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MEDIEVAL SOCIAL EPISTEMOLOGY: *SCIENTIA* FOR MERE MORTALS

ABSTRACT

Medieval epistemology begins as ideal theory: when is one ideally situated with regard to one's grasp of the way things are? Taking as their starting point Aristotle's *Posterior Analytics*, scholastic authors conceive of the goal of cognitive inquiry as the achievement of *scientia*, a systematic body of beliefs, grasped as certain, and grounded in demonstrative reasons that show the reason why things are so. Obviously, however, there is not much we know in this way. The very strictness of this ideal in fact gives rise to a body of literature on how Aristotle's framework might be relaxed in various ways, for certain specific purposes. In asking such questions, scholastic authors are in effect pursuing the project of social epistemology, by trying to adapt their ideal theory to the circumstances of everyday life.

In epistemology, as in so many things, it matters whether one begins with Plato or Aristotle. If it is the *Meno* or the *Theaetetus* that one takes as one's model, the goal is likely to be a fine-grained discussion of the ways in which we use the term 'knowledge,' sensitive to ordinary language and to potential counterexamples. If, instead, one chooses to follow the *Posterior Analytics*, epistemology will look to be an exercise in ideal theory: what is the perfect epistemic state for an agent to be in or, in other words, when is one ideally situated with regard to one's grasp of the way things are?

Medieval philosophers almost invariably took Aristotle as their exemplar and devoted considerable effort, going far beyond the *Posterior Analytics*, to developing the notion of knowledge or *scientia* as a perfect grasp of some state of affairs. This picture has, indeed, filtered into the modern world, where we crown the most elevated epistemic achievements with the title of *science*, shunting off more mundane cognitive successes as mere, common *knowledge*. It is this latter category, however, the category of ordinary knowledge, that modern philosophers have been mostly interested in, a topic they have pursued in Platonic fashion, searching for the definition of an idea that seems familiar but yet elusive. The project of describing a cognitive ideal, in contrast, has received little attention in modern

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epistemology. Although that sort of quest for *scientia* reached its apotheosis in Descartes's *Meditations*, the lesson that subsequent philosophers largely took from that endeavor was that we must content ourselves in the epistemic domain with something far less than perfection. From Locke forward, the question has been whether the grasp we have of the world around us is good enough – good enough, that is, to count as knowledge.

Reflection on the ideal of Aristotelian *scientia* makes it clear why it was eventually cast aside. According to the *Posterior Analytics*, for a proposition to be the object of *scientia* (*epistēmē* in Greek), it must be necessary and universal, known on the basis of an affirmative demonstration in the first syllogistic figure, the premises of which are themselves necessary and explanatory of the conclusion. Plainly, there is not much we know in that way. Now, to be sure, ideal theory may have its interest even if the ideal it describes is rarely met. Here, however, my interest will be in how medieval authors relaxed these Aristotelian strictures in various ways, for certain specific purposes. In so doing, they were in effect pursuing the project of social epistemology, by trying to adapt their ideal theory to the circumstances of everyday life. The result, as we shall see, is an epistemic theory that is responsive to the context of inquiry. In real life, cognitive agents face non-ideal situations that may involve contingent particulars, uncertain premises, and mysterious background conditions, to name just a few potential difficulties. Taking such circumstances into account does not mean abandoning the ideal-theory framework. The project, instead, is to track just how far, and in which directions, those ideal conditions need to be modified in order to be practicable.

1. THE IDEAL OF *SCIENTIA*

Before considering various departures from the ideal, it will be helpful to consider briefly how the ideal case itself was understood. Naturally, medieval Aristotelians differed among themselves on the details here, often significantly, but for our purposes it will be enough to look at a single representative case, that of John Duns Scotus, writing around the start of the fourteenth century. Scotus defines *scientia* in the strict sense as

(1) the certain cognition of
(2) a necessary truth that is
(3) evident through some prior necessary cause that
(4) entails its conclusion through a discursive syllogism.[1]

The last three criteria are plainly inspired by the *Posterior Analytics*. Condition (1) is not Aristotelian, inasmuch as there is, rather surprisingly, nothing in the *Posterior Analytics* that links *epistēmē* with certainty.[2] Scotus, however, like most of his contemporaries, thinks not just that certainty is among the criteria for *scientia*, but that it is in fact the core condition on which the others depend. Here is how he

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argues for the inclusion of (1):

> The first condition, that this *scientia* or cognition be certain, excluding all deception, opinion, and doubt, applies to every intellectual virtue, because every intellectual virtue is a perfection of intellect, disposing intellect for its perfect operation, and a perfect intellectual operation is a certain[3] cognition of what is true. Hence every intellectual virtue is a disposition for determinately saying what is true. For this reason opinion and mistrust, which can extend to what is false, are not intellectual virtues. (*Reportatio* prol. 1.1, n. 8)

The passage takes for granted several things. First, it accepts the standard Aristotelian analysis of *scientia* as a kind of virtue. It also accepts the standard analysis of a virtue as a disposition that perfects its possessor.[4] This is to say, in effect, that we are doing ideal theory – looking for an account of the "perfection of intellect" that disposes the intellect for a "perfect intellectual operation." Just as to have the virtue of honesty is to achieve a certain sort of excellence in the moral domain, so to have the virtue of *scientia* is to achieve excellence in the cognitive domain, whether that be geometry or philosophy or something else. Once one sees the issue in these terms, then of course *scientia* will require certainty, because the intellect will hardly be operating perfectly if its grasp of the truth is uncertain. That is the province of mere opinion, which is scarcely an intellectual virtue.

Talk of certainty is ambiguous between a subjective and an objective sense. The first of these consists in the believer's feeling certain, whereas the second consists in the belief's being certainly true. Scotus himself does not explicitly draw any such distinction, and the passage just quoted might be read in either way. The context of the argument, however, seems to require both kinds of certainty, since this is what the "perfection of intellect" would seem to demand. That Scotus at least has in mind objective certainty becomes clear as he goes on to discuss condition (2):

> The second condition, that *scientia* concerns what is necessarily true, follows from the first. For if *scientia* were of something contingently true, it could extend to something false, on account of its object's undergoing change, as happens with the object of opinion. *Scientia*, however, necessarily, is a disposition that is essentially cognitive of what is true. Therefore it necessarily includes essentially not only a *general* relation between disposition and object but a *specific* one – namely, one of conformity to that object. But if the object were not necessarily true then the disposition, while remaining the same, could sometimes be in conformity to that object and sometimes not, on account of that object's undergoing change. And then it could be sometimes true and sometimes false. (ibid., n. 9)

Scotus might seem to be playing fast and loose with the scope of the modal operators – fallaciously moving from *necessarily, scientia concerns what is true* to *scientia concerns what is necessarily true* – but in fact there is a cogent argument here. He says at the start that (2) follows from (1), which tells us first that (2) is a further consequence of *scientia*'s status as a perfect epistemic state, and tells us more specifically that (2) is connected with certainty. If the sort of certainty at issue

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were merely subjective, then there would be no path to necessary truth, since one can feel utterly certain about contingent truths (and falsehoods), and can feel quite uncertain about necessary truths. There is, however, a clear link between objective certainty and necessity, inasmuch as a proposition that is necessarily true is one that is determinately and fixedly true. The truth of necessary propositions is, in this sense, certain. Genuine *scientia*, Scotus is contending, must be stable in this way in order to safeguard the perfection of *scientia*. Beliefs formed about vacillating contingent things could hardly count as satisfying the epistemic ideal.

Scotus has less to say about the last two conditions, because he regards them as incidental to the core notion of cognitive perfection. Condition (3) does not obtain, for instance, in the case of self-evident truths, and of course grasping truths in that way is no imperfection. We say that *scientia* requires (3) only because we have in mind a systematic body of truths, grounded in first principles but reaching out to conclusions derived from those starting points. Still, of course, it cannot be *scientia* all the way down, or there will be no foundation. The first principles are grasped not through *scientia*, then, but through "understanding" (*intellectus*), which is simply a different sort of cognitive perfection (ibid., n. 10). As for (4), far from being a perfection, it is in fact an imperfection. It would be better to have the sort of intellect that God has, an intellect that immediately sees all the logical entailments of a given body of truths. We, however, have to work laboriously toward those conclusions, using the syllogistic method. For us mere mortals, then, this is what *scientia* must look like (ibid., n. 11).

Already then, with condition (4), Scotus is beginning to move away from the project of an ideal theory. A truly ideal cognitive state would not be discursive at all, but would consist in the sort of at-a-glance omniscience that is unique to God. Since it hardly helps us to concentrate on that sort of unattainable case, Scotus builds a certain amount of imperfection into the theory right at the start, even into his account of *scientia* in the strict sense. Let us now turn to some ways in which medieval epistemic theory made even greater concessions to the practical reality of our cognitive circumstances.

2. COMMON KNOWLEDGE

From the very earliest medieval Latin discussions of the *Posterior Analytics*, it was obvious that a complete account of *scientia* would have to distinguish between the strictest ideal case and various more relaxed criteria. The first Latin commentator was Robert Grosseteste, in the 1220s, who distinguishes four progressively stricter accounts:

> It does not escape us, however, that having *scientia* is spoken of broadly, strictly, more strictly, and most strictly. [a] *Scientia* commonly so-called is [merely] comprehension of truth. Unstable contingent things are objects of *scientia* in this way. [b] *Scientia* strictly so-called is comprehension of the truth of things that are always or most of the time in one way. Natural things – namely, natural contingencies – are objects of *scientia* in this

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> way. Of these things there is demonstration broadly so-called. [c] *Scientia* more strictly so-called is comprehension of the truth of things that are always in one way. Both the principles and the conclusions in mathematics are objects of *scientia* in this way.… [d] *Scientia* most strictly so-called is comprehension of what exists immutably by means of the comprehension of that from which it has immutable being. This is by means of the comprehension of a cause that is immutable in its being and its causing. (*In Post. an.* I.2, ed. Rossi, 99)

The last of these is Grosseteste's account of ideal knowledge: knowledge of an immutable object grasped through a cause that is itself immutable. The prior three cases water this down in various ways. In the third case, that of mathematical knowledge, the objects are necessary but are not grasped through their causes. From the usual scholastic perspective, then, the geometric method is not quite the ideal method for acquiring knowledge – after all, in geometry the axioms are not the *cause* of the theorems they prove. Hence geometry and other branches of mathematics are a lower grade of knowledge.[5] In the second case, Grosseteste relaxes even the requirement that the object of belief be necessary, allowing instead that one might have knowledge of what is true "for the most part." As Aristotle himself had stressed, this sort of concession is necessary to encompass the knowledge of natural phenomena in domains like biology. Finally, in the first case, Grosseteste allows a kind of knowledge as "commonly so-called," which requires only that one grasp the truth. That truth need not be necessary or even true for the most part, and it need not be based on a grasp of the underlying cause.[6]

Grosseteste's four accounts were widely cited, especially the first case. It is not perfectly obvious, however, what the motivation is for this theory of common knowledge. In part, Grosseteste seems simply to be registering the fact that folk ordinarily do talk about knowing "unstable contingent" truths. Perhaps, too, he is acknowledging that there are many such cases in which it would seem absurd to deny that one has knowledge, even in a fairly strict sense. This comes out quite clearly in William Ockham's similar discussion of different degrees of knowledge. Here is Ockham's lowest grade:

> In one way knowledge (*scientia*) is a certain apprehension of something true. And in this way some things are known through faith alone – as when we say we know that Rome is a large city, even though we have never seen it. Likewise I say I know that he is my father and she is my mother, and so on for other things that are not evidently grasped. Nevertheless, because we adhere to them without any doubt and because they are true, we are said to know them. (*Expositio Physicorum* prol. §2, tr. *Phil. Writings*, 4–5)

Cases of the sort Ockham describes are miles away from the ideal theory of the *Posterior Analytics*. Yet it seems clear to Ockham, as it did to Grosseteste and others, that in some sense we clearly do know these things. It is not just that the folk commonly talk this way, but that they are right to do so.

The goal of these discussions is to develop an account of how in practice we apply the concept of *knowing something*. Yet the case of common knowledge is

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puzzling and frustrating, because it requires relaxing the Aristotelian framework to such a degree that it is no longer apparent whether we are in that framework at all. The only thing common knowledge seems to require, according to Grosseteste, is grasping the truth, to which Ockham adds the further requirement of subjective certainty. It does not take Edmund Gettier, however, to see that this will hardly do as an analysis of knowledge, and subsequent medieval authors do occasionally point to counterexamples.[7] Surprisingly, however, scholastic authors put almost no effort into searching for more plausible conditions on knowledge in this weak, common sense. The reason, I believe, is that they conceived of epistemology as ideal theory rather than as an exercise in the analysis of ordinary language. For them it was enough to note the need to relax the theory in certain domains. A precise analysis of the boundaries – and, in particular, an analysis of where common knowledge gives way to mere belief without knowledge – was of no particular interest, because these were defective cases anyway, too far from the paradigm of *scientia* to be of much theoretical significance.

3. CERTAINTY

Even if scholastic authors are not interested in establishing criteria for common knowledge, they do take various strides toward a more satisfactory account of what is going on in these sorts of cases. The two aspects of knowledge in the strict, paradigmatic sense that are abandoned in the case of common knowledge are the requirement that the object be necessary, and the requirement that it be grasped through its cause. Grosseteste's brief remarks about common knowledge are frustrating because they seem to leave intact so little of the paradigmatic notion of *scientia*, and therefore make common knowledge unacceptably easy to acquire. Ockham's discussion, however, is more illuminating. What he says in the passage quoted above is that common knowledge of the sort he describes is acquired "through faith alone." This is not to say that such knowledge is acquired without any evidence – on the contrary, faith is a kind of evidence, the "evidence of things not seen" as Hebrews 11:1 famously puts it. Accordingly, Ockham chooses examples where one's knowledge arises not from direct perception, but from the testimony of others. One knows that Rome is a large city, on the basis of the reports of others, and one knows who one's biological parents are, again on testimony alone. So on Ockham's account the ideal framework of the *Posterior Analytics*, grounded in deductive proofs based on necessary truths, is weakened in cases of common knowledge but not weakened so far as to remove the need for any evidential ground whatsoever. Instead, in the cases he describes, there is evidence, but of another sort: not demonstration, but testimony.

Not all cases of common knowledge are grounded in testimony. In fact, the most obvious cases where we arrive at a certain apprehension of a contingent truth are cases of perceptual knowledge. On Ockham's analysis this counts as a distinct level of knowledge, where we grasp a contingent truth not on the basis of

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testimony, but through immediate observation. "For instance, even if no one tells me that the wall is white, from the mere fact of my seeing the whiteness of the wall, I know that the wall is white" (ibid.). From the modern perspective, this is of course a paradigm case of knowledge, and we accordingly worry over the apparent ease with which even here we might go wrong. From the scholastic perspective, in contrast, it is no surprise at all that we might go wrong in such cases, because we are still so far removed from the ideal case of knowledge. Although Ockham puts perceptual knowledge one step up from knowledge by testimony, in both cases we are in epistemic situations that are very far from ideal. We are trying to grasp some contingent and hence unstable feature of the world, and doing so through means that are themselves contingent and unstable. The grounds of our belief (testimony or perception) do not logically entail the conclusion we seek, and we have absolutely no idea of the reason why the conclusion holds (e.g., *why* the wall is white). From this perspective it goes without saying that we cannot be perfectly certain of such conclusions. That is both obvious and uninteresting. The more interesting question is why we should tolerate treating such non-ideal beliefs as knowledge at all.

In one sense, as remarked already, the reason why the theory should be extended to accommodate cases of common knowledge is wholly practical: we want an epistemic theory that is responsive to the actual circumstances of human life. Most of the things we find ourselves needing to believe (and unable not to believe) are hopeless as candidates for *scientia* in the ideal sense. Within certain scientific domains we can perhaps have the sort of demonstrative knowledge that the *Posterior Analytics* calls for. But even many fields of science will be non-ideal, either because they hold merely for the most part or because they do not yield an explanation of the phenomena. Indeed, as we have seen, not even mathematical knowledge counts as ideal. So if we want to engage with the sorts of knowledge claims that we mere mortals make, we need a theory that accommodates the sorts of doxastic practices that ordinary folk actually engage in – in particular the testimony of others and direct observation.

Still, one might suppose that, given our starting point, it would be better to conclude that the knowledge claims of ordinary folk just shouldn't be taken at face value at all. This would be to say that, strictly speaking, we do not have knowledge – or, to make the claim superficially less jarring, that we do not have *scientia* – in ordinary non-theoretical contexts. To meet this challenge, one needs an account of why common knowledge belongs in the same epistemic family as strict Aristotelian *scientia*. This would not require showing that common knowledge satisfies the requirements of the strict theory. Obviously it does not, and from the scholastic perspective it would be pointless to pretend otherwise, since the strict theory is merely an ideal that will of course not be attained in most cases. Still, to make a persuasive case that common knowledge is a version of *scientia*, one needs to explain how it connects to the governing paradigm case.

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One point of connection is the notion of *certainty*, which is a persistent element in accounts of *scientia* strict and loose. Even though certainty was not a feature of Aristotle's analysis of *epistēmē*, it becomes a defining feature in medieval accounts and from there makes its way into the modern era, via Descartes. For as much of the scholastic framework as Descartes rejects in the *Meditations*, he takes as that work's central ambition the acquisition of *scientia* in something very much like the scholastic sense, and above all takes for granted that the epistemic goal is complete certainty. Scholastic authors are not as ambitious as Descartes in this regard: they never suppose that this epistemic ideal is one that can be extended into the domain of ordinary empirical knowledge. Hence, as we have been seeing, they relax the ideal as necessary to accommodate the mundane realities of life. In line with this practice, it becomes common among later medieval authors to formulate relaxed conceptions of certainty. The most influential proponent of this approach was John Buridan, in the mid-fourteenth century. Buridan's treatment of certainty is notable for drawing a very clear distinction between the subjective and objective forms, and requiring both.[8] But most interesting for present purposes are the degrees of certainty that he describes. In the following passages, he first distinguishes subjective from objective certainty, and then describes two familiar kinds of objective certainty:

> In the genus of human cognition there are several kinds of certainty.... On our part, certainty should not be called that of *scientia* or assent unless it is firm – that is, without fear [of the opposite's being true]. On the part of the proposition, one sort of certainty is that which pertains to a proposition so firmly true that there is no power by which it (or any like it) can be made false.... But this sort of certainty is not required for *scientiae* that are natural or metaphysical, nor even in the arts or in practical matters. Another human certainty on the part of the proposition obtains because the proposition is true and cannot be made false by any natural power and natural manner of action, although it can be made false by a supernatural power and in a miraculous manner. And such certainty suffices for natural sciences. And thus I truly know, by natural science, that the heavens are moved and that the sun is bright. (*Summulae de dialectica* VIII.4.4, tr. Klima, 709)[9]

The passage offers a version of the now familiar distinction between two sorts of necessity, logical and natural. As an example of logical necessity, elided above, he gives the example of God's existence. His examples of natural necessity, at the end of the passage, are that the heavens are in motion and that the sun is bright. Ideally, the objects of cognition would be truths that are logically necessary. But this sort of certainty, Buridan indicates, is quite limited in its scope, and so most of the time we have to content ourselves with natural necessity. If we can arrive at knowledge concerning truths such as these, we should consider that knowledge to be as perfect as is practically obtainable.

Buridan's remarks about natural necessity are aimed at contemporary skeptics who argued that the only knowledge is that which satisfies the very highest standards for *scientia*, and that there is almost nothing we know in that way.[10]

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His reply to such a skeptic begins by marking off a lesser sort of necessity, natural necessity, which suffices for "human certainty." This is familiar enough as a way around skeptical hypotheses invoking supernatural deceivers and the like. But it does not take us very far into the domain of common knowledge, because we are still at the rarified level of natural science. Buridan goes farther, however, in a similar discussion from his *Questions on the Metaphysics*. After initially distinguishing between subjective and objective certainty, and distinguishing two grades of objective certainty (necessity) as above, Buridan here turns to an analysis of the different grades of subjective certainty. The first grade he describes is that of faith, by which he has in mind specifically religious faith, and he stresses that this can engender certainty of the highest subjective degree, even when the proposition in question is false. Thus "some heretics adhere to their false opinions to such an extent that they will to die before denying them." (II.1, f. 8vb) If one thinks of subjective certainty in terms of the heuristic of willingness to take a bet on a certain proposition, then these agents are certain enough to bet their lives, and indeed to bet the eternal future of their immortal souls.

The second grade of subjective certainty comes from "natural appearances and various arguments" – that is, on the basis of reasons of various sorts. In this sense too it is undoubtedly possible to comprehend the truth with certainty, but unfortunately it is again possible to be certain about many things that are false. Lastly, there is the third grade of certainty that comes of *evidentia*, which for Buridan amounts not just to any sort of evidentness, but to evidentness that satisfies a certain higher standard. What that standard is gets spelled out as follows:

> In a third way, firmness of assent comes from evidentness (*evidentia*). [a] This is called the evidentness of a proposition *simpliciter* when from the nature of sense or intellect a human being is forced or necessitated to assent to a proposition in such a way that he cannot dissent. Such evidentness, according to Aristotle, belongs to a first complex principle, as is clear in this fourth book [of the *Metaphysics*]. [b] In another way evidentness is taken hypothetically (*secundum quid sive ex suppositione*), as when before it was said that the common course of nature would be followed in things. And in this way it would be evident to us that all fire is hot and that the heavens are in motion – even though the contrary is possible by the power of God. Evidentness of this sort suffices for the principles and conclusions of natural science. [c] Yet there is still another weaker evidentness that suffices for acting well morally. This goes as follows: if someone, having seen and investigated all the attendant circumstances that one can investigate with diligence, judges in accord with the demands of such circumstances, then that judgment will be evident with an evidentness sufficient for acting well morally – even if that judgment were false on account of invincible ignorance concerning some circumstance. (8vb–9ra)

Buridan sketches three sub-grades of certainty here, based on three degrees of "evidentness." The project is by now familiar: to extend the *Posterior Analytics*' very strict conception of *scientia* to other sorts of contexts, first to natural science and then to the practical domain.

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In the first, strictest case, the intellect is compelled to assent, because the truth of the proposition in question is clear to anyone who understands the meaning of the terms. (Presumably Buridan also includes here propositions inferred from such principles through valid syllogistic reasoning.) Elsewhere, Buridan concedes that first principles of this sort *can* be doubted, even by someone who understands what they mean. He amusingly describes having asked "many old women" whether they could eat and not eat at the same time, which they of course deny, and then asking them whether the Almighty God could make this the case, to which they reply, "I don't know."[11] This does not undermine the idea that, to the right sort of cognitive agents, the Principle of Non-Contradiction and the like are perfectly certain. But for the purposes of a truly social epistemology, concerned with the knowledge of mere mortals, it may be that the old ladies are the more illuminating case. What it shows is that even in the most favorable sort of cases – a straightforward application of the clearest of first principles – the capacity of ordinary folk to achieve the highest degree of certainty is doubtful.

The second class of evidentness is conditional: if nature follows its "common course," then it is certain that this fire is hot. This obviously mirrors Buridan's weaker sort of necessity, and need not be discussed any further. The new idea in the passage comes with the third, final kind of evidentness, in the practical domain. Here we leave the realm of necessary propositions entirely, and consider cases where we have contingent, empirical evidence for a contingent conclusion. Buridan goes on to offer a specific example:

> For instance, it would be possible for a judge to act well and meritoriously by hanging a righteous man because through testimony and other documents it sufficiently appeared to him in accord with his duty that that good man was a bad murderer. (f. 9ra)

This is quite different from Ockham's examples of common knowledge. We are now considering a complex, contested case, on which a great deal rests and where the evidence may be equivocal. Moreover, Buridan adds a further twist to the story by specifying that in fact the judge gets it wrong: the man he hangs is a "good" and "righteous" one. Obviously there is no question of knowledge here, since the belief is not true. By focusing on a case of false judgment, Buridan wants us to focus on the nature of the evidence, and consider whether it is sufficient, despite being so far from the paradigm Aristotelian case of knowledge.

But sufficient for what? Knowledge is not Buridan's concern in this discussion. Rather than ask whether there is knowledge or *scientia* in these various cases, the title of Buridan's question is "whether it is possible for us to grasp the truth." From the scholastic perspective as I have been characterizing it, it is not very interesting to ask whether *scientia* is possible in these cases, as if there is some clear line that can be discerned between cases of knowledge and cases of mere belief. Rather, as I have stressed already, on the scholastic framework there is simply a steady falling away from the ideal case of *scientia*, and there is no reason to suppose there will be some specific place on that spectrum where our cognitive practices cease to count

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as *scientia*. What is interesting instead is to describe in a systematic way how we gradually fall off from that ideal, even while still comprehending the truth. Thus at the far end of the spectrum, but still on the spectrum, is the case of faith, where we entirely lack knowledge but still (may) have a certain grasp of the truth. Here, then, we have at least the beginnings of a systematic account of how the ideal of *scientia* can be brought down to the level of mere mortals. Yet Buridan's theory is obscure in a number of ways, as I will try to bring out in this final section of the paper.

4. EVIDENCE

It is clear that Buridan's efforts respond to a widely felt need to extend Aristotle's framework beyond the ideal case. John Wyclif nicely brings out the consequences of a too strict adherence to the ideal: "thus lay folk who do not doubt or run through premises to certify what they believe frequently know, whereas the educated, especially the philosophers, seeking demonstrations, are ignorant." (*Tractatus de logica* II.13, I:179) What this suggests is that we do not need a social epistemology so that the folk can know things – they are doing just fine without us. Instead, we need a social epistemology so that the philosophers can know as much as the folk do. In going all the way down to the level of moral certainty, Buridan creates a notion that would be extremely influential in the centuries to come, particularly in seventeenth-century England, thanks to William Chillingworth's *Religion of the Protestants*, one of the most influential English works of the century. Chillingworth characterizes a kind of certainty he describes as moral rather than mathematical, and attacks the enemies of religion for conflating the two:

> As if whatsoever is but probable, though in the highest degree of probability, were as likely to be false as true! Or because it is but morally, not mathematically certain that there was such a woman as Q. Elizabeth, such a man as H. the 8, that is in the highest degree probable, therefore it were an even wager there were none such! (I.4, 224)

Using exactly the example found in Buridan, Chillingworth remarks that "our judges are not infallible in their judgements, yet they are certain enough that they judge aright, and that they proceed according to the evidence that is given, when they condemn a thief or a murderer to the gallows" (I.3, 140). Such notions would have enormous influence on subsequent generations, as a strategy for coping with the challenge of skepticism, and this strategy would eventually make its way into the legal domain, as the standard of "beyond all reasonable doubt."[12]

Such strategies were not uncontroversial. Some sought to retain the link between knowledge and perfect certainty. Thomas White, for instance, criticized those who would "tear science itself out of the hands of the learned, and throw it into the dirt of probability." (1665, 55) Part of what is at issue here is that we stand at the linguistic juncture where '*scientia*' divides into 'knowledge' and 'science.' White would retain the notion of *scientia* in its ideal sense, and use this as a standard to develop the sciences, following Aristotle in showing "science in physics and

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metaphysics [!] worthy to vie with geometry" (ibid.). White's worry is that those who weaken the notion of *scientia*, while perhaps describing something fit for common knowledge, are in the process destroying the sorts of standards that ought to be maintained in the sciences.

The way these various authors frame this debate is instructive. On one hand Chillingworth, White, and others talk of different kinds of certainty, but at the same time they also speak of degrees of probability. Such language displays the same sort of subjective-objective ambiguity that infects scholastic discussions. That should not be surprising, of course, inasmuch as I have been arguing that these seventeenth-century debates have their origins in how scholastic authors coped with the ideal framework of the *Posterior Analytics*. Let me return to Buridan, then, for these last few pages, and consider how his discussion bears the seeds of two rather different ways to think about non-ideal epistemic cases.

As we have seen, Buridan's long discussion in his *Questions on the Metaphysics* takes as its focus the question of whether it is possible for us to grasp the truth. Ultimately, though, he says that the real question is whether we can grasp the truth with certainty. As Buridan immediately explains, that formulation is ambiguous in the usual way between a subjective and objective reading: can we be confident in our grasp of the truth, and can we grasp a truth that is fixed and stable. As for the first, the case of the heretics who would die for their beliefs shows just how easy it is to arrive at subjective certainty. So the question, Buridan says, is whether such subjective certainty can be reached on the basis of "evidentness." This term is my cautious but somewhat rebarbative translation of Buridan's '*evidentia*,' which once again is ambiguous in the familiar way. Subjectively speaking, a proposition might seem *evident* – it might, for instance, seem evident that the principle of non-contradiction is true. In the objective sense, in contrast, one might have *evidence* for a given proposition, as the judge has ample evidence for the guilt of the man he sentences to death. Buridan's discussion seems uneasily poised between these two notions, in part seeming to be interested in the objective notion of evidence, but not entirely disengaged from the subjective idea of a thing's seeming evident.

The heart of the problem is that epistemology before Buridan had never clearly come to grips with how to incorporate the notion of evidence into a theory of knowledge. Although the *Posterior Analytics* had described knowledge as grounded in a demonstrative syllogism, Aristotle offered no broader theory of evidence into which his syllogistic theory might fit.[13] Ockham and even more so Buridan are moving in this direction, but neither has a clear story about the role evidence plays in their account; neither, in short, has a theory of justification. It does seem clear that Buridan wants to build the notion of objective evidence into his theory of knowledge, as in this definition of *scientia* from his *Questions on the Posterior Analytics*:

> First I distinguish between *scientia* and true opinion. *Scientia* is a firm assent with firmness and evidentness and through firm, evident, and first principles.... Evidentness is required, in order to differentiate *scientia* from faith, because the article to which one

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> assents through faith is of the firmest truth, and that assent also ought to be firm without any fear [of the opposite's being true], but nevertheless it is not *scientia*, because evidentness is lacking. (I.32)

The juxtaposition here between *scientia* and faith suggests that evidentness should be understood in the objective sense of *evidence*.[14] It cannot be merely subjective confidence, since the faithful have that, nor can it be merely the necessity of the proposition, since God's existence is necessary. The problem comes in providing a systematic account of what such evidence is, and how it contributes to knowledge. The obvious solution – at least to our modern eyes – would be to treat evidence or justification as a separate requirement on *scientia*, satisfied in the ideal case by a demonstrative syllogism but perhaps less rigorously by a merely probable argument – what in the Aristotelian tradition are referred to as dialectical arguments[15] – or else by ordinary experience. Surprisingly, though, what Buridan and other scholastic authors instead generally choose to do is to attach the evidence requirement to their conception of certainty. Buridan's discussion suggests two rather different ways in which this might be done.

The first line of thought would tie the requirement of evidence to the notion that the belief in question must be fixed and stable. Aristotle himself nicely illustrates this point when he remarks, "We all suppose that what we have *epistēmē* of is not capable of being otherwise. In the case of things capable of being otherwise, when they have passed outside our observation, it is not apparent whether they exist or not" (*Nic. Ethics* VI 3, 1139b19–22). So the proposition that Socrates is jogging – the example is actually Buridan's[16] – is not a suitable object for strict *scientia* because once he rounds the corner we immediately lose our ability to say whether he is jogging. Necessary truths are ideal epistemic objects, according to this line of thought, because we don't have to worry about constantly observing them. If true, they are always true, and so it is enough to grasp their truth on one occasion.[17]

If we merely focus on the objective modal status of the proposition (logically or naturally necessary or contingent) and the objective situation of the observer (in this place or time), then we have not yet found a place for evidence, understood as an individual agent's actual grounds for confidence in a belief. But the case of Socrates' jogging points toward a way in which evidence might gain a foothold. For if Socrates is jogging right in front of you, as you watch, then it seems as objectively certain as anyone could wish that he is right now jogging. Although that proposition all by itself is highly contingent and unstable, it looks quite stable and certain relative to the sensory experience that you are presently having. In general, it seems as if one important way to get at objective certainty is to ask about the certainty of a proposition given the evidence that the epistemic agent has. This might be fit neatly into Buridan's way of handling necessity. Some propositions are utterly necessary, in the sense that they cannot be false no matter what happens, and if we grasp that this is so then we will be certain inasmuch as we cannot do anything

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but assent. Other propositions are physically necessary, and so if we consider such propositions with the assumption in mind that the laws of nature hold constant, then again we will be certain. Other propositions, even though they are highly contingent, will be certain given the agent's evidence. We are in a position to know that Socrates is jogging because that proposition is certain relative to the evidence we possess.

Although Buridan does not quite say all of this, what he does say might be read as pointing in this direction. If one does follow this path, it leads toward the modern notion of objective probability, which begins to be given theoretical shape in Pascal, Arnauld, and Nicole in the seventeenth century.[18] We can speak of propositions that are necessary *simpliciter* as having a probability of 1, and then assess the probability of contingent propositions in terms of their likelihood given the body of evidence that we have. Propositions in natural science might come out as having a probability of 1, or close to it, given that we assume the regularity of nature. In the practical domain few things would ever be so certain, but still it might be certain enough to count as knowledge. Again, though, the question of whether it is certain enough to count as knowledge is not the scholastic question. For them, as I have been stressing, epistemic states occur along a continuum without sharp breaks, and there is accordingly little point in worrying about whether a given context is now so far from the ideal that it should no longer count as *scientia*. The current proposal for thinking about evidence – treating it as information from which we assess the conditional probability of a proposition – suits that approach nicely, because it encourages us to set aside binary oppositions like knowing and not-knowing in favor of degrees of likelihood.

I said that Buridan's discussion points in two rather different directions. The second is a conception of evidence placed under the control of deontic norms. One can see this theme emerge in Buridan's discussion of the three classes of evidentness. In the first of the three cases, it is not possible *not* to believe a given principle, because it is an indubitable first principle, and so the issue of whether we are *right* to form that belief cannot even arise. In the second case, where the evidentness is conditional on the hypothesis of natural regularity, Buridan does not quite say that we would be right to form the belief. Instead he says that "evidentness of this sort suffices for the principles and conclusions of natural science" (as above). Presumably, Buridan means more than the purely descriptive claim that this is how in fact conclusions are reached in natural science. What he might seem further to mean is that we would be right, in some normative sense, to reach conclusions on this basis. The normative dimension of the discussion becomes explicit, however, only when Buridan arrives at the third class of evidentness, the practical domain. This evidentness, he says, is "sufficient for acting well morally." This is the same formulation as in the second case, but here the example of the judge clarifies the nature of the claim. If the judge satisfies this standard of evidentness, then in acting in accord with that judgment, by hanging the man, he "acts well and meritoriously." And because we have reached the moral domain here, it would seem that we are

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entitled to work back to the judgment itself, and say that *it* was the right judgment to reach. Although Buridan certainly does not make this explicit, we might regard this moral evaluation as infusing the entire discussion. The natural scientists are right to reach their conclusions on the basis of hypothetical evidentness; such evidence is "sufficient" for them to be in the right doxastically. And going all the way back to those who form their beliefs solely on the basis of faith, they too are right to do so. (Or at least they might be. What to say about the convinced heretic is a delicate question that Buridan does not here address.)

It is notable in this regard that Buridan characterizes the skeptics he is arguing against as "very bad men" (*Quaest. Metaph.* II.1, f. 9ra), thereby suggesting that their mistake is not just theoretical, but moral. In part this reflects the concern that philosophical skepticism will infect religion and morality, and so corrupt society. But Buridan might also be read as suggesting that, quite apart from its societal consequences, skepticism goes wrong more immediately with regard to the ethics of belief. One "acts well and meritoriously" when one satisfies the standards of evidentness that he describes. One who rejects these standards on the grounds that they do not satisfy the ideal of *scientia* is in the wrong, doxastically speaking.

Again, I do not mean to suggest that Buridan's discussion does anything more than point toward this line of thought. But there is certainly reason to want to ascribe such an idea to him. By introducing a normative component along these lines, Buridan has a way to make sense of the idea that one or another standard of evidentness is "sufficient" within a given domain. Without something like this, it is unclear why we should allow the natural scientists to satisfy one standard of evidentness and allow the judge to satisfy a weaker standard. Perhaps this is how in practice such disciplines work, and perhaps it is the best they can do. That, however, hardly constitutes an answer to the skeptical insistence that this is not good enough. Good enough for what, we should ask? To that question, the skeptic's reply seems to be: good enough to satisfy the epistemic ideal. Buridan's answer amounts to insisting that his relaxed standards are good enough to be right in the circumstances he describes. This is how we *ought* to form beliefs in the various domains. Such a claim might of course be challenged – the door to skepticism has by no means been slammed shut. But at least we now have a clearer framework within which to have the debate.[19]

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NOTES

1 Scotus offers essentially the same four-part definition at *Reportatio* prologue 1.1, n. 7, *Ordinatio* prol. p. 4 qq. 1–2 (ed. Vatican vol. I, n. 208), and *Ordinatio* III d. 24 q. unic. (ed. Wadding vol. VII.1, n. 13). In support of this definition he refers to Aristotle's definition of *epistēmē* at *Post. An.* I.2, 71b10–12: "we think we understand a thing *simpliciter* (and not in the sophistic fashion accidentally) whenever we think we are aware both that the explanation because of which the object is is its explanation, and that it is not possible for this to be otherwise."

2 The origins of the connection between *scientia* and certainty is a topic much in need of study. For some brief remarks, pointing toward Arabic sources, see Pasnau (2009, 365–8).

3 I take the word '*certa*' from the older Wadding edition of this text. The word is not found in more recent editions, but it surely needs to be there, since it is after all the major term of the argument, appearing as the predicate of the conclusion that "*scientia* is certain."

4 For the first of these, see *Nicomachean Ethics* VI.3; for the second, see II.6, 1106a15–16.

5 There is a large literature among late scholastic authors regarding whether mathematical knowledge should for this reason be considered defective, as it is on Grosseteste's scheme. Some argue to the contrary that mathematics is the ideal case of knowledge. These discussions are particularly interesting because they occur just as the geometric method was coming into vogue as a philosophical style, and just as natural philosophers like Galileo were beginning to treat mathematics as foundational for natural philosophy. For discussion, see Crombie (1953) and De Pace (1993).

6 One might suppose that it will be *propositions* that are the true objects of knowledge, but this was itself a matter of considerable dispute, with some authors attempting to frame

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an account of *things* as the objects of knowledge. For a brief discussion, see Pasnau (2009, 361–4).

7 See Pasnau (1995).

8 See, for example, *Summulae de dialectica* VIII.4.4, tr. Klima, 707 and *Quaest. in Metaphys.* II.1, f. 8vb. For fuller discussions of this material, see Klima (2009, ch. 11), Maier (1967), and Zupko (2001). For a more general account of Buridan's theory of *scientia*, see King (1987).

9 For similar remarks see also *Quaest. meta.* II.1 (f. 8vb) and V.2 (f. 27va).

10 Buridan seems in particular to have in mind Nicholas of Autrecourt, whose notorious letters point toward something close to global skepticism. See the edition and translation by L. M. de Rijk (1994), and the studies by Grellard (2005) and Thijssen (2000). Thijssen questions whether Autrecourt is in fact Buridan's target, and indeed there are other possibilities. Already in the Condemnation of 1277 one finds condemned the proposition that "one should not believe anything unless it is self-evident or can be manifested from self-evident principles."

11 *Quaestiones super libros Ethicorum* VI.11, f. 127vb. For translation and discussion of the passage see Zupko (2001, 177–8).

12 For a quick look at Chillingworth and his influence, see Popkin (2003, 65–6). For a more detailed discussions of developments in England, beginning with Chillingworth, see van Leeuwen (1970). On developments in law, see Popkin's interesting remarks (215–6) and the more extensive discussion in Waldman (1959). Just a few years before Chillingworth, Jean de Silhon distinguishes between the complete certainty of "demonstrations physiques" and the lesser certainty of "demonstrations morales" (1634, 189). Descartes, too, later speaks of moral certainty at *Principles of Philosophy* IV.205, claiming that his efforts at constructing a natural science should be expected to meet only that relaxed standard. There is no reason to think these authors are drawing directly on Buridan; rather, Buridan's ideas infiltrated later scholastic discussions, and from there into the seventeenth century. It is good to keep in mind, too, that the term 'moral' (in various languages) has a much broader sense during this time than it currently does, and can mean something like "according to common usage." (The *Oxford English Dictionary* contains a remarkable little essay on this subject (*vide* 'moral', a.7).) Hence late scholastic authors speak of "moral necessity" as that which occurs for the most part, and as contrasted with metaphysical and physical necessity. For an instance of this usage, and much discussion of its later development in Leibniz, see Murray (1995).

13 See Burnyeat (1981, 115): "Evidence, certainty, justification – these central concepts of the theory of knowledge have little or no place in his present concerns."

14 *Quaest. Post. An.* I.2 also makes the objectivity of *evidentia* clear, because it describes cases where someone is certain of something, and *takes* himself to have an "evident reason" (*ratio evidens*), but where in fact the reason is not evident.

15 A comprehensive discussion of how scholastic authors conceptualize the relaxed standards on *scientia* would have to come to grips with scholastic theories of dialectic, which grow out of their commentaries on Aristotle's *Topics*. For an overview of this territory, see Stump (1982).

16 *Summulae de dialectica* 8.4.4 (tr. Klima, 710). Buridan thinks that we have common *scientia* that Socrates is running when we can see his doing so. But as soon as he rounds the corner we have only opinion, and not *scientia* in any sense.

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17 This way of putting the importance of necessary truths might immediately make one think of events in the past. Although it must be a matter of some doubt whether Socrates is jogging once he rounds the corner, it may be quite certain that at 11:24 a.m. MDT, on August 28, 2009, Socrates was jogging. In some sense this does seem to count as a necessary truth – at any rate, it seems to satisfy perfectly the spirit of what these authors were looking for by way of necessary truths. So to explain why particular truths about the past are not appropriate objects of strict *scientia*, we need to appeal to some other principle. Aristotle expressly gives us just this, with his requirement that *epistēmē* concern what is universal (*Post. An.* I.4). Although scholastic authors do not usually make this requirement explicit, they presumably mean the necessity clause to include implicitly this further restriction.

18 For an overview see Hacking (2006).

19 I owe thanks to Frederick Schmitt for suggesting several improvements to a draft of this paper.

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