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Aquinas on the Foundations of Knowledge

ELEONORE STUMP

I Introduction

Aquinas is sometimes taken to hold a foundationalist theory of knowledge. So, for example, Nicholas Wolterstorff says, "Foundationalism has been the reigning theory of theories in the West since the high Middle Ages. It can be traced back as far as Aristotle, and since the Middle Ages vast amounts of philosophical thought have been devoted to elaborating and defending it.... Aquinas offers one classic version of foundationalism."¹ And Alvin Plantinga says, "we can get a better understanding of Aquinas ... if we see [him] as accepting some version of *classical foundationalism*. This is a *picture* or total way of looking at faith, knowledge, justified belief, rationality, and allied topics. This picture has been enormously popular in Western thought; and despite a substantial opposing ground-

1 *Reason Within the Bounds of Religion* (Grand Rapids, MI: Eerdmans 1984) 2nd ed., 30. Wolterstorff has since altered his view; see 'The Migration of the Theistic Arguments: From Natural Theology to Evidentialist Apologetics,' in *Rationality and Religious Belief*, Robert Audi and William Wainwright, eds. (Ithaca, NY: Cornell University Press 1986) 38-81.

swell, I think it remains the dominant way of thinking about these topics."²

Foundationalism is most frequently associated with Descartes, and the sort of foundationalism ascribed to Aquinas is sometimes distinguished from that attributed to Descartes. Plantinga, for example, distinguishes what he calls 'ancient and medieval foundationalism' from the modern foundationalism found in Descartes, Locke, and Leibniz, among others, but he thinks Aquinas's brand of foundationalism has enough in common with the foundationalism of Descartes and other early modern philosophers that they can all be conflated under the heading 'classical foundationalism.'

This sort of foundationalism is currently thought to be in trouble; various philosophers, including Plantinga himself, have raised serious objections to it. In the first place, this brand of foundationalism gives the counter-intuitive result that much of what we think we know is not to be counted as knowledge. The propositions we can take to be properly basic don't entail or even render probable many of the apparently nonbasic propositions we ordinarily claim to know. Plantinga's examples include "all those propositions that entail ... that there are persons distinct from myself, or that the world has existed for more than five minutes." In the second place, there are reasons for doubting whether foundationalism is right in confining the set of properly basic beliefs to those which are self-evident and evident to the senses. Memory beliefs, Plantinga argues, are neither self-evident nor evident to the senses, but they certainly seem to be properly basic. The belief that I walked to school this morning, rather than driving or bicycling, is a belief I hold without basing it on other beliefs; and since it seems perfectly rational for me to take this belief as basic, this memory belief and others like it also seem to be properly basic beliefs. Finally, Plantinga has argued that the central claims of this sort of foundationalism cannot meet foundationalist criteria, because these

2 'Reason and Belief in God,' in *Faith and Rationality: Reason and Belief in God*, Alvin Plantinga and Nicholas Wolterstorff, eds. (Notre Dame, IN: University of Notre Dame Press 1983), 48

central claims can't be held as properly basic beliefs — they aren't self-evident or evident to the senses — and it's very difficult to see how they could be traced back to properly basic beliefs. Plantinga concludes his case against the theory with the announcement that "classical foundationalism is bankrupt" (62). And in a recent book designed to acquaint students with current thinking about theories of knowledge, Lehrer ends his examination of foundationalism by claiming that as a theory of knowledge it "is a failure."³

So if the theory of knowledge held by Aquinas is foundationalism of this kind, then there are some good arguments for rejecting his views.

Of course, neither Wolterstorff nor Plantinga is an historian of philosophy, and I began with their views for just that reason: to show that contemporary philosophers engaged in epistemology accept this view of Aquinas's theory of knowledge as just what would be expected. One highly regarded historian of philosophy, however, who has expressly addressed the issue of foundationalism in the history of Western philosophy is T.H. Irwin. In his recent book *Aristotle's First Principles*,⁴ Irwin argues that at least in the *Posterior Analytics* Aristotle himself is a foundationalist. "Aristotle therefore recognizes first principles with no further justification; but he denies that his view makes knowledge impossible, because he denies that demonstration requires demonstrable first principles. In denying this, he implies that in some cases complete justification is non-inferential, since it does not require derivation from other propositions. Non-inferentially justified first principles allow us to claim knowledge without facing an infinite regress or a circle. Aristotle's conclusion implies a foundationalist doctrine, requiring true and non-inferentially justified beliefs as the basis of knowledge and justification" (130-1).

And Irwin takes the *Posterior Analytics* as an epistemological treatise in which Aristotle develops his foundationalism:

3 *Theory of Knowledge* (Boulder, CO: Westview Press 1990), 62

4 Oxford: Clarendon Press 1988

Aristotle's account of scientific knowledge develops from his metaphysical realism and his epistemological foundationalism;

[in the *Analytics*] he treated foundationalism as the only alternative to skepticism. (134; 197)⁵

Irwin himself takes a rather negative attitude towards this side of Aristotle's philosophy: "we must say that Aristotle's foundationalism in the *Analytics* results from a one-sided view of science and objectivity, and that this view needs considerable modification in the light of Aristotle's views on first philosophy" (473). Irwin's views, of course, are not the only available interpretation of the *Posterior Analytics*.⁶ Nonetheless, if his account of Aristotle is correct, it provides some confirmation for the common view of Aquinas as a foundationalist, since it would not be unreasonable to suppose that Aquinas simply accepted and developed the theory of knowledge he found in Aristotle.

In this paper I want to reexamine this picture of Aquinas's epistemology.

II Foundationalism

It will be helpful in this enterprise to be clear about what is being attributed to Aquinas. Here is Plantinga's description of classical foundationalism:

Foundationalism is best construed ... as a thesis about rational noetic structures.... According to the foundationalist a rational noetic structure will have a foundation — a set of beliefs not accepted on the basis of others; in a rational noetic structure some beliefs will be basic. Non-basic beliefs, of course, will be

5 See also 139-41, 148-50, 315, 318, 326, 482-3.

6 For a different interpretation of the nature and purpose of the *Posterior Analytics*, see, for example, Jonathan Barnes, 'Aristotle's Theory of Demonstration,' in *Articles on Aristotle*, Jonathan Barnes, Malcolm Schofield, and Richard Sorabji, eds. (London: Duckworth 1975) 65-87.

accepted on the basis of other beliefs, which may be accepted on the basis of still other beliefs, and so on until the foundations are reached. In a rational noetic structure, therefore, every non-basic belief is ultimately accepted on the basis of basic beliefs. (52)

A further and fundamental feature of classic varieties of foundationalism [is that] they all lay down certain conditions of proper basicity.... [A] belief to be properly basic (that is, basic in a rational noetic structure) must meet certain conditions.... Thomas Aquinas ... holds that a proposition is properly basic for a person only if it is self-evident to him or "evident to the senses." ... [T]he outstanding characteristic of a self-evident proposition is that one simply sees it to be true upon grasping or understanding it ... Aquinas and Locke ... held that a person, or at any rate a normal, well-formed human being, finds it impossible to withhold assent when considering a self-evident proposition.... [P]ropositions "evident to the senses" are also properly basic. By this latter term ... [Aquinas] means to refer to perceptual propositions — propositions whose truth or falsehood we can determine by looking or employing some other sense. (55-7)

So, on Plantinga's description of the type of foundationalist theory of knowledge he attributes to Aquinas, it consists in the following claims:

1. Some propositions are properly basic in the sense that it is rational to accept them without basing them on other propositions.
2. Properly basic propositions include only propositions which are self-evident or evident to the senses, that is, propositions which can be known to be true either just by understanding their terms or by employing one or more of the senses.
3. All non-basic propositions must be accepted, directly or indirectly, on the basis of properly basic propositions.

It is common to add one more set of conditions to this list. Wolterstorff stipulates that

4. the properly basic propositions can be known with certitude, and that consequently

5. the propositions known on the basis of properly basic propositions can be known with certitude (Wolterstorff, 29; cf. also 36).

And Lehrer emphasizes the search for a guarantee of truth, or for certainty, as the hallmark of foundationalism:

[A] central thesis of the traditional foundation theory was that basic beliefs are immune from error and refutation; (42)

[S]ome beliefs *guarantee* their own truth. If my accepting something guarantees the truth of what I accept, then I am completely justified in accepting it for the purpose of obtaining truth and avoiding error. We are guaranteed success in our quest for truth and cannot fail. (40)

Finally, although it need not be, foundationalism has often been taken as a species of internalism: the view that knowledge is constituted by certain states internal to the knower and accessible to him. And although it is possible to combine features of both foundationalism and reliabilism, foundationalism has sometimes been distinguished from reliabilism, put forward as a species of externalism — the view that knowledge is constituted largely or entirely by states or processes external to the knower, or at any rate not internally accessible to him. Plantinga's own favored theory of knowledge has certain features in common with reliabilism. On Plantinga's account,⁷ when a person has enough warrant for a true belief, the belief counts as knowledge. His complicated explanation of warrant includes these claims: in order to have warrant, a person must hold true beliefs acquired by a reliable process, when his cognitive faculties function as they were designed to function (by evolution, for example, or by God) in an environment in which they were designed to function; and beliefs with sufficient warrant constitute knowledge. This account is avowedly externalistic. One can't tell just by looking within oneself and reflecting on the results of introspection whether one's faculties

7 I am grateful to Alvin Plantinga for giving me access to his forthcoming work on epistemology.

are functioning as they were designed to function or whether the environment in which they are functioning is the appropriate one.

Although both Plantinga and Wolterstorff freely speak of Aquinas as a foundationalist, or classical foundationalist, I want to avoid the sort of controversy which can be raised by epistemological taxonomy. Rather than attempting to determine precisely which species of foundationalism Aquinas is supposed to have held, a task that would require an exegesis of Plantinga and Wolterstorff as well as Aquinas, I propose to try eschewing such taxonomy altogether. So, for the sake of brevity and clarity, instead of asking whether Plantinga and Wolterstorff are right to present and repudiate Aquinas as a classical foundationalist, I want to prescind from their terminology and focus just on internalism and the claims in (1)-(5) above. The idea of a theory of knowledge characterized by (1)-(5) is that there is a small set of propositions which we can know with certainty to be true without inferring them from anything else that we know, and that our non-basic beliefs will also be known with certainty if we base them on that small set of certainly true propositions. In Aquinas's case, the propositions which properly serve as the foundation for the non-basic beliefs are supposed to include just two groups: those whose truth is seen as soon as they are understood, and those whose truth is evident to the senses. As we examine Aquinas's views, I will be concerned to ask just whether he holds an epistemological theory which is internalist and which can be characterized by (1)-(5). It will, of course, be helpful to have a noun by which to refer to this position rather than referring to it always by some clumsy circumlocution. So for ease of exposition I will refer to this theory as 'Foundationalism,' capitalizing the term to remind the reader that it does not refer to foundationalism as a whole or to some commonly discussed species of foundationalism, but picks out instead only an epistemological position which is internalist and which is characterized by (1)-(5).

III Evidence for and against Foundationalism in Aquinas

Why would anyone suppose Aquinas is a Foundationalist? One of the main reasons is that the Latin term for the subject of Aquinas's commentary on the *Post. An.* — namely, '*scientia*' — has often enough

been translated as 'knowledge' and his commentary has consequently been taken to consist in an exposition of his theory of knowledge. Understood in this way, the treatise can give an appearance of Foundationalism.

There is a process of reasoning, Aquinas says, which yields its results necessarily, and in this process the certitude of *scientia* is acquired. (I will leave '*scientia*' untranslated, so as not to make any assumptions at the outset about the appropriate English equivalent for it.) This process of reasoning consists in demonstrative syllogisms.⁸ Each demonstrative syllogism has two premisses, and these premisses must be better known and prior to the conclusion (Ibid., I lectio 4). But demonstration does not give rise to an infinite regress. There are first principles of demonstration, and these are themselves indemonstrable (Ibid., I lectio 35).

It is not possible to acquire *scientia* of (*scire*) anything by demonstration unless there is prior cognition of the first, immediate principles. (Ibid., II lectio 20)

And so, Aquinas says,

scientia ... which is acquired by demonstration, proceeds from propositions which are true, first, and immediate, that is, which are not demonstrated by any intermediate but are evident by means of themselves (*per seipsas*). They are called "immediate" because they lack an intermediate demonstrating them, and "first" in relation to other propositions which are proved by means of them.⁹

There is no cognition that has more certitude than the cognition of such first principles, and they are the cause of certitude in one's cognition of other propositions (Ibid., II lectio 20). They are not only necessary but known *per se* (cf., e.g., *ibid.*, proemium; lectio 9), and

8 Thomas Aquinas [17], *Super Post An., proemium*

9 Ibid., I lectio 4: "*scientia* ... quae per demonstrationem acquiritur, procedat ex propositionibus veris, primis et immediatis, id est quae non per aliquod medium demonstrantur, sed per seipsas sunt manifestae (quae quidem immediae dicuntur, in quantum carent medio demonstrante; primae autem in ordine ad alias propositiones, quae per eas probantur)."

any *scientia* takes its certitude from them (Ibid., I lectio 42). There are different sorts of *scientia*, but one of his paradigms is mathematics (Ibid., I lectio 1).

What sorts of propositions are first principles? On the one hand, Aquinas says that the first of all the principles are the law of noncontradiction and the law of excluded middle. But definitions, too, are principles of demonstration (Ibid., I lectio 20; II lectio 2). In fact, every proposition in which the predicate is in the definition of the subject is known per se (Ibid., I lectio 5; lectio 9). On the other hand, he says that propositions accepted by the senses, such as that the sun is now eclipsed, are the most known (*notissima*) (Ibid., I lectio 16).

These remarks and others like them can certainly give rise to the impression of Foundationalism. In fact, it looks as if Aquinas is committed to just those Foundationalist claims listed above. Propositions which we know in virtue of understanding their terms — that is, self-evident propositions — and propositions evident to the senses are properly accepted as basic. All other propositions which form part of our knowledge must be accepted on the basis of these properly basic propositions. So we begin with properly basic propositions and proceed by means of demonstrative syllogisms to non-basic propositions. In this way, we begin with what can be known with certainty — the properly basic propositions — and move to non-basic propositions, which are deduced from the properly basic ones and so also count as knowledge known with certainty.

But just a little further exploration of his views shows that this picture of Aquinas's theory of knowledge is irremediably inaccurate.

In the first place, there is ample evidence that Aquinas's notion of *scientia* is not equivalent to our notion of knowledge. *Scientia* isn't of contingent or corruptible things.¹⁰ In fact, there is no *scientia* of individual things; demonstration always has to do with universals.

10 Thomas Aquinas [3], *ST Ia q.79 a.9*; Thomas Aquinas [17], *Super Post. An.* I lectio 4, lectio 16: "neque demonstratio, neque scientia est corruptibilem." Aquinas does think that we have *scientia* of the natural world, but we have it in virtue of the fact that we have *scientia* of the universal causes which operate in nature. See, for example, *Super Post. An.* I lectio 42.

Demonstration must always be on the basis of universals. (*Super Post. An.* I lectio 16)

Universals are the objects of our inquiry, just as they are the things of which we have *scientia*.¹¹

“Universal” is taken here as a certain suitability or adequation of a predicate to a subject, as when the predicate isn’t found apart from the subject or the subject without the predicate.... Demonstration is properly speaking of a universal of this sort. (Ibid., I lectio 11)

[Aristotle] asserts that two things pertain to *scientia*. One of them is that it is universal, for there is no *scientia* of individual things susceptible to sense.

Besides things which are true and necessary and which cannot be otherwise, there are things which are true but not necessary, which can be otherwise; but it is evident ... that there is no *scientia* of such things.¹²

If ‘*scientia*’ were Aquinas’s term for knowledge, then we would have to attribute to him the view that we can have no knowledge of contingent, corruptible, or singular things; and that would be a very odd view of knowledge. Furthermore, it would be hard to square with Aquinas’s own claim, presented above, that propositions accepted on the basis of the senses, such as that the sun is now eclipsed, are most known (*notissima*).

But there is further evidence which suggests not only that *scientia* isn’t Aquinas’s equivalent of ‘knowledge’ but in fact that *scientia* should be understood as a special species of the broader genus *cognitio*, which looks like a much better candidate for an equivalent to our notion of knowledge.¹³

11 Ibid., II lectio 1: “*ea quae quaeruntur sunt universalialia, sicut et ea quae sciuntur.*”

12 Ibid., I lectio 44: “*ponit duo ad eam pertinere: quorum unum est quod sit universalis. Non enim scientia est de singularibus sub sensu cadentibus*”; “*praeter vera necessaria, quae non contingunt aliter se habere, sunt quaedam vera non necessaria, quae contingit aliter se habere. Manifestum est autem ex praedictis, quod circa huiusmodi non est scientia.*”

13 In fact, there are some passages in which Aquinas uses ‘*cognitio*’ in a way that

If he has a word which expresses what the English term 'knowledge' does, it is probably '*notitia*,' although that Latin term doesn't seem to have the range the English term does; where we would expect to use the verb 'know,' Aquinas uses not the verb cognate with '*notitia*' but rather '*cognosco*,' 'cognize.'

Aquinas explains '*scire*,' the verb cognate with '*scientia*,' in this way:

To have *scientia* ("*scire*") of something is to cognize it perfectly ("*perfecte*");¹⁴

Scientia is cognition acquired through demonstration. (Ibid., II lectio 1)

And he defines '*scire*' as Aristotle does:

To have *scientia* [of a thing] is to cognize the cause of the thing.¹⁵

a cause is the intermediate in a demonstration which brings it about that we have *scientia* (*facit scire*).¹⁶

In fact, Aquinas explains *scientia* in a way which suggests that he has in mind a Porphyrian tree of cognition, with *scientia* occupying one of the branches of the tree, along with other species of cognition. *Scientia*, he says, is one of several dispositions (*habitus*) which are related to what is true. There are five such dispositions, and they all are types of cognition. Following Aristotle, he lists the five as art, wisdom, prudence, understanding, and *scientia* (Ibid., I lectio 44).

Both *scientia* and wisdom are virtues of the speculative intellect, he says in another place. As for understanding, a person is said to have understanding or *scientia* insofar as his intellect is perfect in cognizing

wouldn't allow '*cognitio*' to be translated 'knowledge': as, for example, when he occasionally talks of a false cognition.

14 Thomas Aquinas [17], *Super Post. An.* I lectio 4: "*scire aliquid est perfecte cognoscere ipsum.*"

15 Ibid., I lectio 13: "*scire est causam rei cognoscere*"; see also lectio 4 and lectio 42.

16 Ibid., II lectio 1: "*causa est medium in demonstratione, quae facit scire.*"

truth.¹⁷ Prudence and art have to do with the practical part of the soul, which reasons about things that can be done by us; prudence is right reason about things to be done, and art is right reason about things to be made. But wisdom, understanding, and *scientia* have to do with the speculative part of the soul. Understanding is a disposition regarding first principles of demonstration. Wisdom considers first causes (that is, higher or divine causes), and *scientia* has to do with conclusions based on lower causes.¹⁸

So for all these reasons it seems clearly a mistake to render '*scientia*' as 'knowledge' and therefore even more of a mistake to interpret Aquinas's theory of *scientia* as a theory of knowledge. What he has to say about *scientia* cannot consequently be taken to express his views about the nature or structure of knowledge. (What his account of *scientia* comes to and how it should be interpreted will be discussed below.)

But what about the appearance of Foundationalism presented just above? What about Aquinas's apparent adherence to the view that there are properly basic beliefs, which ground all other propositions believed and which are known with certainty?

Properly basic beliefs for Aquinas are supposed to consist in propositions evident to the senses and self-evident propositions or propositions known with certainty to be true as soon as their terms are understood. Let's consider these two groups in turn.

It is true that Aquinas thinks the senses cannot be deceived as regards their proper objects;¹⁹ but the proper objects of the senses are something below the propositional level. Any belief about the world of physical objects based on the senses, such as the belief that there is

17 Thomas Aquinas [9], q. un., a. 7

18 Thomas Aquinas [15], L I, 11, 34; cf. also Thomas Aquinas [14], L VI 11-6.

19 Thomas Aquinas [3], ST Ia q.17 a.3: "circa propria sensibilia sensus non habet falsam cognitionem nisi per accidens et ut in paucioribus, ex eo scilicet quod propter indispositionem organi non convenienter recipit formam sensibilem"; "falsitas dicitur non esse propria sensui, quia non decipitur circa proprium objectum."

a coffee cup in front of me or that there is a tree outside the window, is a belief with regard to which we may be mistaken, on Aquinas's view. Aquinas quotes with approval Augustine's dictum that we can make mistakes with respect to any of our senses, and he gives an affirmative answer to the question whether there is falsity in the senses.

We are not deceived in the judgment by which we judge that we sense something. But from the fact that a sense is sometimes affected otherwise than as things are, it follows that that sense sometimes reports things to us otherwise than they are. And therefore by means of sense we make a mistake with regard to things, though not with regard to sensing itself.²⁰

These claims on Aquinas's part, of course, don't show that it's wrong to attribute to him the view that propositions evident to the senses are properly basic beliefs. He surely does think that propositions evident to the senses are accepted without being based on other beliefs, and he also clearly thinks that, most of the time at any rate, we are rational in accepting such beliefs as basic. What Aquinas's claims about the fallibility of the senses do show, however, is that propositions evident to the senses may be false and that therefore they don't constitute a class of propositions known with certainty. Consequently, the noetic structure in which the non-basic beliefs of a person are based on propositions evident to his senses may or may not constitute a set of beliefs known with certainty. On Aquinas's view, if the foundation includes propositions evident to the senses, there is no guarantee that the resulting structure comprises knowledge; it might consist in error instead.

Should we then understand Aquinas as a Foundationalist who restricts the foundations of knowledge to self-evident propositions? The evidence here too is against Foundationalist interpretations of Aquinas.

20 *Ibid.*, q.17 a.3 ad 1: "non decipiamur in iudicio quo iudicamus nos sentire aliquid. Sed ex eo quod sensus aliter afficitur interdum quam res sit, sequitur quod nuntiet nobis rem aliter quam sit aliquando. Et ex hoc fallimur per sensum circa rem, non circa ipsum sentire."

The candidates for self-evident propositions in Aquinas are the first principles of a *scientia*. Now these come in two sorts, what Aquinas (following Aristotle) calls the common principles, such as the law of noncontradiction, and what he labels the proper principles, such as that every man is an animal.²¹

Common principles, unlike proper principles, are common to every *scientia*. They are not only true, indemonstrable, and known per se, but, in fact, Aquinas says, a common principle can't be confirmed by an argument. It is known by the light of natural reason, and no one can form an opinion which is the contrary of a common principle.

Common principles, then, clearly look like candidates for the properly basic foundation of certain knowledge. There are problems here, too, however. It's obvious that common principles are basic; not only are they not derived from other propositions, but they can't be. Furthermore, there is no possibility here of falsity, as there was in the case of propositions evident to the senses; common principles are not only true but known by the light of natural reason itself. So common principles seem manifestly properly basic. The problems arise from our cognition of common principles. To say that they are known per se is not the same as saying that they are known per se *by us*.²² We can think something isn't a common principle when in fact it is. We can also deny common principles, out of obstinacy, for example (Ibid., I lectio 27). We cannot *really* deny common principles, in the sense that we believe the opposite of a common principle to be true; but we can deny common principles orally ('*ore*') (Ibid., I lectio 19) and verbally ('*secundum vocem*'), in accordance with a false opinion or imagination (Ibid., I lectio 27).

21 For the distinction between common principles and proper principles, see, e.g., Thomas Aquinas [17], *Super Post. An.* I lectio 17, lectio 18, lectio 43.

22 For this distinction, see, e.g., *Super Post. An.* I lectio 4, lectio 5.

Nothing is so true that it cannot be denied verbally. For some people have denied orally even this most known principle, "The same thing cannot both be and not be."²³

A common principle is known *per se* in the sense that if a person really understands the terms of the principle, he will see that it must be true; but he might not understand the terms of the principle even though he can use those terms adequately in ordinary discourse. The proposition that God exists is known *per se*, on Aquinas's view. If a person understands the term 'God,' he will also understand that God is simple and that therefore God's essence includes his existence; but, of course, it is possible for a person to be able to use the term 'God' adequately in ordinary discourse and not understand the term in such a way as to see that the proposition 'God exists' is necessarily true.²⁴

In the case in which a person denies a common principle, Aquinas will want to say both that the denier doesn't *really* understand the principle and that in any case what the denier takes to be the case does not constitute the opposite of the principle he is denying. But the interesting point for our purposes is that even though common principles are known by the light of natural reason, it is perfectly possible that what is in fact a common principle be rejected by someone as false (or at any rate possible that he should reject the common principle as he understands it), and therefore it is also possible for a person to take what is in fact false as true and use it as a common principle. Consequently, there is no guarantee that when a person begins with propositions which function as common princi-

23 Ibid., I lectio 19: "nihil est adeo verum, quin voce possit negari. Nam et hoc principium notissimum, quod non contingat idem esse et non esse, quidam ore negaverunt."

24 Thomas Aquinas [4], SCG I c.11: "simpliciter quidem Deum esse per se notum est: cum hoc ipsum quod Deus est, sit suum esse. Sed quia hoc ipsum quod Deus est mente concipere non possumus, remanet ignotum quoad nos. Sicut omne totum sua parte maius esse, per se notum est simpliciter: ei autem qui rationem totius mente non conciperet, oporteret esse ignotum. Et sic fit ut ad ea quae sunt notissima rerum, noster intellectus se habeat ut oculus noctuae ad solem...."

ples for him, the resulting noetic structure will comprise knowledge; just as in the case of propositions evident to the senses, the result might be error instead. Of course, in this case whatever is based on propositions that really are common principles will unquestionably be *true*; the problem is that a cognizer might be deceived and in the place of genuine common principles might instead have false propositions. If he is deceived, he isn't really understanding the common principles at issue; but the salient point is that for all he knows he might be in the state of not really understanding the relevant common principles. Therefore, if he begins with propositions which function for him as common principles, the cognizer has no guarantee that what he builds on that foundation will even be true, let alone constitute something known with certainty.

What about proper principles, then? It seems even less likely that proper principles can serve as the foundations of knowledge.

No *scientia* can reach its conclusions on the basis of common principles alone; proper principles are always required also.²⁵

There are very many proper principles; in fact, Aquinas says, following Aristotle, the number of principles isn't much less than the number of conclusions (Ibid.: "principia non sunt multum pauciora conclusionibus"). These principles are universals and describe a cause (or sometimes an effect) of something²⁶ (that is, a material, formal, efficient, or final cause or effect).²⁷ And these principles are always established by means of induction.

25 Thomas Aquinas [17], *Super Post. An.* I lectio 43: "non possunt esse aliqua principia communia, ex quibus solum omnia syllogizentur ... quia generalium sunt diversa, et diversa sunt principia quae sunt solum quantitatum principia, ab his quae solum sunt principia qualitatum: quae oportet coassumere principiis communibus ad concludendum in qualibet materia."

26 Cf., e.g., Ibid., I lectio 4: "demonstrationis propositiones sint causae conclusionis. quia tunc scimus, cum causas cognoscimus." "Ex singularibus autem quae sunt in sensu, non sunt demonstrationes, sed ex universalibus tantum, quae sunt in intellectu."

27 Cf., e.g., Ibid., I lectio 10; II lectio 9.

Demonstration proceeds from universals, but induction proceeds from particulars. Therefore, if universals, from which demonstration proceeds, could be cognized apart from induction, it would follow that a person could acquire *scientia* of things of which he didn't have any sense perception. But it is impossible that universals be comprehended without induction.²⁸

Universals, from which demonstration proceeds, don't become known (*nota*) to us except by induction.²⁹

It is necessary to cognize the first, universal principles by means of induction.³⁰

For this reason, Aquinas says that there is a sense in which there are two roads to *scientia*; one is demonstration and the other is induction.³¹ Proper first principles, then, which are necessary to any *scientia*, aren't basic at all, let alone properly basic. And what they are based on is induction. But, of course, induction is a notoriously uncertain mode of inference, as Aquinas himself recognizes: "a person who makes an induction by means of singulars to a universal doesn't demonstrate or syllogize with necessity."³² And he draws an analogy between induction and the method of analysis he calls 'division': "the method of division is analogous to the method of induction.... When something is proved syllogistically ... it is necessary that

28 Ibid., I lectio 30: "demonstratio procedit ex universalibus; inductio autem procedit ex particularibus. Si ergo universalia, ex quibus procedit demonstratio, cognosci possent absque inductione, sequeretur quod homo posset accipere scientiam eorum, quorum non habet sensum. Sed impossibile est universalia speculari absque inductione." Cf. also, e.g., Thomas Aquinas [15], L I, 11.

29 Thomas Aquinas [17], *Super Post. An.* I lectio 30: "universalia, ex quibus demonstratio procedit, non fiunt nobis nota, nisi per inductionem."

30 Ibid., II lectio 20: "necesse est prima universalia cognoscere per inductionem."

31 Ibid., I lectio 30: "duplex est modus acquirendi scientiam. Unus quidem per demonstrationem, alius autem per inductionem."

32 Ibid., II lectio 4: "Ille enim qui inducit per singularia ad universale, non demonstrat neque syllogizat ex necessitate."

the conclusion be true if the premisses are true. But this is not the case in the method of division....³⁴

So not only is there no guarantee that what a cognizer uses as a proper first principle of *scientia* will be something known with certainty, there isn't even a guarantee that what the cognizer starts with as a first principle will be *true*, since it is the result of induction. Of course, since first principles are *defined* as true, if a cognizer begins with first principles, he will begin with something true. But since what we use as a first principle has to be the result of induction, what we use as first principles might very well not be genuine first principles at all, and there is no simple formal procedure for telling the genuine from the counterfeit. Even when a cognizer does begin with a genuine first principle, however, he will not be starting with a properly basic proposition, since the genuine first principle he begins with will be derived by induction.

Finally, a word should be said about Aquinas's term '*certitudo*,' generally translated as 'certainty.' Very little of Aquinas's commentary on the *Posterior Analytics* is devoted to an explanation of *certitudo*, but in the small space he gives to an exposition of the notion, he says these sorts of things about it:

Scientia is also certain cognition of a thing, but a person cannot cognize with *certitudo* anything which can be otherwise. And so it must also be the case that what we have *scientia* of cannot be otherwise than it is.³⁵

Furthermore, he compares one *scientia* to another in order to determine which has more *certitudo* (or is *certior*) than the other. Geometry, for example, has less *certitudo* than arithmetic. Finally, a cause is *certior* than its effect; a form is *certior* than matter (Ibid., I lectio 41).

34 Ibid., "ita se habet in via divisionis, sicut et in via inductionis.... C\um enim aliquid syllogistice probatur ... necesse est quod conclusio sit vera, praemissis existentibus veris. Hoc autem non accidit in via divisionis...."

35 Ibid., I lectio 4: "scientia est etiam certa cognitio rei; quod autem contingit aliter se habere, non potest aliquis per certitudinem cognoscere; ideo ulterius oportet quod id quod scitur non possit aliter se habere."

What exactly he has in mind with '*certitudo*' or '*certior*' isn't clear. But clearly it would be a mistake to translate '*certitudo*' in such contexts as 'certainty.' Certainty, as we understand it, seems to be a relation between a knower and what is known, but it's difficult to see why anyone would suppose that such a relation couldn't obtain between a knower and a contingent state of affairs. And in the comparison of one *scientia* to another or of a form to matter, questions of the relation between knower and what is known don't seem to come into the discussion at all. For these reasons, we should be cautious about how we render Aquinas's term '*certitudo*'; it is undoubtedly misleading simply to take it as equivalent to our term 'certainty.' In fact, although demonstration produces "the *certitudo* of *scientia*,"³⁶ Aquinas is perfectly willing to talk about the possibility of error arising in demonstration. For example, following Aristotle, he says "in order not to fall into mistakes in demonstration, one must be aware of the fact that often a universal seems to be demonstrated but in fact is not."³⁷

So, to summarize, then, on the view which takes Aquinas to be a Foundationalist, what constitutes the foundation for knowledge for him are propositions evident to the senses and the first principles of *scientia*; these will be the properly basic propositions which are known with certainty and from which all other non-basic propositions known with certainty are derived. But, in fact, the evidence that Aquinas is a Foundationalist depends on interpreting '*scientia*' as equivalent to 'knowledge,' and we have seen good reasons for supposing that such an interpretation is decidedly mistaken. Furthermore, on Aquinas's view, in one way or another, a person can be deceived as regards all the propositions which are supposed to

36 Ibid., proemium: "Est enim aliquis rationis processus necessitatem inducens, in quo non est possibile veritatis defectum; et per huiusmodi rationis processum scientiae certitudo acquiritur."

37 Ibid., I lectio 12: "quod non accidat in demonstratione peccatum, oportet non latere quod multoties videtur demonstrari universale, non autem demonstratur."

ground knowledge for him, so that the propositions which are supposed to be known with certainty according to Foundationalism aren't even guaranteed to be true on Aquinas's account and therefore obviously can't provide a guarantee of the certain truth of other, non-basic propositions derived from them. Finally, among the first principles of any *scientia*, on Aquinas's account, are proper principles, and these are propositions which aren't even basic, let alone properly basic, since they are derived from induction.

These considerations by themselves seem to me enough to undermine the claim that Aquinas must be taken to be a Foundationalist. In what follows I want to consider what theory of knowledge Aquinas does hold. The evidence adduced there seems to me to constitute further reason, if any is needed, for rejecting the view of Aquinas as a Foundationalist.

IV Reliabilism in Aquinas's Theory of Knowledge

If Aquinas isn't a Foundationalist, what view of knowledge does he take? Like Aristotle, Aquinas is a metaphysical realist. That is, he assumes that there is an external world around us and that it has certain features independently of the operation of any created intellect, so that it is up to our minds to discover truths about the world, rather than simply inventing or creating them. On Aquinas's account, the human intellect was created by God for the purpose of discovering such truths about the world.

All natural things are the product of divine art.... And so God gives to everything the best disposition, not best *simpliciter* but best as ordered to its proper end.... The proximate end of the human body is the rational soul and its activities.... Therefore, I say that God constituted (*instituit*) the human body in the best disposition appropriate to such a form [i.e., the soul] and its activities;³⁸

38 Thomas Aquinas [3], ST Ia q.91 a.3: "omnes res naturales productae sunt ab arte divina.... Sic igitur Deus unicuique rei naturali dedit optimam dispositionem, non quidem simpliciter, sed secundum ordinem ad proprium finem.... Finis autem proximus humani corporis est anima rationalis et operationes ipsius...."

A soul is united to a body in order to understand, which is [its] proper and principal activity. And consequently it is necessary that the body united to a rational soul be best suited to serve the soul in those things which are needed for understanding;³⁹

A person is said to have understanding or *scientia* insofar as his intellect is perfected to cognize what is true, which is the good of the intellect.⁴⁰

Not only did God make human beings in such a way as to be optimally suited for the rational soul's cognition of what is true, but the fact that human beings are made in the image of God consists just in their being cognizers of this sort.

Only creatures that have intellects are strictly speaking in the image of God.⁴¹

Since human beings are said to be in the image of God in virtue of their having a nature that includes an intellect, such a nature is most in the image of God in virtue of being most able to imitate God.⁴²

Being in the image of God pertains to the mind alone.... Only in rational creatures is there found a likeness of God which counts as an image ... as far as a likeness of the divine nature is concerned, rational creatures seem somehow to attain a

Dico ergo quod Deus instituit corpus humanum in optima dispositione secundum convenientiam ad talem formam et ad tales operationes." Cf. also ST Ia q.76 a.5.

39 Thomas Aquinas [5], q.8, ad 15: "anima unitur corpori propter intelligere, quae est propria et principalis operatio. Et ideo requiritur quod corpus unitum animae rationali sit optime dispositum ad serviendum animae in his quae sunt necessaria ad intelligendum."

40 Thomas Aquinas [9], q.un., a.7: "Dicitur enim aliquis intelligens vel sciens secundum quod eius intellectus perfectus est ad cognoscendum verum; quod quidem est bonum intellectus."

41 Thomas Aquinas [3], ST Ia q.93 a.2: "solae intellectuales creaturae, proprie loquendo, sunt ad imaginem Dei."

42 Ibid., q.93 a.4: "cum homo secundum intellectualem naturam ad imaginem Dei esse dicatur, secundum hoc est maxime ad imaginem Dei, secundum quod intellectualis natura Deum maxime imitari potest."

representation of [that] type in virtue of imitating God not only in this, that he is and lives, but especially in this, that he understands.⁴³

So God has made human beings in his own image, and they are made in his image in virtue of the fact that, like him, they are cognizers; they can understand and know themselves, the world, and the world's creator. And human beings can accomplish this feat because God has constructed them to be cognizers and attainers of truth. How God has done so is a story Aquinas tells more of elsewhere than in his commentary on *Posterior Analytics*; I will content myself with just a word or two about it here.

Human cognizing, on Aquinas's view, is a process which depends primarily on two cognitive capacities (or sets of capacities): sense and intellect. Aquinas's account of sense is based on this view:

With regard to its proper object sense is not deceived ... (unless perhaps by accident as a result of some impediment which happens as regards the [physical organ]);⁴⁴

With regard to its proper sensibles, sense does not have false cognition, except by accident, and in only relatively few cases, because it doesn't receive the sensible form properly on account of some indisposition of the [physical organ]....⁴⁵

And this astonishing optimism as regards sense perception is echoed by his view of the intellect:

43 Ibid., q.93 a.6: "Esse ergo ad imaginem Dei pertinet solum ad mentem ... in sola creatura rationali invenitur similitudo Dei per modum imaginis.... Nam quantum ad similitudinem divinae naturae pertinet, creaturae rationales videntur quodammodo ad repraesentationem speciei pertinere, in quantum imitantur Deum non solum in hoc quod est et vivit, sed etiam in hoc quod intelligit...."

44 Ibid., q.85 a.6: "Sensus enim circa proprium objectum non decipitur... nisi forte per accidens, ex impedimento circa organum contingente."

45 Ibid., q.17 a.2: "circa propria sensibilia sensus non habet falsam cognitionem, nisi per accidens, et ut in paucioribus: ex eo scilicet quod, propter indispositionem organi, non convenienter recipit formam sensibilem."

The proper object of the intellect is the quiddity of a thing. And so as regards the quiddity of a thing, considered just as such, the intellect is not mistaken;⁴⁶

in a simple consideration of the quiddity of a thing and of things cognized by means of it, the intellect is never deceived.⁴⁷

As sense gets its form directly by a likeness of [its] proper sensibles, so intellect gets its form by a likeness of the quiddity of a thing. And so regarding the quiddity [of a thing] (*quod quid est*), intellect is not deceived, just as sense is not deceived regarding [its] proper sensibles.⁴⁸

For my purposes here what is important about these implausible sounding claims is just the attitude Aquinas takes towards our cognitive capacities. On Aquinas's view, our cognitive capacities are designed by God for the express purpose of enabling us to be cognizers of the truth, as God himself is. In particular, when we use sense and intellect as God designed them to be used in the environment suited to them, that is, in the world for which God designed human beings, then those faculties are absolutely reliable. In fact, not only are they reliable but as regards their proper objects it is even the case that neither sense nor intellect can be deceived or mistaken. The nature of Aquinas's account of our cognitive capacities can be shown most graphically by considering what he has to say about Adam.

It could not be the case that, while innocence remained, a human intellect accepted anything false as true.... The rectitude of the original condition is not compatible with any deception on the part of the intellect.⁴⁹

46 *Ibid.*, q.85 a.6: "Obiectum autem proprium intellectus est quidditas rei. Unde circa quidditatem rei, per se loquendo, intellectus non fallitur."

47 *Ibid.*, q.85 a.6 ad 1: "in absoluta consideratione quidditatis rei, et eorum quae per eam cognoscuntur, intellectus nunquam decipitur."

48 *Ibid.*, q.17 a.3: "Sicut autem sensus informatur directe similitudine propriorum sensibilium, ita intellectus informatur similitudine quidditatis rei. Unde circa quod quid est intellectus non decipitur: sicut neque sensus circa sensibilia propria."

49 *Ibid.*, q.94 a.4: "non poterat esse quod, innocentia manente, intellectus hominis

Every error is either guilt or punishment, and neither of these could be in the state of innocence; therefore, neither could error.⁵⁰

As the true is the good of the intellect, so the false is its evil.... If an opinion is false, it is a certain evil act on the part of the intellect. And so since in the state of innocence there was no corruption or evil, there could not be in the state of nature any false opinion.... And in this way in the intellect [of human beings in the state of nature] there could be no falsity.⁵¹

In a way, then, what has to be explained on Aquinas's views is not so much what accounts for our ability to know as what accounts for the fact that we are sometimes in error. And, in fact, it turns out that for Aquinas, because God has designed our cognitive capacities in such a way as to make us cognizers of the truth, it is only in our post-fall condition that error, deception, mistake, or even false opinion is a possibility at all. Error has to be explained as either guilt or punishment, on Aquinas's account. For my purposes here, we can consider this account of Aquinas's just as a source of information about his theory of knowledge. And in light of these views of his, it seems reasonable to take his theory of knowledge as a species of externalism, with reliabilist elements. On Aquinas's account, the reliable method or process whose functioning constitutes our knowing is just the natural operation of our cognitive capacities. For Aquinas, then, human knowledge is a function of our using the cognitive capacities God created in us as God designed them to be used in the world God created them to be used in. It is, on reflection, not at all surprising to find a theory of knowledge of this sort in a

alicui falso acquiesceret quasi vero ... rectitudo primi status non compatiebatur aliquam deceptionem circa intellectum."

50 Thomas Aquinas [8], q. 18 a. 6 s.c.: "omnis error vel est culpa, vel poena: quorum neutrum in statu innocentiae esse poterat. Ergo nec error."

51 *Ibid.*, q. 18 a. 6: "sicut verum est bonum intellectus, ita falsum malum ipsius ... si ipsa opinio falsa, sit quidam malus actus intellectus. Unde cum in statu innocentiae non fuerit aliqua corruptio vel aliquod malum, non potuit esse in statu innocentiae aliqua falsa opinio ... ita in intellectu eius nulla falsitas esse potuisset."

theist, which may help to explain why Aquinas's approach to knowledge bears a strong resemblance to the theory of knowledge Plantinga develops after rejecting the views he mistakenly attributes to Aquinas.

V Aquinas's Approach to Epistemology

It might occur to someone to object that if my interpretation of Aquinas's approach to epistemology is correct, we should expect to find some explicit statement of it somewhere in his works. In fact, what we have is a discussion of the way in which the mind acquires true beliefs — for example, in the commentary on *De Anima* — and exposition of *scientia*, which turns out to be only a species of cognition — for example, in the commentary on the *Posterior Analytics*. If Aquinas is an externalist, why isn't there in his works some straightforward presentation and analysis of externalism as a theory of knowledge?

To see the answer to this question, it helps to consider theories of knowledge in terms of an analogy. Suppose we were reflecting not on our cognitive capacities and theories of knowledge, but rather on race cars and theories of excellence in race car driving. Any good, complete manual presenting a theory of excellence in race car driving ought to include at least three parts. There might or might not be (1) an introduction in which the manual explains what no one really needs to be told, that excellence in race car driving is a matter of winning as many races as possible. But there needs to be (1) a section on race tracks, saying something about the environment in which the race car is designed to be driven. Then there should be (2) a section on race cars themselves, and it should be divided into two parts. (2a) Information about the general mechanics of race cars would comprise one part; it would explain in general how such cars are built and how they are designed to work. (2b) The other part would consist in evaluation of different sorts of companies or mechanics which build such cars and would explain the extent to which various firms or individuals could be trusted to turn out excellent machinery. Finally, there ought to be (3) a section on race car drivers and what they need

to do to drive well. This section will also be divided into two. (3a) One part will present general advice on how to avoid crashes; (3b) the other will give information on what drivers can do to make the car go as fast and as far as possible.

These parts of a theory of excellence in race car driving correspond to elements in a complete theory of knowledge. Which of the three parts of such a theory one emphasizes is a function of one's whole worldview and values.

Given Aquinas's robust faith in a provident creator of the world who has made human beings in his image and, like himself, cognizers of the truth, it is not surprising that some elements of the theory don't get much explicit development or analysis. He takes for granted that (1') the goal aimed at in the use of human intellect is the acquisition of truth about the world and its creator and the avoidance of falsehood. And as for (1') the track on which human cognitive equipment operates, Aquinas, like Aristotle, is clearly a realist; he thinks that there are truths about the world which the human mind must discover, rather than invent. This view flows from his theological commitments and therefore doesn't need or get lengthy argumentation. For these same reasons, it would be a mistake to look for explicit consideration of knowledge as a function of the reliable operation of human cognitive capacities. Given Aquinas's beliefs about God, it isn't likely that (2b') the part of epistemological theory corresponding to the section on car makers in the theory of race car driving will be well developed. The maker of human cognitive equipment is God, and his purpose in making that equipment is to enable human intellects to imitate him in his activity as a knower. This view, which Aquinas takes to be revealed by Scripture, is so fundamental to his beliefs that it gets little explicit attention. (That worries about the nature and possibility of knowledge raised, for example, by skepticism should loom much larger in a theory of knowledge which isn't embedded in a theistic worldview or which is an accompaniment to an atheistic outlook is certainly understandable. It is plausible to suppose, however, that a theory of knowledge at least similar to Aquinas's can form part of a non-theistic worldview. For God as the guarantor of the reliability of human cognitive equipment, it is possible to substitute evolution and to suppose that the theory of evolu-

tion provides roughly the same support for such a theory of knowledge that Aquinas's theism does.)

What is of far more interest to Aquinas than these issues are those parts of a complete theory of knowledge corresponding to the remaining parts of a thorough theory of race car driving — (2a'), (3a'), and (3b'). The epistemological equivalent of an account of the mechanics of race cars is comprised in Aquinas's commentary on *De anima* and his other discussions of the way in which the human mind works. (There is, of course, no reason why this part of Aquinas's philosophy can't also be understood as part of his philosophy of mind. But insofar as his theory of knowledge takes knowledge to be a function of human cognitive capacities' operating as they were designed to operate, the story of how the mind operates will also be part of a complete theory of knowledge.) This part of the story is the subject for another paper, and so I leave it aside here.

What is left is the equivalent of that part of a treatise on race car driving that we might think of as the driver's manual: (3a) how to avoid crashes and (3b) how to get the most out of the car — how (3a') to avoid falsehood and (3b') acquire truth, perhaps even truths of a deep, significant, or far-ranging character. Here, too, which of these two parts of the enterprise of knowledge one emphasizes is a function of one's values and worldview. Aquinas does discuss, for example, the nature and detection of fallacies in reasoning or the way in which the mind can be deceived. But a driver who thought her car was built by God and she herself was under the direct providential care of God, who supposed that God himself wanted her to win races, might be less worried about the possibility of crashing and more concerned with doing her part to make the car go as far and as fast as possible. Similarly, Aquinas, who thinks in general that everything happens under God's providential control, supposes in particular both that God is the maker of human cognitive equipment and that God designed that equipment for the purpose of acquiring truth. Consequently, it isn't surprising to find him paying less attention to how we know we're not mistaken or deceived or how we keep from being in those undesirable states and more attention to how we use our cognitive capacities in gaining truth. Of course, this story will be considerably complicated if we add to it Aquinas's views concerning

the effects of sin on the will and his account of the relations between intellect and will, but these additional considerations will only complicate and not undermine the epistemological story I have argued for here. At any rate, the method for acquiring significant and far-ranging truth is, in my view, the object of Aquinas's work on *scientia*, especially in his commentary on the *Posterior Analytics*, as I hope to show in what follows.

VI Aquinas's Commentary on the *Posterior Analytics*

As we have seen, *scientia*, on Aquinas's view, is the cognition of the causes of things, where the causes in question aren't divine causes but belong to a lower order. "A cause," he says, "is what is sought in all ... inquiries [in which demonstration plays a part]."⁵²

In retrospect, it seems clear that this description by itself should have given us pause about adopting the view of Aquinas as a Foundationalist whose theory of *scientia* is a theory of knowledge. A Foundationalist theory of knowledge is a theory which explains what counts as knowledge and what does not and which accounts for the trustworthiness of what counts as knowledge. But the theory of *scientia* is a different enterprise; *scientia* is a matter of cognizing causes of things, of finding causal explanations for currently accepted claims.

So, for example, Aquinas says that

There are certain things which we would not ask about with [any] doubt if we were to see them, not because *scientia* consists in seeing but because the universal, with which *scientia* is concerned, would be obtained by means of experience, on the basis of the things seen. For instance, if we were to see glass as porous and see how the light is transmitted through the openings of the glass, we would have *scientia* (*sciremus*) of why the glass is transparent.⁵³

52 Thomas Aquinas [17], *Super Post. An.* II lectio 1: "Causa autem est quod quaeritur in omnibus praedictis quaestionibus."

53 *Ibid.*, I lectio 42: "Quaedam enim sunt de quibus non quaereremus dubitando, si ea vidissemus; non quidem eo quod scientia consistat in videndo, sed in

Similarly, he says,

Suppose ... that someone were on the moon itself and by sense perceived the interposition of the earth by its shadow. He would perceive by sense that the moon was then eclipsed by the shadow of the earth, but he would not for that reason have full *scientia* of the cause of the eclipse. For what causes an eclipse in general (*universaliter*) is the proper (*per se*) cause of the eclipse.⁵⁴

Scientia is superior to sense. For it is clear that cognition which is through a cause is nobler, but a proper (*per se*) cause is a universal cause ... and therefore cognition through a universal cause, which is the character of *scientia*, is more honorable. And because it is impossible to apprehend a universal cause by means of sense, it follows that *scientia*, which shows the universal cause, is not only more honorable than all sensory cognition but also than all other intellectual cognition, when it is of things which have a cause.⁵⁵

Descriptions of these causes serve as the *premisses*, rather than the conclusions, of demonstrative arguments.

The middle of a demonstration is a cause;

quantum ex rebus visis per viam experimenti accipitur universale, de quo est scientia. Puta si videremus vitrum perforatum, et quomodo lumen pertransit per foramina vitri, sciremus propter quid vitrum est transparentens."

54 Ibid., I lectio 42: "Ponamus ergo quod aliquis esset in ipsa luna, et sensu perciperet interpositionem terrae per umbram ipsius: sensu quidem perciperet quod luna tunc deficeret ex umbra terrae, sed non propter hoc sciret totaliter causam eclipsis. Illud enim est per se causa eclipsis, quod causat universaliter eclipsim."

55 Ibid., I lectio 42: "scientia est potior quam sensus. Manifestum est enim quod cognitio quae est per causam, nobilior est: causa autem per se est universalis causa, ut iam dictum est; et ideo cognitio per universalem causam, qualis est scientia, est honorabilis. Et quia huiusmodi universalem causam impossibile est apprehendere per sensum, ideo consequens est quod scientia, quae ostendit causam universalem, non solum sit honorabilior omni sensitiva cognitione, sed etiam omni alia intellectiva cognitione, dummodo sit de rebus quae habent causam." See also Thomas Aquinas [15], L 1 lectio 1.

by the middle of a demonstration all the [four] causes are manifested, because any of these [four] causes can be taken as the middle of a demonstration.⁵⁶

So, on Aquinas's views, demonstration isn't a matter of starting with epistemically certain propositions and deducing conclusions which are consequently equally certain, in order to have knowledge of a particularly rigorous sort. Rather, on his account, in order to find a demonstration we need to look for causes of what is described in the claim that is to be the conclusion of the demonstration. Once we have the demonstration, we have *scientia* of the subject matter presented in that claim in virtue of having a causal explanation of the state of affairs described in the demonstration's conclusion. And what demonstration confers is not so much epistemic certainty as it is depth of understanding. Because Aquinas is often misunderstood on this score, Paul Durbin, in commenting on Aquinas's understanding of demonstration, says

After Descartes it has become necessary to distinguish Aristotelean "syllogismus" and "demonstratio" from a Cartesian, rationalist "deduction." Aristotle and St Thomas do not begin with self-evident principles and derive conclusions therefrom in a rationalist-deductive mode (even though *Posterior Analytics* is often interpreted this way); rather, they begin with a statement to be justified (it will become the "conclusion" only in a formal restatement of the argument) and "reduce" it back to its ultimate explanatory principles.⁵⁷

When Aquinas himself describes what he is doing in his commentary on the *Posterior Analytics*, he describes his project in this way. There are two different processes human reason engages in; one is discovery or invention, and the other is judgment.

Following the path of inquiry or discovery, human reasoning proceeds from certain things understood simply, and these are first principles.

56 Thomas Aquinas [17], *Super Post. An.* II lectio 9: "medium demonstrationis sit causa"; 'per medium demonstrationis omnes hae causae manifestantur; quia quaelibet harum causarum potest accipi ut medium demonstrationis."

57 Paul T. Durbin, *Blackfriars ST*, vol. 12 (New York: McGraw-Hill 1968), 82, n. a

And, again, following the path of judgment, human reasoning returns by analysis to first principles, which it ponders once it has discovered them.⁵⁸

So, according to Aquinas, when we are engaged in what he calls 'discovery,' we proceed from first principles, reasoning *from* them to other things; when we are concerned with what he calls 'judgment,' we reason *to* first principles by means of analysis. On the common account of Aquinas as a Foundationalist, his commentary on the *Posterior Analytics* and his other discussions of epistemology would count as descriptions of discovery, since in those discussions Aquinas is supposed to be explaining how we proceed from first principles to other things known with certainty. But in his introduction to his commentary on the *Posterior Analytics*, Aquinas takes the opposite view. He thinks there are three different reasoning processes examined in Aristotle's logical works. The first process yields *scientia*.

The part of logic which is principally devoted to the first process is called the judicative part, because judgment goes with the certitude of *scientia*. And because we cannot have certain judgment about effects except by analysis into first principles, this part is called "Analytics"⁵⁹

Sometimes this judgment is based on the matter rather than the form of a syllogism, and "the *Posterior Analytics*, which has to do with the demonstrative syllogism, is devoted to this."⁶⁰

58 Thomas Aquinas [3], ST Ia q.79 a.8: "ratiocinatio humana, secundum viam inquisitionis vel inventionis, procedit a quibusdam simpliciter intellectis, quae sunt prima principia; et rursus, in via iudicii, resolvendo redit ad prima principia, ad quae inventa examinat."

59 Thomas Aquinas [17], *Super Post. An. proemium*: "Pars autem Logicae, quae primo deservit processui, pars iudicativa dicitur, eo quod iudicium est cum certitudine scientiae. Et quia iudicium certum de effectibus haberi non potest nisi resolvendo in prima principia, ideo pars haec Analytica vocatur, idest resolutoria."

60 *Ibid.*, proemium: "ad hoc ordinatur liber Posteriorum analyticorum, qui est de syllogismo demonstrativo."

But there is also a second reasoning process, another part of logic, which doesn't yield *scientia*, and "this is called 'discovery'.... The *Topics* or dialectic is devoted to this." And so, as it turns out, is the *Rhetoric*.⁶¹

So on Aquinas's account discovery is a part of dialectic or rhetoric, rather than of demonstration, and what is covered in his commentary on the *Posterior Analytics* is judgment. But, according to Aquinas, judgment is a matter of returning to first principles, rather than beginning from them and deducing other propositions from them. The subject matter Aquinas takes to be covered both in Aristotle's *Posterior Analytics* and in his own commentary on it, then, has as its main emphasis finding causal explanations for the states of affairs described in claims which become the conclusions of demonstrative syllogisms, and tracing those causal explanations back to first principles. And the point of this process is to yield a deeper understanding of the nature of the state of affairs being described. So a demonstrative syllogism produces *scientia* in virtue of the fact that it shows the causes and so provides an explanation of the syllogism's conclusion. This account of Aquinas's views helps to clarify some of his examples, presented above. For example, on this interpretation, it is easier to understand his example involving the lunar eclipse. Both the person who is on the moon watching an eclipse of the moon and the physicist who understands eclipses know that the moon is sometimes eclipsed (or is now eclipsed). But only the physicist has *scientia* of that fact because only the physicist understands in general the causes of eclipses. On this interpretation, then, a person has more *scientia* in virtue of knowing more, and more ultimate, causal explanations of more states of affairs.

61 Ibid., proemium: "Secundo autem rationis processui deservit alia pars logicae, quae dicitur Inventiva.... Per huiusmodi enim processum, quandoque quidem, etsi non fiat scientia, fit tamen fides vel opinio propter probabilitatem propositionum, ex quibus proceditur ... et ad hoc ordinatur Topica sive Dialectica.... Quandoque vero, non fit complete fides vel opinio, sed suspicio quaedam.... Et ad hoc ordinatur Rhetorica."

On this interpretation of Aquinas, then, how shall we translate *scientia*? 'Discipline,' 'expertise,' 'body of knowledge' are all possibilities, except that they leave us no handy analogue for the verb '*scire*.' 'Understanding' might do the job, except that it has unfortunately become the conventional translation for '*intellectus*.' Perhaps the best possibility is just to translate it by its cognate, 'science,' with a reminder to the reader that science so understood also includes, for example, mathematics and metaphysics. Understanding *scientia* as science in this broad sense will help us to digest some of Aquinas's examples of demonstration, which are surprising and perplexing on the Foundationalist interpretation.

In illustrating the different kinds of causes that can serve as the middle of a demonstration, Aquinas gives this example as an instance of a demonstration in which the middle is an efficient cause:

[Aristotle] presents an example of an efficient cause using a certain story about the Greeks. Allied with certain other Greeks, the Athenians once invaded the Sardians, who were subject to the king of the Medes, and therefore the Medes invaded the Athenians. He says, therefore, that one can ask the reason why the war of the Medes with the Athenians occurred, and this reason why is a cause of the Athenians' being attacked by the Medes.... The middle ... in this case has to do with the Athenians who first began the war. And so it is clear that here a cause which is efficient (*primo movit*) is taken as a middle.⁶²

I am not at all clear on how this example could be construed on the Foundationalist interpretation of Aquinas. What combination of self-evident propositions and propositions evident to the senses of a person living in Aquinas's time could yield the conclusion that the Medes made war on the Athenians? But on the account I have been

62 Ibid., II lectio 9: "ponit exemplum de causa movente, tangens quamdam Graecorum historiam: videlicet quod Athenienses quondam, adiunctis sibi quibusdam aliis Graecis, invaserunt Sardenses, qui erant subiecti regi Medorum; et ideo Medi invaserunt Athenienses. Dicit ergo quod quaeri potest propter quid bellum Medorum factum est cum Atheniensibus; et hoc propter quid est causa quare Athenienses impugnati sunt a Medis.... Hoc autem, scilicet B, quod est medium, pertinet ad Athenienses, qui prius bellum inceperunt. Et sic patet quod hic accipitur quasi medium causa quae primo movit."

developing here it isn't difficult to accommodate this example if we take 'science' broadly enough to include the social sciences as well.

The fact that in this passage Aquinas is obviously discussing an example of Aristotle's should serve to remind us that the question of Aquinas's relation to Aristotle still remains. On Irwin's view of Aristotle's *Posterior Analytics*, Aristotle is a foundationalist, at least at the time of writing that work. I have been at pains to show that Aquinas's commentary on the *Posterior Analytics* cannot be interpreted as presenting his theory of knowledge, that *scientia* in that work is not equivalent to 'knowledge,' and that Aquinas's epistemological position is not correctly characterized as Foundationalism. I am not clear what species of foundationalism Irwin is attributing to Aristotle, but if it is an internalist theory of knowledge or if it bears a family resemblance to Foundationalism, then, on my interpretation of Aquinas, there are two ways of thinking about Aquinas's relation to Aristotle. One is that Aquinas completely misunderstood the nature of Aristotle's treatise and that although he thought he was simply explaining and developing Aristotle's thought, in fact he was radically altering the nature of Aristotelian epistemology. And the other is that we suppose Aquinas was an astute reader of Aristotle and that the evidence gathered here to reject the view of Aquinas as a Foundationalist is some reason to rethink at least one current account of Aristotle. Either of these possibilities is compatible with the interpretation of Aquinas I have defended here, but deciding which one to accept seems to me to belong decidedly to the province of the historians of ancient philosophy. On that score, then, this paper will come to no judgment. When the issue is adjudicated, however, it should be resolved with a clear recognition of Aquinas as holding not Foundationalism but rather an interesting theological externalism with reliabilist elements.⁶³

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