since no absurdity arises if <either of> these two significations are posited. We hold

¹²¹Emend *definitio* to *definito*.

that it has already been shown that the reality defined together with its definitions does not evade what is left from these three realities, either that it is unknown of being and the definition, or that it is known of being, and unknown of the definition, or known of both being and definition. But a demonstration, which shows the being of unknown realities in accord with being and definition furnishes its definition, and its being. So it is known [117K] that the parts of the definition and the whole definition are not better known than the defined, from which both are known through another, that is, both the definition and the defined. Concerning those, then, which are known to be, and unknown according to definition, it is also known that the parts of their definition, and the whole definition are not better known than the defined, for that which is known *per se* is better known than that which is known through another. Now concerning realities which are known according to being and according to definition, it has been seen already that it is choosable that the parts of the definition and the whole definition are better known than the defined, so that it is adjoined to the definition with this, that it is more perfect than the defined, which is also better known than it. But if the parts of such definitions are not better known, but less known, they are bad definitions. But it is necessary that for the first species of definition we establish the condition that definitions and the parts of definitions are better known than the defined, that is, that middle terms of demonstration are taken which furnish the definition of the reality and its being. But in those in which the being of the definition is not shown through a sign, and the defined is known *per se*, either it is known through a sign, this condition is not found either in respect of necessity or in respect of that which is better. But in the third species of definition the being of this condition is that it is better, that, of definitions known *per se*. And thus, therefore, a necessary continuous condition is in every definition, that concept of parts of the definition drive the concept of the definition, as the certitude of the premisses drive the certitude of the conclusion. But the difference between the two is, that [118A] the active and passive concept of the definition differ as more and less, since each of them is known first. Now active and passive certitude of syllogisms differ, since one of these is known by nature, and the other is unknown by nature. Now since the definitions differ from syllogisms through this, that the being of the parts of the definition is better known than the defined, it is not necessary in definitions as it is necessary in syllogisms. There is no one to say from which the parts of the definition are better known than the defined, and the definition is better known than the defined, that the parts are better known than the defined, but it is of a more perfect concept, but of correlative realities, the parts of the definition and the defined are of one degree of knowledge, but it is understood for a part of the definition and from the definition in itself, that is, that by the concepts of the parts of a definition a confused is better known than the implicit concept of a definition, just as the confused concept of a part is

better known than the distinct concept of a son in father, although such definitions do not furnish a greater knowledge of the defined than the name furnishes. [118C] On the other hand, since the definition makes known the essence of a reality, as is it is being, the essences of these are relational. Now the relational is not one in every way, so that the relation of father to son, for example, is not called the relationship of son to father, although these have one subject, that is, by which they are things having that relationship. Now since this is so, relationship by which the father is conceived and which furnishes its essence, which is said in relation to son, is other than the relationship which the son furnishes. It is his essence and is what is said in [118D] relationship to the father, although father and son are not the same reality. Therefore it does not follow from the definitions of correlative realities the reception of the reality in its concept, as is though in its first encounter with the mind, for persuasive discourse which leads to this opinion when it is put together thus, in the concept of the father is taken son, and in the concept of son is taken father, and thus father is taken into its own concept. Now this is similar to what is said, if the Sun is taken into the concept of day, and day is taken into the concept of Sun, and so the Sun is taken into its own concept. Now the manner of error is that when we take Sun into the concept of day, and day into the concept of Sun, the two relations are one relation, that is, that relation of day to the Sun which is taken into the concept of Sun is the same relation of Sun to day when day is taken into its definition, just as a relation small of definition to the definition. But of two correlatives there are two different relations, for the relation of father to son is other than the relation of son to father, and in the same way the relation of two to one, which is the relation, double, is other than the relation of one to two, which is the relation, half. Now there is one difference between these two relations, for the relation of parts of the definition to the definition is a relation which the intellect makes, but the relation of one reality to another is outside the intellect. And just as the relation according to essence of two mutual relatives is as they are mutually relative. Now if we accept that either of these is taken into the definition of the other, on the one hand something does not happen beyond the badness of the definition, and thus what occurs where is begging of the question, as Avicenna thought, for [118G] begging of the question happens to the what-it-is, as we have shown. And so it is shown from this discussion how what has been said is possible, that parts of the definition are better known than the defined, and of what sort it is in the way of necessity, and what is in the way of the more excellent, and how what is said is possible, a begging of the question occurs in a definition, which is what we intended to show.

Now those who conveyed to us this way of interpreting this treatise, were our allies the studious Morsiani, for if this is something from which one merits well, they were the chief cause of it, from which we

share in it. For he who perceives some reality, and who moves forward to it, is said to share in it. And thus what was asked has been completed, to the praise of God who aided us, exalted be his name. Amen.

Question 8: Concerning definitions which are said to be from demonstration differing in position.

[118va] Aristotle thought that the demonstrations from which definitions are derived, the definitions he calls demonstrations differing in position, are demonstrations in which it happens that their middle terms are causes outside the reality, and in the reality, which are the agent, the end, matter and form.¹²²

On the other hand (*nam*), the causes from which the quiddities of realities, that is, definitions composed from formal causes, are constituted, [118vb] are the universal form, which is called the genus, and the proper form, which is called the difference.¹²³ And the opinion is that when middle terms are the quiddities themselves of realities, definitions are not shown from them except accidentally, if we grant that of one reality there is more than one quiddity, as it seems that <if a definition is shown from the quiddity> there is more than one definition of one reality. But if we do not grant this <that there is more than one quiddity of a reality>, it falls under the heading of showing a reality through itself. Now the appearance of the demonstration is this: A is in the definition of B, and B is in the definition of C, and thus it is thought that it concludes that A is the definition of C. As Aristotle says, this is either <good> logic, so it is not *per se*, for the predication of definitions of one another is accidental, or it begs the question, if we hold that there is only one definition of one reality.¹²⁴

But these common species <of demonstrations>, which do infer definitions through causes outside the causes from which definitions arise, that is, outside the quiddities themselves, are demonstration *per se*, and

¹²²So all four sorts of causes are involved in a demonstration which is a definition rearranged, and these causes stand both outside and within the essence of the subject. These are presumably causes of the inherence of the passion in the subject, and the formal cause of the subject, which would be the cause within the essence of the subject, is probably not the formal cause of this passion.

¹²³So the definitions of the quiddities of realities, a different sort of definition entirely from that which is a demonstration rearranged, are composed from the formal causes of the subject alone, not from the other three sorts of cause.

¹²⁴The reference is to *Posterior Analytics* II 4, where Aristotle argues that one cannot demonstrate its essence or quidditative definition of a thing. Say one makes the quidditative definition of the subject the middle term. Then, if a definition is shown of the subject, it is presumably another definition of the subject, and a quidditative one, else the demonstration begs the question. It is assumed here that the definition shown as the predicate of the conclusion is a quidditative definition of the subject. First, why is it quidditative? Probably because the definition of the subject is necessarily quidditative, for the being of the subject is an absolute being. The definition of a passion, which is an accident of the subject really distinct from it, but inhering in it, is a different case, since the being of such a passion is an inherence, and the cause of the inherence includes efficient causation from outside the subject, and the subject itself as material cause, for instance. Second, why is it a definition of the subject? It might be, and this would be interesting because it would ally Averroës with Albertus Magnus, that the only way the subject and its quiddity can cause a passion is as a material cause, and hence an incomplete cause. The rest of the cause (and the rest of the definition) lies outside the subject. So if a complete cause of the predicate of the conclusion's belonging to the subject is sought, it must be assumed that the predicate of the conclusion expresses only the subject and its quiddity, and nothing really distinct from the subject.

are, as Aristotle says, in themselves whole definitions differing in the position <of their parts>. ¹²⁵ Now the conclusions of these are definitions, ¹²⁶ but imperfect, and their middle terms, if they are signified of those through speech, are also imperfect definitions that are principles of demonstration, ¹²⁷ or if they are not signified of them through speech their middle terms are things arising from the causes of the definitions. ¹²⁸ Now a perfect definition is what this species of demonstrations contains as a whole, and the most perfect of these is what signifies the middle term through speech. ¹²⁹

And of this species of demonstrations, some are demonstrations without qualification, [119ra] some are demonstration why, and both simple, and composite from these. And this will either be known to be in some reality, and the definitions unknown, or unknown according to both realities at the same time, that is, according to being and definition, and this either without qualification or in respect of some reality. Now an example of something known to be in respect of some reality is an eclipse of the Moon, for an eclipse is known to be in the Moon, but unknown in its quiddity, since there could be a removal of its light due to many causes. A demonstration is composed thus: when there is an eclipse of the Moon the Earth is interposed between it and the Sun, but when the Earth is between it and the Sun, the light of the Sun ceases in the Moon, and thus it is concluded that an eclipse is the cessation of the light of the Sun in the Moon, which is the quiddity of an eclipse. But when the order of this whole demonstration is changed, it is hence a perfect definition of eclipse, for an eclipse is the cessation of light from the Sun in the Moon because of the interposition of the Earth between them. Now it is clear (*notum*) that the middle term is a cause outside the quiddity of eclipse, for it is its efficient

¹²⁵See *Posterior Analytics* II chs. 8-10, in particular, 8: 93b15-21, and 10: 93b38-a4.

¹²⁶*Posterior Analytics* II 10, 94a8-9, says that the conclusion of a demonstration is a definition.

¹²⁷*Posterior Analytics* II 10, 94a11-13 lists three sorts of definition, one of which is the demonstration rearranged, one the conclusion of the demonstration, and the third “an indemonstrable account of what something is,” which Averroes here takes to be the middle term. If it is the middle term, it is a definition of the passion, which turns out, therefore, to have two definitions, this one in terms of its efficient cause, and the second in terms of its material and formal causes, perhaps. That the middle term definition will be in terms of the efficient cause, may seem to be indicated in *Posterior Analytics* II 9, which states that if “something else” outside the essence is explanatory of the essence, that is, explains why it actually exists, then this, clearly an efficient cause of the passion in most cases (perhaps not so in mathematical demonstrations), makes it possible to “show what something is through a demonstration.” It is not clear in Aristotle’s text that II 9 is speaking of the middle term, rather than the whole demonstration rearranged, but it could be taken that way.

¹²⁸This seems to envision a demonstration in which the immediate and adequate cause of the passion’s inherence, which Averroes seems to take to be a kind of definition, is not the middle term, but rather some more remote cause is. [Or is it a sign of the cause, something it produces that leads us back to it.]

¹²⁹It would, of course, detract from the perfection of a demonstration and its corresponding definition if the middle term were not the immediate and adequate cause of the passion’s inherence in the subject.

cause, and it is clear that this definition is a part of the perfect definition of eclipse, since it <the eclipse> is taken to be a sign of it <of the interposition of the earth> in the discussion (*ex quo sumitur signum eius per orationem*), and it is clear that the second part of this definition is the conclusion of the demonstration, and the aggregate from both of these is the perfect definition. And this same example provides quiddity and being at the same time in the case of one who does not see the eclipse. In the same way, if we make the minor extreme the eclipse, and say now that the eclipse is the cessation of the light of the Sun [119rb] in the Moon, this is a demonstration offering the quiddity of the reality to us through its cause, that is, its definition.

And so these demonstrations are definitions potentially, and Aristotle intended them in this book <i.e. Book II>, and all the attributes and conditions established for demonstrations in *Posterior Analytics* I are also of this sort of demonstration, and this is truly what the name of demonstration applies to (*absolvitur*¹³⁰) without qualification, but the name of demonstration applies to other sorts of demonstration only equivocally.¹³¹ And therefore we think that demonstrations of which the middle terms are its quiddities, go beyond (*sunt praeter*) those quiddities,¹³² because these are not true demonstrations, since the greater part of the species of demonstrations contained in the book of **Al Farabi** does not enter into those <species of demonstrations> through proximate causes.¹³³ And in the same way there are demonstrations in which some parts of the quiddity are shown through something, as, for instance, demonstrations in which genera are shown demonstratively through differences. Now we show all of this in our *Commentary on the Book of Posterior Analytics of Aristotle*, and this is the opinion (*sermo*) shown in the last part of the *Posterior Analytics*, and it has been ascertained by me that it is the opinion of Aristotle about demonstrations that provide definitions. Now I have written elsewhere about these things, but this is what it is suitable to hold, because it is true, and this is what appears after intense scrutiny, and very careful consideration, and it is a truth which none of those expositors established, whose

¹³⁰? Perhaps *absolvitur* here means something related to pay off a debt, that is, it answers to the need perfectly, or some such thing. No doubt it is an over literal translation from the Arabic.

¹³¹This is the opinion of Albert the Great, that the highest sort of demonstration (*demonstratio potissima*) is of this sort.

¹³²The meaning seems to be that a demonstration with a quidditative definition of the subject as middle term goes beyond that quiddity in the predicate of its conclusion (or else, as argued above, it begs the question).

¹³³The point seems to be that if the middle term is a quidditative definition, then, assuming that the demonstration does not beg the question, the predicate of the conclusion (even if it is a second quidditative definition of the same subject) can have only an accidental connection with the middle term, and the middle term is certainly not its proximate cause.

[127va]¹³⁴ treatises have come to us, nor does it seem from the words of **Al Farabi** that it reached him from the words of Aristotle, although this was shown from his words in the *Posterior Analytics*, and in the *Sophistical Refutations*. But it is God who completes a vow, and strengthens wisdom, his name be exalted. Amen.

¹³⁴The pages are out of order here, and 127v continues the text of 119r.

Question 9: Whether there is definition of a particular, or of the universal alone.

[127va] Now there is a doubt about what the import is of the definition of particular, and about what has been said, namely that definitions are of intentions, not of particulars. Now there is a doubt here because if there is definition of particular, it would signify the common nature of all singulars. But this being so, singular would be something in which more than one agree. But it was said in its definition that it is that in which more than one do not agree. This is an impossible contradiction.

Again, since what singular signifies is one in species and many in number, thus singular would be divided into singulars—but this is absurd. And it is also asked about those into which it is divided, whether there is a definition for them or not, and it is plausible to answer as in the first case, and so realities proceed into infinity, or else there would be a definition of singular even though *<emend quia to quamvis>* there is not one of the particular.

Moreover, if we do not avoid assuming a definition of a singular, there will be no reality for us by which singular differs from universal, nor would it be predicated essentially. But if we did find a reality of which it is predicated essentially, since we have said that reality is such that two agree in it, it would follow that the definition signifies that of which it is not the definition.

So this is the difficulty that occurs in this question.

[127vb] And this doubt is not resolved by saying that ‘singular’ is an equivocal name, for if it were equivocal, there would be no definition of it, and no description, and nothing more universal, so that there would be no reality producing an understanding of its essence, and there would be nothing more universal made true of it except for accidents—for it is possible that some predicate be found in an equivocal name which can be made true of it accidentally, but no predicate can be found made true of it *per se*.

Now we hold by way of response that in a way a common reality is attributed to singulars, and this is a privation of the commonalty which is in a universal. Now this attribute is a privative reality, and accordingly it is made true that it has a definition, and is not a universal predicated of several realities. And considering it as there is a common attribute of it, it is in the understanding that it is a privation of the commonalty which is in a universal, and thus there is a definition of it, but considered as it is not a common nature outside the soul, it is a singular, and not a universal. Now the error here lies in asserting that everything of which there is a definition is universal, and the truth is that everything of which there is a definition is something common. Now a universal is common, but a privation of the universal can also be common, for a privation of the universal is

in many realities, just as the universal itself is. So the mode of the error about this is the similitude between the common and a privation of universality, that is, since both are in more than one reality. So it has been shown from this discussion that a singular insofar as it is singular is not common to another singular, and most of all in those things that are outside the soul, for this would be a universal. But singulars agree with one another in the privation of universality. And hence it has been ascertained concerning these that there are definitions of them.

Letter concerning the primitivity of the predicates in demonstrations.

by Averroës

translated into Latin by Abramo de Balmes¹³⁵

translated from Latin to English by John Longeway and James South

Certainly what you remember [*illud de quo meministis*] about the characteristics [*conditionibus*] of demonstration posited by the Philosopher, that its predicates are primitive, and what he mentioned elsewhere, that the predicate most of the time is more universal than the subject, is reasonable [*convenit*]. This is because it is understood concerning the characteristics of its predicates, that they are proper in the predicates of their premisses, and in the predicates of demonstrative questions,¹³⁶ and he joins to the characteristics of the predicates of demonstrative premisses, including that they are proper, that they are also immediate. Indeed, the predicates of demonstrative questions are without doubt primitive when the predicates shown through those premisses are proper to their subjects, and both the question and the premisses are called primitive. The reason for this is that the intention of demonstration is formation¹³⁷ through definition, but definitions are proper to the defined.

Now if the predicate of a question were more universal than the subject, the predicate would not be part of a definition, for the predicate would not evade being <commensurately> universal unless it were an accident or the genus.¹³⁸ Now if it were an accident, then the middle term would be the cause for its being in the subject, not the cause of its being without qualification. Now without doubt the middle term of a

¹³⁵Fol. 120ra-va.

¹³⁶I.e. in the conclusion, which is the demonstrative question—Are human beings capable of laughter? Yes, human beings are capable of laughter, for this is the conclusion of a demonstration.

¹³⁷I.e., the in-formation of the intellect, that is, it brings about knowledge. The formation of knowledge through definition, as Averroës notes further down, is a matter of the demonstration itself being a definition with its parts rearranged. Now this definition is proper to what it defines (neither too broad nor too narrow), and so it seems that the demonstration is proper to its subject. Let the demonstration be: Every B is C, Every A is B, therefore Every A is C. Then the definition which is the demonstration rearranged is “C because of being B.” Now it seems that this could be proper to A, while either or both of C and B are wider than A, and so Averroës’s argument is questionable at this point.

¹³⁸This argument attempts to avoid the objection raised in the previous note.

demonstration is the cause of the predicate of the question being without qualification as well as the cause of its being in the subject. Since this is the essential cause, when it is found, the predicate is also found, and when it is missing, the predicate is as well. Now this happens because this predicate is proper to its subject, and posterior to it, and therefore it does not arise in absolute demonstrations, but in accidental demonstrations, that is, in definitional demonstrations, and this predicate is not wholly in the essence [alone].

Therefore substance is not shown through demonstration.¹³⁹ But **Al Farabi** thought that it is shown through demonstration, when he took it that genera are shown in a demonstration through their differences,¹⁴⁰ and this was because he thought that it suffices in demonstrations for the middle term to be the cause of both extremes, or of either of them, as he said in his book. But that is not how things are, since the cause which determines [*decernit*] the being of the reality itself, agrees with that which determines its being without qualification, and, upon its removal, its removal without qualification. For if the reality arises from what is in the subject, it determines both things simultaneously. But if it were a predicate from things which are not in the subject, it would be prior to the subject, since one who establishes the condition that the cause be prior to the major term in being, establishes precisely that it be the cause of its being without qualification, and of its belonging to its subject, and its removal determines the removal of this without qualification, and its removal from its subject.

Now the differences which are the middle terms for showing the genus of the species are not like this, for they are causes *per se*, so that when they are removed, what they cause is removed without qualification. But when a difference is removed, the genus is not removed without qualification. Rather, if it is removed, the genus is removed from that from which one of its differences is removed.¹⁴¹ And in the same way, when it is discovered, the genus is not discovered without qualification, but it is found in what has the difference. Now this is a reality which is not found in its causes *per se*, because when *per se* causes are removed, what they cause is removed without qualification. And so Aristotle teaches in the beginning of the *Posterior Analytics* canons by

¹³⁹The predicate be something standing outside the essence of the subject, the substance, but produced by it without outside assistance. This is the position on the highest sort of demonstration taken by Aquinas, Scotus and others after them, and it seems that it must come from Averroës. Albert the Great and Giles of Rome argued against this view because they could not envision how an essence could, of itself, produce such an accident in itself.

¹⁴⁰For example, one might argue, “every rational thing is an animal, every human being is a rational thing, therefore every human being is an animal.” Rational is the formal cause of human being.

¹⁴¹So, in the example of the last note, when rational is removed, animal is removed. That means that the difference here, rational, stands in for “rational animal,” and it is *that* animal, rational animal, which is removed when rational is.

which these predicates are regulated, and warns us away from what fails in respect of them.

But the words of the Philosopher asserting that most of the time the predicate is more universal than its subject is this same business. And so true demonstrations are rarer than common dialectical demonstrations, which are not potential definitions. Now we have already set forth this question in the book on the *Posterior Analytics* and in the questions on logic. But you asked about the words of the Philosopher when he says that our *dictum*, “the log is white,” is not an enunciation, since elsewhere in his books he has already given examples of this. The last time we used it, we did not intend by ‘predicate’ an accident predicated of the subject. The reason for this is that when one says ‘the white’ two things may be understood. In one way the accident itself can be understood by ‘the white,’ and this is the color white. But when we understand by ‘the white’ the thing receiving the whiteness, the proposition is more universal than its predicate,¹⁴² and it is not an enunciation, and it is, in its own way, the same sort of statement that posited the difference predicated of its genus.¹⁴³ And therefore it is reported of such that they are predicates outside of natural custom, but through what he says, our last use of ‘predicate’ did not intend an accident predicated of a subject, but it signified that through a denominative name.¹⁴⁴ In the same way substance, which is predicated of a subject, is signified through a denominative name, as it is in the second premise.¹⁴⁵ But so it would have been if he had said the planets are closer to us than the fixed stars.¹⁴⁶ But all this is already familiar.

¹⁴²That is, the sentence, “the log is white,” assuming it true, does not make its subject something classified under, and so less universal than, “the white itself.” “Ceiling white is a white” might do that, but the log is not a color. Moreover, “log” covers things that are not white (some logs are not white). So the sentence is ‘more universal’ than its predicate, that is, its subject extends beyond its predicate.

¹⁴³Just as some log may fail to be a white thing, so, in “the animal is aquatic,” an animal may not be aquatic, but terrestrial. What is meant if it is true is that “this thing falling under animal is aquatic,” which is like “this thing falling under log is white.”

¹⁴⁴That is, it named something which happened to be characterized by the predicate, and the name by which it did this signified the predicate (contained the predicate in its sense but not in its reference), and, indeed, referred to the thing that had the predicate through this signification (we looked for the white log to see which one was being referred to).

¹⁴⁵In the example we have been using, the second premise when the syllogism is laid out canonically is “Every human being is rational.” This does not mean that human beings are rationality itself or some form of rationality itself, but that they are substances which are rational. “Rational” signifies the essence of human being, but does not refer to it. It refers to what falls under it, those individuals, so that the sentence means “every human being is something that falls under rational.” It is about individual human beings, not about essences, even if it does signify the essence, or some part of the essence, of human beings.

¹⁴⁶The reference seems to be to a stock demonstration not of the highest sort, since it is not a demonstration why, but only that something is the case. The demonstration runs: “What does not twinkle is near, the planets do not twinkle, therefore the planets are near.” The argument runs from effect to cause, rather than from cause to effect. One are proper to their subjects, could change the terms around, so that “near” is the middle term and “does not twinkle” is proved of planet, to get a proper demonstration why it is so. But all this is misleading. Here it seems the only point Averroës wants to make is that being near is not a sort of planet, but

End of the letter of Averroës

rather an accident of planets, so that the sentence has to mean “every planet is something that is near.”

Questions by Diverse Arabs

Abu al Qasim Benadaris

Question 1: Concerning how genus and species become known.

The intention of this discussion is to explore the remark of **al Farabi** that genus and difference agree inasmuch as the two of them <together?> make known the essence and substance of a species. If a genus in which other <species> agree does not make known the substance of a <given> species, then the difference by which it is distinguished from these others makes the substance of the species known, or <at least> it makes its substance known inasmuch as it distinguishes it from these <others>. Now our explanation here will follow our custom in the other matters we have explored, for there is speculation concerning what is necessary,¹⁴⁷ and speculation for the sake of what is better.¹⁴⁸ Now speculation about what is necessary occurs in this treatise, aimed at that true understanding beyond which nothing else that is imagined can be established as true.¹⁴⁹ And so we say that simple predicates that are predicated of their subjects, and simple realities that correspond to the answer what-it-is, or of-what-sort-it-is, fall into two true, well known divisions in the production of knowledge. The first division is into what makes known what is of the essence, and what makes known what is outside the essence. The second division arises because these are separated into those that make known the universal reality, and those that make known the proper reality. Now here is a third division, which determines the natures of those realities, as they will determine those two divisions, and **al Farabi** awakened us to this third division,¹⁵⁰ which is that these give rise to those which make known the whole cognizable, and those which make known some part of it.¹⁵¹

¹⁴⁷That is, speculative or theoretical science.

¹⁴⁸That is, the practical arts.

¹⁴⁹This seems to be a reference to demonstrative conclusions, which are known when it is established that it cannot be otherwise.

¹⁵⁰The exposition of al Farabi's point, which the author considers most important, is the aim of this little treatise.

¹⁵¹So the division is into eight cases: (1) What makes known the whole essence of the universal (2) What makes known a part of the essence of the universal, (3) What makes known the whole essence of the proper reality, (4) What makes known a part of the proper reality, (5) What makes known the whole of what is outside the essence of the universal, (6) What makes known a part

Now all these divisions are of simple realities, in accord with two sorts of acquaintance, acquaintance with its truth, that is, whether-it-is, and with its formation, that is, what-it-is. Hence the reality is such that what is said of the genus must <also be said> of the difference in logical discussion.¹⁵² What makes known what-it-is of both of these contains an awareness that it is or what it is, and also whether the awareness in each case is of the essence, or of what is outside the essence, or of the whole species, or of its part. Therefore **al Farabi** said before in the preceding discussion, that the making known of the genus and difference is of the essence, not of what is outside the essence, and this, when he said that the genus and difference agree, because each of these makes known the essence of the species.¹⁵³ So this was made known by his discussion, in what reality they agree in making known, and what that knowledge is, in which they agree, namely, the making known¹⁵⁴ of the substance.

But afterwards he mentioned the distinction of the substance the genus makes known from the substance the difference makes known. And the substance that the genus makes known is the whole species that is made known, or what contains both that and also other species <under the genus>. But the substance that the difference contains is the whole species, or what is proper to it in distinction from the other <species under the genus>. Now the exposition of the two realities making the genus of the species known must be done in two different ways, and the exposition of the two realities that make the difference of the species known is also done necessarily in two different ways. Thus we will now remark concerning both of these <ways> about the two different realities, due to the variety of ways in which it is made known. And this is because it is known about the intention of the genus that it agrees with the difference in the being of both in the species, and because there is a difference according to being between them in the species. Therefore the species, which is a composite from these two, is one in actuality, and not two. Thus because of the union of being of the genus with the difference according to being in the species, so that the being of each of these is inseparable from the other, and does not differ from it in being, thus necessarily the genus, when it is predicated of this species, or

of what is outside the essence of the universal, (7) What makes known the whole of what is outside the essence of the proper reality, (8) What makes known a part of what is outside the essence of the proper reality.

¹⁵²This, of course, might look absurd if there are several species falling under the genus. The author is aware of this, and intends to defend it nonetheless.

¹⁵³Again, note that knowledge of the genus makes known the species.

¹⁵⁴The use through out of *notificatio*, which I render “making known,” for the sort of knowledge involved here perhaps reflects that this making known occurs through a demonstration. *Notificatio* does not cover knowledge of first principles.

when one answers the question what-it-is about this species through it, makes known the whole species. But it does not make it known through what is proper to it, because the part making known is common to it and the other species differing from it. Thus it makes known the whole species by reason of this agreement with the difference in the species according to being, but not according to its part,¹⁵⁵ and makes known the totality inasmuch as it contains this species as well as other species, because the genus is common to the species and the other species distinct from it. This, then, is the reason the genus makes known the whole species in accord with its common substance, just as it makes known part of its substance. And this is because it contains the species, and others apart from it, which it is the intention of a genus to be, and its essence in part, by which both these <genus and difference> are distinct in essence, notwithstanding that both are at the same time in the same species. And therefore I intend that because of the genus being the essence of the species its intention is other than the difference,¹⁵⁶ though they agree in the being of this species. Therefore necessarily the genus, in this regard, made known [121G] concerning the species a part of the essence of the species, and this is what he intended when he said: “unless the genus, in which other species agree, makes known the essence of the species.” And he intended the genus’s making known concerning the whole species of that species when he said: “or its essence, insofar as it agrees with this in that which is other than it.”¹⁵⁷

And the making known by the difference concerning this species in accord with its totality, or its essence, is explained in the same way, because it makes proper, that is, because the difference is the essence of the species, and is also part of the essence of the species. So the species is from two essences, of which one is the difference, which makes known a part of the species. But also, in the two making knowns, of the whole and of the part, the difference is the proper essence of the species—its making known of the whole species is in accord with that which it makes proper to the species,¹⁵⁸ and its making known properly is of a part of the

¹⁵⁵That is, the genus is, *in this species*, really identical to the difference, for there is only *one* actual essence for the species. So, considered as it is predicated of the species as belonging to its essence (not merely as being predicable of it any old way, possibly accidentally), the genus is made out to be *identical* to its species. The same is true of the difference. So, *in the species*, these two are identical to one another, and to the species itself.

¹⁵⁶One might say that there is a rational distinction here, since different *rationes* or intentions belong to genus and difference, but no real distinction.

¹⁵⁷The quotation is, it seems, from al Farabi.

¹⁵⁸That is, it makes the whole species known by making what belongs to the species as a whole known.

species.¹⁵⁹

Now from the two making-knowns by a genus two demonstrations are constructed, and the same for difference.

(1) A demonstration of the making known by a genus of the whole species, insofar as it contains the species, and others from that, is constructed thus: The genus is the common essence of the species, which is in its totality, but the common substance exists in the species in its totality, and it makes known the species insofar as it contains the species, and others from it; hence it is inferred that the genus in which the species is contained makes known the totality of the species, and the others from this.

(2) A demonstration of the making known of its species as part of its common essence, is put together thus: The genus is a part of the common essence of the species, but what is of such denomination makes known the common essence of the species: and hence it is inferred that the genus makes known the common essence of the species.¹⁶⁰ [121K]

(3) A demonstration of the making known of the whole species in accord with what is proper to it is put together thus: The difference is the proper essence of the species, which is in it the whole, but what is the proper essence of a species existing in the whole makes known the whole species through what is proper to the species.

(4) The demonstration of the difference making known the species, that is, the <part of the> essence proper to the species, is constructed thus: The difference is part of the essence proper to the species, and what is of such a disposition makes known the <part of the> essence proper to the species; and so the difference makes known the <part of the> essence proper to the species.

So as for the genus and difference being in the whole species, there is a making known of each of these of the whole species, just as, so far as being is concerned, there is a making known of each of these of part of the species, that is, the part alone. But the genus is the common part, and thus when it makes known the whole species it makes known its common part. But the difference is the proper part, and thus, when it makes known the whole species, it makes it known according to its proper part. And thus there is a complete and perfect consideration, necessary, perfect and true, of this sort of question.

¹⁵⁹That is, it makes a part of the species known, the difference that separates it from other species under the genus, not as regards what is proper to the whole species, but only what belongs to a part of it, or its essence.

¹⁶⁰That is, that part of the essence which is common to other species under the genus.

But it would be useful to confirm the statements by considering the discussion of **al Farabi** about what is asked. Now there are three statements that are to be confirmed here.

(1) The first is the statement of **Abu Arahman ben Thahar**.¹⁶¹ Now what comes from his words is what he understood **al Farabi** to have said, and that is what **al Farabi** had understood from what is said in the *Posterior Analytics*. Now the genus is what signifies [122A] that which runs the course of the conclusion of the demonstration, <and> is more worthy, greater, and stronger. But the difference is what signifies that which runs the course of the principle of demonstration, and is more worthy, more capable and stronger. And he understood from these two places one *intellectum*, and made the one the same as the other. Now what **al Farabi** imagined in the book of the *Posterior Analytics* about this place is that two parts of the definition, the genus and the difference, are placed in the demonstration when the order of the definition is changed into the order of demonstration, since, as is explained in the *Posterior Analytics*, the definition is the demonstration differing in position, and concerning each, he attends to both genus and difference, which is a part of demonstration when the parts of the definition are changed in place to the position in the demonstration, because the genus is the genus and because the difference the difference, and because the definition of the genus is taken in place of the genus, and the definition of the difference is taken in the place of the difference. And he compared these two significations of the genus and the difference, and explained that genus is common, and difference is proper, and that, when the order of the definition is changed into demonstration, it makes the genus what is concluded in the demonstration, and on this account it is the conclusion of the demonstration, and the difference is the middle of the demonstration. And therefore it becomes the principle of the demonstration, since the principle of a demonstration is its middle term.¹⁶² And it is agreed that whatever the order of the two is in demonstration, that is their order, and so the difference is proper, and the genus is common. Now the common is inferred from the proper, and thus it must be that the genus is the conclusion of the demonstration by its commonness, and the difference is the principle by its properness. Now these two orders that belong to genus and difference in demonstration is in them from this, that both are taken into demonstration *per se*. Indeed, its definition was taken in the place of both, nor do both run the course of one

¹⁶¹The name is given in various ways, later in the text, Abuhabadhalrhaman. Perhaps Abd-al-rahman al Sufi (903-986), a noted Iranian astronomer, is meant, or, given the last few lines of the letter, his son? Al Farabi lived from about 870 to about 950, so the dates are plausible if he had read al Farabi.

¹⁶²Consider, then, the definition of thunder, a noise made by the extinction of fire in a cloud. The demonstration corresponding to it will be “fire is extinguished in a cloud, the extinction of fire is the making of a noise, therefore a noise is made in a cloud.” Here the extinction of fire is the middle term, and is the difference, and noise in a cloud is the genus, and the conclusion.

part of the demonstration. Now the definition of the genus signifies the whole aggregate, which is the principle of the demonstration, and of its conclusion, and thus also the definition of the difference, from which both definitions are divided into genus and difference. And thus the order of the genus in demonstration is the status which it has in itself, which is that it be the conclusion of the demonstration, and the order of the difference is the status which it has in itself,¹⁶³ which is that it be the principle of the demonstration.

Now an example of this order of genus and difference in a demonstration considered in itself, now according to the assumption of its definitions, once the arrangement of a definition has been changed into the arrangement of a demonstration, is, for instance, the way in which the definition of human being, that is, “animal that is rational,”¹⁶⁴ is changed: It is said that “a human being is rational, and the rational is an animal,” and so rational is established in the definition first [[in the status of principle]], and animal last [[in the status of conclusion]]. Now when the definition of animal is taken in place of animal, the highest definition of the genus signifies the aggregate in the demonstration, which is its principle, and its conclusion—because the definition of animal is “body capable of nutrition and sensation,” “capable of nutrition and sensation” is placed first [[in the status of principle]] in a demonstration, and body last [[in the status of [122G] conclusion]] in the demonstration, and the demonstration is connected up as a result of the change of the arrangement in the definition thus, “a human being is capable of nutrition and sensation, but what is capable of nutrition and sensation is a body, therefore a human being is a body.”¹⁶⁵ Now we know that the status of a reality in a per se demonstration is more true and more worthy because it is attributed in it, and it is stronger in belief, and of greater use. Now if it is truer because it is in accord with the essence of the reality, not according to what follows from it, this is in accord with <??> its definition. And so there is a difference between making known in these two places, which has now been explained, and in this way the order of the order of demonstration is set <terminetur>, and the order of the order of making known of the separate realities.

(2a) Now what deceives through an equivocal name occurs in two places, of which one is when it indicates the sum of an aggregate, since through the sum of an aggregate **Hadadh al Rahman** understood the species itself, the sum of the aggregate of the genus and difference. What is intended, however, in the *Posterior*

¹⁶³Perhaps each has this status (*gradus*) in itself because by nature the more general is concluded from the more specific in deduction, so that from its being a human being one may conclude that it is an animal.

¹⁶⁴This ordering is germane to the sense, and the Latin ordering is “*animal rationale*,” and so I preserve that order in English as best I can.

¹⁶⁵So the demonstration constructed moves from a species to its genus, and then to the genus of that genus.

Analytics is the aggregate from this demonstration and its conclusion, but another place suggests this answer, and **Abu Hadadh al Rahman** understood it to concern the species. Now what is understood about that in the *Posterior Analytics* is that its answer <the answer to what it is> concerns the definition itself, because its arrangement is changed into the arrangement of a demonstration. I have confirmed the intention of this noble judge, in which God himself is pleased, from two things he said. First, about what is said by which it is determined ? in various [[Primo circa sermonem quo in diversum dem[onstr]avit est]], because Abu Nasr took note of true making known by both genus and difference and of <such making known> by transference <i.e. metaphorically intended>. [122K] The true making known of both of these is of some part, but making known metaphorically of both of these is according to the whole multitude of people. Now the making known in truth to a part makes the whole known in truth makes known the whole metaphorically, the place of transference is not in demonstrative teaching.

(3a) Now the second understanding, to which it is transferred, is that that which **al Farabi** indicates concerning both makings known of both genus and difference, is constructed on the opinions of the ancients, about the being of genus and difference in the species. And thus, he who believes the truth about the beings of both of these in it, which is that they are united in it at one and the same time, not being in it only through the definition of this of that, posits the making known of both of these following this being, and thus being is in the whole species, just as the making known is of the whole. But one who believes that both these, that is, genus and difference, are in the species in the manner of inherence, not according to union, is like a seed in the generation of a fruit, and posits a making known in respect of the part, not the whole.

Now this second opinion is false, and of no utility, that making known confers an order following the false opinion about this being, and God was pleased with me inasmuch as he first alerted me to these two places which **Abu Habadh al Rhaman** numbered, which are different.

(3) Now the fourth thing said is that which is said by one who confirmed the new agent according to cognition and functioning, which is, because **al Farabi** made known about of these, genus and difference, two things, of which is [123A] believing the genus to be several species, and that is the making known of both of these in the species as a part, of the genus indeed as a common part, and of the difference as a proper part. And believing the genus to be of only one species, from which that species is known. Now that this manner of speech is to be derided is clear to one who has looked into the matter, and it is what is said according to someone who deviates from the truth, **Abu Habadh al Rhaman**, and he believed the union of the two distinct places, because his father also believed it. And thus the discussion of the manner of speculation of this

question is complete, and this in the city of Dhania in the time of speculation, which is between men according to legal decisions, and this in the night entering the fourth day of the month Sahaba, in the year 509 [1130 CE].

And it is God who directs one to what is right.

Question 2: Concerning nominal definition.

The most excellent judge, **Abuakasin benadaris** said:

It is in the keeping of God.

Aristotle defined name in *De Interpretatione*—it is a word (*dictum*) significant by convention, abstracted from time, none of whose parts signify by themselves.¹⁶⁶ And **al Farabi** said, all the expositors agree that adding “by imposition”¹⁶⁷ to “word” is superfluous, since a word does not signify except by imposition, and therefore they said that by “word” (*dictum*) here he understood “utterance” (*vox*).¹⁶⁸ But this has no meaning, for it is absurd to provide a remote genus for the defined, but omit [123D] the proximate genus,¹⁶⁹ even if we grant this, that utterance is a <remote> genus of word. But **al Farabi** said that he gave this genus, because often those sounds are also called words which an animal produces (*canit*), because they approximate to the expression of men’s words. And this is also futile because it is not suitable that a genus that is said equivocally should occur in definitions, as if someone were to define human being as an animal, and take this name to signify both an animal with senses and a picture of an animal. But although their statement holds, we hold that an addition saying “by imposition” in this definition is necessary, and it is through this that the definition is completed. The words of men are divided into those that signify and those that do not, and therefore because it conveyed the highest genus, which is word in its proper sense, it was given through signification <and not through imposition>; and he said that signification belongs to word in the more general sense, because there is a certain signification of utterances and a signification belonging to words, and the signification of the utterance, which brutes use, is separate from the signification of words, because the latter is said by imposition.

¹⁶⁶*On Interpretation* 2, 16a19-20.

¹⁶⁷Here, as frequently elsewhere in the treatise, *in positione* is written in place of *impositione*.

¹⁶⁸So the definition of “expression” is “an utterance signifying by imposition.”

¹⁶⁹The author will argue that utterance is a remote genus, and word the proximate genus, and deny that it is part of the definition of word that it signify by imposition.

For the signification of words is by imposition, and the signification of utterances is natural. Therefore he affixed this addition beyond signification, and said “by imposition” to distinguish between these two significations.

This species of definition belongs to the species of complete definitions. For the first difference happens to be what divides the first genus in the definition, because it divides the first genus and the genus which is above it, and once the difference of the first genus is given, it is then necessary that the difference come next that is other than the difference by which the genus is distinguished from the first genus. [123G] An example: someone has defined human by saying it is an animal that moves bipedally—“that moves” divides animal into two parts, and its genus, body, is also divided.¹⁷⁰ Now when “bipedally” is added in this definition, animals that move are distinguished by this addition from things that move and are not animals, and the species of animal is also distinguished, which it was intended to define in distinction from the other species in its <proximate> genus.

It happens in the same way in this definition, because, inasmuch as it gives “significant word,” it distinguishes through “word” what is the genus of the name through the genus under which the name enters, which is “significant.” And since “word” is divided into two parts by “significant,” the genus of “word” is also divided by it, that is, “utterance,” since one utterance is significant, and another is not. And then he took the difference by which the signification of “utterance” is distinguished from the signification of “word,” and called it “by imposition.” And from these things, which are clear to you, it happens that saying “word” does not signify imposition, for among the words by which a man speaks are those which are not imposed which are words set aside and not established in a language, nor does significant speaking signify imposition. And thus imposition is necessarily placed in the definition. And thus the judgment of the Expositors, who said that imposition is signified by “word,” is an error. For words set aside are not imposed, and nonetheless they are without a doubt words. For example, there is the word which is composed from *zada*, because you will find among these some which are imposed, and some that are not imposed, and it is the same in the rest of latent compositions. Therefore it is impossible without the addition of a signification beyond to say word, because one sort of word is significant, and one is not. And it is impossible without the addition of “through imposition” beyond “signifying,” because one sort of signifying is by nature, and another by imposition. Nor does anyone say, what is not impossible, that the name “word” does not signify imposition, and the name “signification” does not

¹⁷⁰That is, there are bodies that move but are not animals, falling rocks, for instance.

signify imposition. And when “word” is connected to “signification” and the clause is said with it, it signifies imposition, because if the last differences is granted in this definition, it is conveyed implicitly, not explicitly. Now the last differences of definitions agree with signify by an explicit simple signification, not with a signification through insinuation. For “word” is word, and utterance and since it is utterance its signification is by nature, and since it is a word, it has signification through imposition. Therefore it is impossible without explanation through “word” that it should signify through a figure, and by indirection, imposition. And if it should be said, it is enough in a nominal definition, that it be said that it is a significant word, from which this conditional clause is equal to “a word through imposition,” it is better if the figure of this conditional clause is explained in the definition. And so now it is shown to you that one who has defined name through this definition, and leaves out “word from imposition,” has erred in accuracy of expression.

It is God who directs to what is right those who will it. And it is the custom of men with this man <to will what is right> in all things in which they have argued against him. I speak of those men who are true philosophers.

Question of al Hagiag bin Thalmus, concerning the mixture of necessary propositions and propositions concerning inherence.

Aristotle said at the end of the exposition of the combination of propositions concerning inherence and necessary propositions, if a negative is necessary, and particular, in this way the conclusion is not necessary. **Now this is explained through the premised definitions.**¹⁷¹ And in the same way, when it was said at the end of the <explanation of the> mixture of propositions of inherence and necessary propositions in the third figure, if an affirmative proposition is necessary, whether it is universal or particular, or it was a negative particular necessary proposition, the conclusion is not necessary.¹⁷² When he said the conclusion is not necessary, he meant, <not> in the way in which it leads back to the first figure when its premisses concern inherence

¹⁷¹*Prior Analytics* I 11, 31b38. “. . . but when the affirmative is put as necessary (whether it is universal or particular), or when the privative is particular, the conclusion will not be necessary. The proofs of the rest are the same as those we stated concerning the previous cases. . .”

¹⁷²*Prior Analytics* I 11, 31b37-38.

simply,¹⁷³ and he says here that the conclusion is not necessary, instead of what he says when both <premisses> are necessary without qualification, and that the conclusion of a necessary syllogism is not set out in the way in which conclusions of simple syllogisms are set out. **Now there is no setting out of this, its reduction to the first figure in the aforesaid manner, concerning definitions, in such a way that this opinion might appear to be about both of these.** Then below he is silent¹⁷⁴ about the supposition that now the premisses are about the necessary without qualification. Therefore he abbreviated all this, as is his custom, and lying concealed in abbreviation in “places in which” he means this, “in one of them or in both,” because he already showed his meaning, “in both these places.” And thus now I publish this exposition of the words of Aristotle, pure from any fault. This or something like it is attributed to him, and removes its ambiguity. Now God always directs us to what is most suitable. Amen.

**Question I of abu Halkasim Mahmath ben Kasam,
Concerning the manner of discerning demonstrations *propter quid*
and demonstrations *quia***

Abu Halkasim Mahmath ben Kasam, the philosophical composer of speeches, said that:

Skilled investigators (*speculatores*) of the science of logic nowadays are perplexed about the cognition of demonstrations *propter quid* and *quia*, and the order had not become clear to them by which demonstrations *propter quid* are discerned from demonstrations *quia*, even given what **al Farabi** said about this, for which he is to be commended. Now the cause of this perplexity is an incorrect and corrupt passage in the edition of *Demonstrations*, which is not what **al Farabi** wrote. Because they did not think it to be corrupted, but [124v] believed it, they asserted its truth, and ordered demonstrations accordingly. We have found them [these textual corruptions], because they omit words freely, and pass on conditions in which they withdraw too much from the true order, which **al Farabi** noted. Nor does it support the business (*negotium*) of these [investigators], to the extent that they have been deceived about the matter itself, and in some of these [investigators] there is found what is not found in others. Already there has been some talk about this between myself and some of them even a second time. In that discussion, the greater part of my opinion about this was that in the book

¹⁷³*Prior Analytics* I 8, 30a4-10.

¹⁷⁴Emending *ticit* to *tacuit*.

there are passages that are incorrect and corrupt. I did not much speculate earlier about this, and I was persuaded that enough was understood through the words of **al Farabi**, when in these books he speaks about these matters, and thence we were separated from holding to what he intended. Now since things are in this important matter as he thinks, a strong mind should not hold back from taking up the completion of speculation about this matter as long as he touched on it. I posed a question asked about this in accord with his intention, as he makes a beginning concerning what no one else had any opinion about before.

Thus the Creator has directed me in his mercy to the truth. What is set forth here agrees with what **al Farabi** set forth, and we will speculate on the basis of what he said in his edition.

Now we know two opinions bearing on this question, established in his writings, that can direct what will follow. Thus I hold that every speculative question is known through syllogism, as was shown in the book of the *Posterior Analytics*. Every syllogism is composed from the subject sought, and its predicate, and a third reality, which is called the middle term, as was shown in the book of the *Prior Analytics*. Now syllogism does not enable us to acquire knowledge of something sought, by the two extremes sought that are in it. Indeed, this would be absurd, for both of these is sought itself, and thus if knowledge were acquired through these two, the acquisition of the knowledge sought would be absurd. So all that is left is that knowledge of what is sought is gained through a third thing [that is not sought], which is called the middle term. But unless the middle term is connected with both of the two extremes sought, knowledge cannot be acquired at all. For between two things where there is no connection, there is no causation (*impressio*) and nothing follows. Now this is what heat is like, as is related in the book *On Generation*.¹⁷⁵ And so it is necessary that between the middle term and the other terms sought there be certain connections spoken of in the *Posterior Analytics*, so that there emerges from the middle term between these knowledge of what is sought. And when there is a connection of the middle term to the two extreme terms sought, knowledge occurs in actuality. For what is sought is recognized potentially, and the middle term reduces this to what is recognized in actuality. And so it happens necessarily that knowledge, which the middle term brings to what is sought, is in the middle term actually. For what is potentially is not brought into actuality unless something in its species is actually. Heat is this way, which is in the iron potentially, and heat is brought forth in it actually from what is actually of heat's species. Now this is already shown in the science of physics by demonstration, and elsewhere, and so we leave it alone. Moreover, when the unknown is sought in actuality, it happens that [125r] the middle is better known in actuality. For

¹⁷⁵The point seems to be that the hot, fire, passes into the cold, earth, only if there is some middle term binding the two, the dry.

the true is known only through what is true like it.

And thus it has been shown that the middle term makes it ready to be known in actuality, and that the species of its knowledge is the same as the species of the knowledge of what is sought—or, it is also the species of the knowledge of the cause, that is, also *propter quid* or *quia*. And these same species are the species of knowledge through the middle term, considered as it is the middle term, and this, whether it is in the minor and the major extreme in potentiality or actuality. And when this is not entirely the cause, it would be [a cause], according to knowledge, *quia* alone. For from this it is known only that it is in the minor term, and that the major term is in the minor. And therefore what is sought leads to the gain of knowledge that of the extremes the major is in the minor, as was related in the *Prior Analytics* in the first figure, which is known *per se*. But when it is the cause of its being in the minor and in the major, as well as the cause of the major being in the minor, this sort of knowledge through the cause is *propter quid*, for what is known through this is the only cause. But when we consider it as regards both the minor and the major, in this way there is received knowledge of its being, and when it is taken to be the cause of the intention, in this way it enters into knowledge of the cause, that is the manner of knowledge according to being and cause at the same time, for what is known is that it is said about both extremes, and it is the cause. And thus we introduce necessarily the showing [demonstration] of this reality through it. So we see now that the manner of knowledge is through the middle term, and what is gained in the knowledge of what is sought when it is knowable potentially, arises through the middle term, which is known actually.

Now when what is gained through this is perfect knowledge of what is sought, it will be the agent [cause]. The rule of the proof is the instrument, for every perfect instrument, or agent, is an agent regulating that on which it functions. For the circular, for example, it is a circle, and it is proved through itself. And the bootmaker makes the boots, and tests them. Now the perfect agent is what produces fully the perfect end sought by it. And the middle term produces fully the perfect end sought by it, and that is this knowledge in actuality. It acts on every reality, so it is the middle term by which demonstrations are distinguished in that knowledge sought, which they impart to us, of conclusions. And if you want to show that in this treatise he speaks about demonstrative premisses of which some are known through a proper demonstration, some through a demonstration of another cognition, and some through experience by which well-tested first principles are gained, and you compose demonstration from these—in this way knowledge of what is sought is drawn forth from the middle term from potentiality to actuality. The middle term prepares it to be in actuality this species of knowledge, which leads to what is sought. Now what prepares for being in a species of knowledge leading

to what is sought, is what cognition of what is sought returns to. So it is that term, in which there is a return into the cognition of what is sought.

Again, that into which that reality returns, returns into it as it is agent and rule, but it returns into the middle term as it is agent and rule, as is now demonstrated in the premisses. [125v] Now if you want its premisses and composition, thus the middle term is the perfect agent, as it is premise. And every perfect agent is agent and rule, as it is set in order by its experience. So the middle term is agent and rule. By this they are confirmed and they fall, and other rules are reproved.

And thus we now take up again, for the sake of the conformity to the speech of **al Farabi**, what has been constructed from his words. And let us say that knowledge of the predicate's being in its subject, that is, [knowledge] *quia*, is one undivided thing. But knowledge of the cause, that is, [knowledge] *propter quid*, is divided into knowledge of the cause of being of the subject, and knowledge of the cause of being of the predicate of the subject, and the knowledge of the being of the predicate and subject at the same time, as **al Farabi** tells us in the book of *Elements*. But he does not take note of the knowledge of the cause of being of the subject and predicate at the same time, and no one is arguing this. "Every cause is material, form, agent or end," as he notes in this book. "As though we were to receive the middle term between man and animal through knowledge of the cause from matter, as it is composed from those things ultimately mixed together, or from form, and this is its rational thought, or from the agent, and that is whoever generates the man, or from the end, and this is what is fitting to him, that he remain blessed after death. And each of these is part of the definition. For the definition is composed from each of the four causes," as he notes in this book. So we say that a man is a body composed from those things ultimately mixed together, or that it is an animal made rational in its thought, or that it is a body given birth, which a human being generates, or that it is a body suited to die and then remain blessed after death. [These are] all definitions, and if they are composed from other causes they run the course of the forms.¹⁷⁶

"Now definitions, to which all causes turn, are more excellent than predicates. And thus the middle terms of demonstrations of causes, that is, demonstrations *propter quid*, are either definitions, or parts of the definitions of the two extremes of the syllogism, or of something other than these. Or they have community with the definitions of both in some way."

And this is the corrupted passage from him, which understands part of the truth. So it is clear now how

¹⁷⁶That is, the definition will be in one of these four forms because the cause will fall under one of these four?

the words are ordered, so that they introduce demonstrations from causes, of which the middle terms are causes, and are conformed to what we showed first. And this whole, which appears from this, is the passage of **al Farabi** in the text. But by his exposition of demonstration **al Farabi** removed this, and said that there were two species, of which one is that by which it is concluded after the case of the posterior, when there was one degree of posteriority of those successive to the middle term. And now **al Farabi** showed concerning this second species, that its middle term is the cause of neither of the extremes, when he said, “when it was one degree of posteriority of those successive to the middle term.” And in the first species he showed that their middle term is also the cause of being of the major extreme, but that it is not the cause of the minor, though it is demonstrative of it, which is shown from this saying, that “the middle terms of demonstrations of causes, that is, *propter quid*, are definitions, or parts of the definitions of the two extremes, or of some other than these.” And so when he said, “of some other than these,” he denied that the middle term of a demonstration *quia* is the cause of the minor. Demonstration *quia*, then, is that of which the middle term is no cause at all, as we showed before. But a demonstration of being and the cause, that is, a demonstration that is *quia* and *propter quid* at the same time, is the demonstration that is *propter quid*. But it is called demonstration *propter quid* through only one of its characteristics. So when we have come to know it to be, and we sought knowledge, this is demonstration that leads us to acquire knowledge of the causes in connection with the same demonstration, which is both *quia* and *propter quid* at the same time.

For once we have acquired that the predicate is in its subject through the connection of the middle term to the two extremes affirmatively, as we said, we have also acquired knowledge of the cause, as the middle term is the cause. But since we have gotten that, that only is knowledge of the cause, that is, *propter quid*. Therefore it is a demonstration of the cause, that is, *propter quid* in relation to us, and thus only is any demonstration *propter quid* in relation to us. But in itself every demonstration of the cause, that is, *propter quid*, is a demonstration of being, that is, a demonstration *quia*. For every demonstration in which the middle term is connected affirmatively to the two extremes produces a grasp of being. But when we inquire after knowledge of this and being at the same time, the demonstration which produces both these is demonstration of the cause and of being in itself, and also in relation to us. And there is no difference between a demonstration of the cause, that is, *propter quid*, and a demonstration *quia*, except in relation to ourselves alone. **Al Farabi's** remark mentioning demonstrations *propter quid* and demonstrations *quia* was enough for this, and he left out any mention of demonstrations that are *propter quid* and *quia* at the same time. Indeed, this was enough as far as demonstrations *propter quid* are concerned, for there is no difference between this and a demonstration *quia*

except in relation to us, as we have shown. So demonstration *quia* is similar to demonstration *propter quid*, if it produces a grasp of both things at the same time, and the middle term of a demonstration *propter quid* is the cause of the minor term, and the major, and also of the major being in the minor, hence it is the demonstration of the cause and being at the same time that it produces a grasp of being, and one of these causes, whichever it might be. For given that the major extreme is the more excellent of the two parts sought, since the knowledge of this is the more excellent than is knowledge of the other part, and therefore the demonstration which produces a grasp of being and cause, when its middle term is the cause of the major, is in a prior way and more truly named demonstration of being and cause without qualification, and is more worthy of the name of demonstration without qualification. So that is the demonstration of being and cause without qualification of which the middle term is the cause of the major extreme. Now if there is something less besides that, it is a demonstration of being, and it is a demonstration without qualification below the first in degree [126v] of the imposition of the name. And therefore **al Farabi** says, since by one of these conditions it is established as demonstration without qualification, because the middle term is prior to the major in that way in which the cause of a reality is prior to it, this is, to demonstration, which is prior and more true, as it is called demonstration without qualification. And sometimes it is the cause of being, and the causes in relation to it, and its relation to us, when this has touched on us about it. But when we wish to know the knowledge that the predicate is in the subject, we take some reality as the middle term, and it happens to us about this that it is the cause. So there happens to us being and cause, which, if it happens to us according to a first intention, is for that reason knowledge of its being, that is, knowledge. But it is knowledge of the cause when it happens to us according the second intention, and from a second syllogism, and it happens that about this the first syllogism is composed. So this the highest of them, which appears to use about the rules of three demonstrations. The rule and direction of all things belongs to the glorious God.

**Question II: Chastisement of the fourth species of the second genus of
the collection of demonstrations by al Farabi**

Perhaps you have noticed that there is an error about the fourth species of the second genus of the collection in **Abunazar**, [who speaks] as if it were a demonstration of the cause, or *propter quid*. But it is a demonstration *quia*, for its middle term is posterior to both extremes. Now those who err believed this, and held that the property of a genus is equal to its first species, and an accident (*adiacens*) of the genus equal to the

being of the species. Now this is absurd, for the property of a genus is neither equal or unequal, because it does not constitute the genus, and is an accident of it, and of the other species of it and posterior to it, and in the rest of its species, for it is the first posterior to the genus, and its species second. Now an indication of this is that a part of a substance is nothing but the substance, and also, because the nature of the species is more prior to the nature of the genus, than the nature of property is to its genus, because the nature of the genus does not come forth, unless it is present already with the nature of its species, just as the nature of the species does not [come forth], unless it is with the nature of the genus. For both are relative, and the property follows the nature from which it comes, and therefore also with it the nature follows which follows it. Now when the nature of the genus comes forth with the species, as the nature of the species with the genus, it is necessary that the property follow both natures, the nature of the genus and the nature of the species. And thus your consideration here is firm, and you evade the error found in many places. And thus logics unfold what is sought, to the praise of the glorious God, the rays of whose wisdom removes us from every involvement in error. Amen.

End of the two questions of Abu al Kasim Mahmat ben Kasam.

Letters of Different Arabs

Abu Habad Adhadrahman ben Iohar

First Letter

Concerning negative necessary and negative possible [propositions]

Pray that God shall assist me: Concerning negative necessary and negative possible [propositions, it is asked] whether they are disposed in the same way, or differently. I hold that a negative [proposition] concerning the necessary, and a negative necessary [proposition], is disposed in such a way that, when the negative necessary is true, there is inferred necessarily the truth of a negative concerning the necessary. This is because, when necessarily our expression A is not about any reality C,¹⁷⁷ it is wholly made true that A is not

¹⁷⁷That is, "Necessarily no C is A."

necessarily about any reality C,¹⁷⁸ because if this were false it would be verified necessarily that A is necessarily about some reality C,¹⁷⁹ even though that A necessarily is not about some reality C is false, since these two are contradictories. And thus, when a negative necessary is true, there is verified wholly a negative about the necessary. Now this cannot be converted, so that we say that when it is true about the necessary, without doubt a negative necessary is made true. This is because it is true that white is not necessarily about any plant,¹⁸⁰ and it is not made true with this that white necessarily is not true of any plant.¹⁸¹

The disposition of the negative [proposition] about the possible, and of a negative possible [proposition] is contrary to this, for when either of these is made true, the other is necessarily false. So when we say truly that it is possible for Zayadh not to walk, with this it is made false necessarily that it is not possible for Zayadh not to walk. And therefore when this is made true, that is made false. Now the reason for this is that truth of the affirmative possible is inferred from the negative possible and vice versa, because if we say of Zayadh that it is possible that he should not walk in the morning, it is inferred that it is possible that he should walk in the morning.¹⁸² Now it is clear that when the negative of this possible [proposition] is falsified, the affirmative is also falsified, for when we falsify what we say, we say of Zayadh that it is not possible that he walk, and with this falsity, the affirmative is also falsified.¹⁸³ But when the negative necessary proposition is verified, its affirmative is falsified, and conversely. And so the two differ from one another.

Now may God direct us to what is good. Amen.

Second Letter

¹⁷⁸ That is, “no C is necessarily A.”

¹⁷⁹ That is, “necessarily some C is A,” which follows from “some C is necessarily A”, which follows from “it is not the case that no C is necessarily A.”

¹⁸⁰ That is, “no plant is necessarily white.”

¹⁸¹ That is, “necessarily no plant is white.” The point, of course, is that some plant may be contingently white.

¹⁸² This assumes that it cannot be at the same time possible that he walk, and necessary that he walk. So if it is possible that he walk, it is not necessary, and so it is possible also that he not walk. Modern modal logic generally assumes that possibility follows from necessity, rather than being ruled out by it, following different intuitions about the matter.

¹⁸³ Here, note that “it is not possible that he walk” is convertible with “either necessarily he walks, or necessarily he does not walk,” given the interpretation of “possible” in Note 172. If we say “it is not possible that he not walk,” this is also convertible with that disjunctive proposition. So they are convertible with one another.

Concerning the middle term, when it is the cause of the major, whether it is imaginable in accord with some place not to be the cause of minor.

Ask that God assist you concerning this! [It is asked] whether the middle term, when it is the cause of the major term, might be imagined in some case not to be the cause of its being in the minor, given that we need some cause of the major's being in the minor. The response is that when the interrogation arises without qualification, that is imagined and found is the middle cause of the major, and it is not the entire cause why the major is in the minor, unless this be according to cognition alone. Because of things sought, and (as the more universal, I say) of things posited beforehand, it is, because now it is in the major of these, and because its predicate is made true of its subject, according to the truth of the predicate in that subject. For example, if it is asked, whether a human being is able to laugh and is a geometer, we might say "everything able to laugh, and every geometer, is a rational animal, and every rational animal is a human being, therefore everything that is able to laugh or a geometer is a human being." And here both premisses are true, and the conclusion likewise. But human being is not truly predicated of being able to laugh, or a geometer, but the thing is in fact the other way around. And we call this sort of predication a predication outside of natural usage. And therefore the middle term in this [i.e. rational animal], and in similar cases, is the cause of the major [i.e. something able to laugh or a geometer], and is not the cause of the minor's being in the major [that is, the cause why a geometer or one able to laugh is a human being], even though the affirmative predication of the major of the minor is a true predication, and thus in such it is not imagined that the predication [of the middle term] is the cause of the major's being in the minor.

Aristotle said, "I do not call every predication outside of natural usage wholly predication, and if perhaps we do name it thus, we call it predication accidentally." And **Themistius** places these demonstrations among demonstrations of the cause alone [and not of the fact, i.e. of the minor being in the major]. And **al Farabi** sets this out in this place. And I set it out in a sufficient exposition in my treatise on demonstrative combinations. And in the same way I hold, if the predicate sought is not an essential predicate of the subject, neither is the subject essential in its predicate. For instance, say it is sought whether everyone seated can learn, and we say everyone seated is a human being, and every human being can learn, and thus everyone seated is able to learn. These three sentences are true, since it has already been explained in natural science that being seated is proper to human being, just as being able to learn is. Still, not everyone seated is able to learn per se, since not everyone seated is able to learn because of this, that sitting is in a human being because of its nature

and its ability to learn is in it because of its rationality. Now the middle term of this syllogism is the cause of the major, since human being is the cause of being able to learn, because being able to learn is part of the definition of human being. And predications which are mutually predicated by accidental predication, for instance, of our predicating geometer of physician, or tailor, or one using a tripod, are customarily treated in this way.

Now God directs us to what is right. Amen.

End of the questions and letters of different Arabs.