

## 11

# Thomas Aquinas on our Knowledge of the First Principles of Demonstration

Lecture 20

(99b18–100b17)

How the first Principles of Demonstration Are Known By Us

After showing how that which is the principle of demonstration in the sense of a middle comes to be known, the Philosopher now shows how the first common principles come to be known. First, he states his intention. Secondly, he pursues it (99b20).<sup>1</sup> He says therefore first (99b18), that from what follows it will be clear concerning indemonstrable principles both how we come to know them and by what habit they are known. However, the plan we shall observe calls for us first to propose certain problems touching this matter. Then (99b20) he pursues his plan. Concerning this he does two things. First, he raises the problem. Secondly, he settles it (99b32). In regard to the first he does three things. First, he prefaces something from which the need for an inquiry of this kind is indicated. Secondly, he raises the questions (99b23). Thirdly, he objects to a question (99b26).

He says therefore first (99b20), that it has already been established above that nothing is scientifically known through demonstration, unless the first immediate principles are known beforehand. Therefore, in order to have scientific knowledge of demonstration, it is useful to know how the first principles are acquired.

Then (99b23) he raises three questions touching this knowledge of the principles. The first question is whether the knowledge of all immediate principles is the same or not. The second is whether there is a science of all immediate principles or of none; or is there science of some, and some other type of knowledge of the others. The third question is whether the habitual knowledge of those principles comes to exist in us after previously not existing, or have they always been in us but escaped our notice.

Then (99b26) he objects to the last question to which the others are ordered. First, he objects to the second side, saying that it is absurd to claim that we have the habitual knowledge of these principles but they escape our notice. For it is obvious that those who have knowledge of the principles have a knowledge which is more certain than that which is acquired through demonstration. But knowledge through demonstration cannot be had

1 'The Philosopher . . . (99b20)': all references are to Aristotle, *Posterior Analytics*. Gk.

such that it escapes the notice of the one having it. For it was established in the beginning of this book that a person who has scientific knowledge of something knows that it is impossible for it to be otherwise. Therefore, it is far less possible for someone having a knowledge of the first principles to have it escape his notice. Yet this absurdity would follow, if habitual knowledge of this kind were in us but escaped our notice.

Secondly (99b28), he objects to the other side. For if a person states that we acquire these habits or principles *de novo* after previously not having them, we are left with the further problem of how we can know and learn such principles *de novo* without some previous knowledge existing in us: for it is impossible to learn anything save from pre-existing knowledge, as we have established above in regard to demonstration. But the reason why we cannot learn the immediate principles from pre-existing knowledge is that pre-existing knowledge is more certain, since it is a cause of certitude of the things which are made known through it. But no knowledge is more certain than the knowledge of these principles. Hence it does not seem that we can begin to know them, when previously we did not know.

Thirdly (99b30), he concludes from the above two arguments that it is neither possible always to have had the knowledge of these principles but it escaped our notice, nor possible that such knowledge is generated *de novo* in us to supplant a state of absolute ignorance in which no other habitual knowledge was possessed.

Then (99b32) he solves these questions. First, he solves the last one. Secondly, he solves the first two (100b5). In regard to the first he does three things. First, he proposes that some principle of knowing must pre-exist in us. Secondly, he shows what it is (99b34). Thirdly, he shows how from a pre-existing principle of knowing we attain the knowledge of principles (100a4).

He says therefore first (99b32), that there must be in us from the beginning a certain cognitive power that exists previously to the knowledge of principles, but not such that it is stronger as to certitude than the knowledge of principles. Hence the knowledge of principles does not come about in us from pre-existing knowledge in the same way as things which are known through demonstration.

Then (99b34) he shows what that pre-existing cognitive principle is. Apropos of this he posits three grades among animals. The first of these is something which seems to be common to all animals, namely, that they have a certain connatural faculty [i.e., potency, i.e., power] for estimating about sense-perceptible things. This faculty, which is not acquired *de novo* but follows upon their very nature, is called *sense*.

Then (99b36) he mentions the second grade, saying that although sense is found in all animals, in some of them a sensible impression remains after the sense-object is removed, as happens in all the perfect animals. But in certain others this does not occur, as in certain imperfect animals; say in those which are not capable of progressive local movement. And it might perhaps be that in regard to some animals an impression remains in regard to certain sense-objects which are more vigorous, and not in regard to those which are weaker. Therefore, those animals in which no impression of sensible objects remains at all have no knowledge except when they are sensing. Similarly, in regard to animals in which such an impression is apt to remain, if it does not remain in them in the case of certain sensible objects, they cannot have any knowledge of them except while they are sensing. But animals, in which a trace of such an impression remains, are capable of having some knowledge in the mind beyond sense; and these are the animals which have *memory*.

Then (100a1) he shows, in view of the foregoing, how the knowledge of first principles comes about in us; and he concludes from the foregoing that from sensing comes

remembrance in those animals in which a sensible impression remains, as has been stated above. But from remembrance many times repeated in regard to the same item but in diverse singulars arises *experience*, because experience seems to be nothing else than to take something from many things retained in the memory.

However, experience requires some reasoning about the particulars, in that one is compared to another: and this is peculiar to *reason*. Thus, when one recalls that such a herb cured several men of fever, there is said to be experience that such a herb cures fevers. But reason does not stop at the experience gathered from particulars, but from many particulars in which it has been experienced, it takes one common item which is consolidated in the mind and considers it without considering any of the singulars. This common item reason takes as a principle of art and science. For example, as long as a doctor considered that this herb cured Socrates of fever, and Plato and many other individual men, it is *experience*; but when his considerations arise to the fact that such a species of herb heals a fever absolutely, this is taken as a *rule of the art of medicine*.

This, then, is what he means when he says that just as from memory is formed experience, so from experience or even from the universal resting in the mind (which, namely, is taken as if it is so in *all* cases, just as experience is taken as being so in certain cases. – This universal is said to be resting in the mind, inasmuch as it is considered outside the singulars which undergo change. Furthermore, he says that it is *one outside the many*, not according to an autonomous existence but according to the consideration of the intellect which considers a nature, say of man, without referring to Socrates and Plato. But even though it is one outside the many according to the intellect's consideration, nevertheless in the sphere of existents it exists in all singulars one and the same: not numerically, however, as though the humanity of all men were numerically one, but according to the notion of the species. For just as *this white* is similar to *that white* in whiteness, not as though there were one numerical whiteness existing in the two, so too Socrates is similar to Plato in humanity, but not as though there were numerically one humanity existing in the two. – ) the principle of *art* and *science* is formed in the mind.

And he distinguishes between art and science, just as he did in *Ethics* VI, where it is stated that *art* is right reason in regard to things to be made. And so he says here that if from experience a universal in regard to generation is taken, i.e., in regard to anything that can be made, say in regard to healing or husbandry, this pertains to *art*. *Science*, however, as it is stated in the same place, is concerned with necessary things; hence if the universal bears on things which are always in the same way, it pertains to *science*; for example, if it bears on numbers or figures. And this process which has been described is verified in regard to the principles of all sciences and arts. Hence he concludes that there do not pre-exist any habits of principles in the sense of being determinate and complete; neither do they come to exist anew from other better known pre-existing principles in the way that a scientific habit is generated in us from previously known principles; rather the habits of principles come to exist in us from pre-existing sense.

And he gives as an example a battle which starts after the soldiers have been beaten and put to flight. For when one of the soldiers shall have taken a stand, i.e., begun to take a battle position and not flee, another takes his stand next to him, and then another, until enough are gathered to form the beginning of a battle. So, too, from the sense and memory of one particular and then of another and another, something is finally reached with is the principle of art and science, as has been stated.

But someone could believe that sense alone or the mere remembrance of singulars is sufficient to cause intellectual knowledge of principles, as some of the ancients supposed, who did not discriminate between sense and intellect. Therefore, to exclude this the Philosopher adds that along with sense it is necessary to presuppose such a nature of mind as cannot only suffer this (i.e., be susceptible of universal knowledge, which indeed comes to pass in virtue of the *possible intellect*) but can also cause this in virtue of the *agent intellect* which makes things intelligible in act by abstraction of universals from singulars.

Then (100a4) he elucidates something asserted in the preceding solution, namely, that the universal is taken from *experience* bearing on singulars. And he says that what was stated above, albeit not clearly – namely, how from the experience of singulars the universal is formed in the mind – must now be discussed again and explained more clearly. For if many singulars are taken which are without differences as to some one item existing in them, that one item according to which they are not different, once it is received in the mind, is the first universal, no matter what it may be, i.e., whether it pertains to the essence of the singulars or not. For since we find that Socrates and Plato and many others are without difference as to whiteness, we take this one item, namely, white, as a universal which is an accident. Similarly, because we find that Socrates and Plato and the others are not different as to rationality, this one item in which they do not differ, namely, rational, we take as a universal which is an essential difference.

But how this one item can be taken he now explains. For it is clear that sensing is properly and *per se* of the singular, but yet there is somehow even a sensing of the universal. For sense knows Callias not only so far forth as he is Callias, but also as he is this man; and similarly Socrates, as he is this man. As a result of such an attainment pre-existing in the sense, the intellective soul can consider man in both. But if it were in the very nature of things that sense could apprehend only that which pertains to particularity, and along with this could in no wise apprehend the nature in the particular, it would not be possible for universal knowledge to be caused in us from sense-apprehension.

Then he manifests this same point in the process which goes from species to genus. Hence he adds: “Again in these,” namely, in man and horse, “the mind lingers in its consideration, until it attains to something indivisible in them, which is universal.” For example, we consider such an animal and another one, say a man and a horse, until we arrive at the common item, “animal,” which is universal; and in this genus we do the same until we arrive at some higher genus. Therefore, since we take a knowledge of universals from singulars, he concludes that it is obviously necessary to acquire the first universal principles by induction. For that is the way, i.e., by way of induction, that the sense introduces the universal into the mind, inasmuch as all the singulars are considered.

Then (100b5) he solves the first two question, namely, whether the knowledge of first principles is science, or some other habit. In regard to this he accepts, from what has been stated above, that the knowledge of principles pertains to the intellect whose function is to know the universal: for he says that the universal is a principle of science. But in regard to the intellect there are two genera of habits, and these are not related to the true in exactly the same way. For some are always true, whereas others sometimes receive what is false, as in opinion and in those cases of reasoning which can be of the true and of the false. Again, there are certain erroneous habits, namely, which bear on the false. But because principles are most true, it is clear that they do not pertain to habits which are always of the false, or even to habits which now and then receive falsity, but only to habits which are always of the true. But these are *science* and *understanding* [i.e., intuition]. (In *Ethics* VI a third one is

added, namely, *wisdom*: but because wisdom, as it is stated there, comprehends within itself both science and understanding – since it is a science and the chief of the sciences – he omits it here). Therefore, leaving this one aside, no other genus of knowledge but understanding is more certain than science.

Now it is plain that the principles of demonstrations are better known than the demonstrated conclusions, as was established in Book I. Moreover, it cannot be through science that we have those principles, because science is the result of reasoning, namely, demonstrative, whose principles are the very things about which we are speaking. Therefore, because nothing can be truer than science and understanding (for wisdom is included in them), what follows from our consideration of the foregoing is that, properly speaking, the knowledge of principles is understanding.

He also proves this with another reason, namely, because a demonstration is not of necessity a principle of a demonstration; otherwise there would be an infinite process in demonstrations, and this was disproved in Book I. Since, therefore, demonstration causes science, it follows that science cannot be the principle of science, as though the principles of the sciences were made known through science. Therefore, if we have no other type of knowledge except science which is always true, it follows that understanding will be the principle of science, namely, because the principles of the sciences are made known through understanding, so far forth, namely, that this understanding which is the principle of science is cognoscitive of the principles from which science proceeds. But this, namely, science, is *all*, i.e., a whole, which is related to every thing (i.e., to the entire matter with which science is concerned) in the way that understanding is related to the principles of science.