

# Duns Scotus's Epistemic Argument Against Divine Illumination\*

Billy Dunaway  
University of Oxford

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## 0 Preliminaries

When we don't know something, often this is because we are at risk of forming a false belief. If an outside agent could eliminate this risk, then in such cases such a person could in principle change ignorance into knowledge simply by affecting our environment, broadly construed. To what extent is this possible? On some plausible epistemic assumptions, even an omnipotent God is not always in a position to rescue the non-knower.

The context I will use for exploring these issues is a late medieval debate over divine illumination between Henry of Ghent and Duns Scotus. Roughly, the issue arises in the following form: both Henry and Scotus agree on the fairly point that beliefs that are at risk of being false aren't knowledge. Henry thinks that this condition applies to *all* of our beliefs formed with materials provided by purely natural processes. He takes this to be an argument for the conclusion that a kind of divine illumination occurs: we avoid ignorance only because God intervenes and illuminates our minds with materials that aren't susceptible to such risks. But Scotus replies that illumination isn't the answer to Henry's sceptical worries. If the initial worry about the risks involved in our natural sensory powers was sound, then adding illumination picture does nothing to eliminate these risks. This I will call Scotus's "epistemic argument" against divine illumination.

Although I will explore the issue of the ways in which epistemic risk can be eliminated in this medieval context, the issue is not merely a historical

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\*Thanks to John Hawthorne for discussion of some of the issues covered in this paper.

one. In the closing section of this paper, I show how the best “safety” principles in contemporary epistemology raise the same issue. These principles connect the absence of risk to knowledge, but on a naive interpretation they appear to make risk-elimination too easy. I will sketch how these principles should be understood, and the result both accommodates some potential counterexamples, and bolsters Scotus’s epistemic argument against divine illumination.

Before proceeding, some caveats are in order. First, although question of the ways in which epistemic risk can be eliminated arises in this historical context, my aim is not primarily to make contributions to existing Duns Scotus scholarship. I believe that what follows contains some helpful ways of thinking about Scotus’s thought that might benefit future scholarship, and sketch some potential benefits in §3. But I will rely primarily on the work of others to outline the basics of Scotus’s views on cognition and Henry’s argument for divine illumination.<sup>1</sup> I do not take any definitive stand on what the best interpretation of the Scotus passages I quote below; I merely take them to be very suggestive of some interesting lines of thought.

Second, as in any discussion of the relationship between historical and contemporary philosophy, issues of translation arise. While most of contemporary epistemology is conducted using the term ‘knowledge’, the medieval Latin discussions of broadly epistemic issues are conducted in variously using the terms *scientia*, *notitia*, and *cognitio*. Each of these terms can be used with different meanings, and even the same term can be used with different meanings on different occasions (See for example the discussion of *scientia* in Aquinas in Hawthorne (2013). ). Moreover in the passages I will be discussing, Scotus begins by discussing “certain knowledge” (*certae cognitionis*, *Ordinatio*, I, D. 3, Q. 4, n. 219<sup>2</sup>), and then thereafter limits his discussion to “certitude” (*certitudo*, n. 221) and applies the same conclusion to *scientia*, knowledge had by means of a demonstration (n. 224).

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<sup>1</sup>In particular I will rely on Adams (1987, Ch. 14), Cross (2014a), Pasnau (1997), and Rombeiro (2011).

<sup>2</sup>For quotations of Scotus I primarily rely on the translation in Wolter (1962) and translations from commentators, and will mark which translation I am relying on in particular quotations. Occasionally where relevant I will note which latin words are used in the original text, and here I rely on the Vatican edition of the *Ordinatio*, which can be found online at [http://www.logicmuseum.com/wiki/Authors/Duns\\_Scotus/Ordinatio](http://www.logicmuseum.com/wiki/Authors/Duns_Scotus/Ordinatio).

For simplicity I will treat Scotus's discussion as one primarily about what we would use the English term 'knowledge' for, noting only where important which Latin term Scotus is using.<sup>3</sup> I won't in general be advancing any arguments that this translational strategy is best, and will instead be more interested to show the connection between Scotus's discussion so interpreted and some outstanding issues in the contemporary discussion of knowledge. But there is one point that is worth making at the outset, since it will be crucial to what follows that we do not misinterpret Scotus as interested in some epistemological notions that are very different from knowledge.

*Certitudo* might, on its own, appear to be best thought of as something akin to high credence in the sense of modern epistemology of partial belief, or alternatively to a state of having access to one's knowledge by either knowing that one knows, or being very confident that one knows. Since we sometimes use the English word 'certain' to mark either high credence or access to one's knowledge, it can be tempting to treat the *certitudo* as equivalent to certainty in this sense. But in general medieval discussions of *certitudo* do not carry either of these connotations. Instead many uses tie *certitudo* to the *absence of the possibility of error*—something that can exist (or not) independent of whether one knows that it exists, or has a high credence. As we will see below, this makes medieval arguments about *certitudo* especially relevant to contemporary issues surrounding knowledge simpliciter.

I will briefly mention two points in favor of this claim, though there is no doubt that much more should be said on the issue. The first is from Aquinas's *Summa Theologica*, in a context where he is discussing the relationship between Sacred Doctrine (which deals with matters of faith) and ordinary "speculative" science:

Now one speculative science is said to be nobler than another, either by reason of its greater certitude (*certitudinem*), or by reason of the higher worth of its subject-matter. In both these respects this science [viz., Sacred Doctrine] surpasses other speculative sciences; in point of greater certitude, because other sciences derive their certitude from the natural light of human reason, which can err (*potest errare*); whereas this derives its certitude from the light of divine knowledge, which cannot be

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<sup>3</sup>For a relevant discussion of translational issues regarding 'scientia' and 'knowledge' in Aquinas, see Stump (1991).

misled (*decipi non potest*).<sup>4</sup>

Here Aquinas argues for the presence or absence of certitude to the possibility of error (and importantly not to high degree of confidence, or higher order knowledge): since the light of divine knowledge is the source of Sacred Doctrine, it cannot err and thereby counts as certain.

Scotus talks about certitude in a similar way. He explicitly says that certitude is incompatible with false belief (and hence the possibility of error which is so strong that it is actual is enough to destroy certitude).<sup>5</sup> Scotus also directly connects certitude with absence of possibility of error by inferring the presence of the former from the latter.<sup>6</sup> Although he grants that there are higher degrees of certitude (for instance, that which comes with a demonstration, viz., deduction from a self-evident principle—see Wolter (1962, 118)), these higher grades mark the *way* in which the claim is known, and not necessarily the presence of a higher degree of confidence or higher-order knowledge.

With these caveats in mind, the plan for this brief paper is as follows. First I outline the basic issue as Scotus sees it: whether cognition requires divine illumination in order to produce judgments that qualify as knowledge (§1). Then I sketch Scotus’s central epistemic objection to divine illumination using some contemporary tools from modal metaphysics and anti-risk epistemology, suggesting that Scotus makes an analogous connec-

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<sup>4</sup>*Summa Theologica*, 1a q. 1 a. 5.

<sup>5</sup>Scotus’s example is ancient physicists with views on first principles:

Every philosopher was certain that what he postulated as a first principle was a being; for instance, one was certain that fire was a being, another that water was a being. Yet he was not certain [...] whether it was first or not first. He could not be certain that it was the first being, for then he would have been certain about something false, and what is false is not strictly knowable (*scibile*). (*Ordinatio* I.3.1, p. 29, in Wolter (1962, 23). See also Cross (2014b) for discussion of this passage.)

<sup>6</sup>Speaking of sense knowledge, he says:

[E]ven though the uncertainty and fallibility in such a case may be removed by the proposition “What occurs in most instances by means of a cause that is not free is the natural effect of such a cause”, still this is the very lowest degree of scientific knowledge. (Wolter (1962, 119), and Ord. XXXX.)

Here I read Scotus as claiming that when a sense perception is caused by a regular and reliable causal process effected by its object, the perception is not likely to be in error and hence is eligible to produce knowledge. Notice that Scotus says nothing about knowing that the perception has this feature; he only requires that it in fact be true that the perception is caused in this way.

tion himself (§2). Finally I briefly discuss whether the objection's success rests on Scotus's (perhaps misleading) interpretation of the issue (§3), and close by sketching some lessons for contemporary anti-risk epistemology that emerge from the discussion (§4).

## 1 Sensation, cognition, and error

Scotus's epistemic argument against divine illumination is not a direct attack on the view. Rather, his argument is that it does no work in addressing the sceptical worries it is designed to avoid. That is, it is an argument for the conditional: *if* skepticism threatens the judgments formed by purely natural cognition, then it also threatens divinely illuminated cognition. Illumination isn't intrinsically problematic, rather it just complicates one's cognitive theory without adding any corresponding epistemological benefits. Of course Scotus doesn't accept that natural cognition (i.e., cognition without any special illumination) is fraught with skepticism, and he develops his own account of how this is possible. But for the purposes of giving the epistemic argument against divine illumination, he supposes the antecedent of the conditional. Since Scotus's pessimism about divine illumination relies on this from where in the process of natural cognition skepticism supposedly arises, it will be necessary to briefly sketch some of the details of Scotus's views on sensation, cognition, and judgment.

### 1.1 *A psychological and semantic primer*

Broadly, cognition about sensible objects requires a process with two distinct phases. The first is an activity of sensation (or "intuitive cognition"), where an external object makes an impression on a sense organ. Then, second, there is an active process by the intellect whereby it "abstracts" content for the sense impression and uses it to form judgments about the external world. We can follow Scotus and his contemporaries in introducing some technical terms to highlight certain aspects of this picture that will become important later. Here I will not have anything original to say and will simply defer to others to get the basic picture into view.

The physical picture is one by which an external object interacts with the sense organs by impressing its form, or species, on the sense organ. The species is "transferred" from the object, through an intervening medium, to the sensing individual.<sup>7</sup> The species of the sensed object then takes hold in the sense organ, though exactly how is a delicate matter—clearly

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<sup>7</sup>From *Ord.* II.9.1-2 n. 61, quoted in Cross (2014a, 22):

by sensing a red thing the sense organ does not take on the species of the thing in the same way and thereby become red. I will skip discussion of this matter here (for more on Scotus's view, see Cross (2014a, 24, ff.)). What is produced in the sensing agent is a phantasm: an entity that provides the intellect with the resources for forming concepts and making judgments about the sensible world.

For Scotus, the existence of a phantasm in the mind is not the same as cognizing an object, but the phantasm is used by the intellect to form such cognitions. The intellect can making judgments about things without thinking that such things are present, as they are in sensation.<sup>8</sup> There is, Scotus goes on to say, something which is equally present in cognition both in cases where we are sensing something real, and when we are not. That which plays this role: it is in sensation, is related a present object and somehow records its features, and provides the resources for the intellect to form (possibly mistaken) judgments, is the *phantasm*.

The process from a species inherent in a (perceived) object to phantasm in intuitive cognition is a purely organic, natural process. There is then an intellectual process of abstraction and judgment formation, which is eligible for epistemic evaluation and a candidate producer of knowledge. As hinted at by the functional role of a phantasm, the intellectual process does not operate entirely independently of sensation. The concepts with which the intellect works are all grounded in sensation.

The agent intellect is responsible for (i.e., a partial cause of) cognizing the universal aspects of the species received through sensory cognition. The phantasm is, necessary, produced by a particular object. But what it lends to cognition is universal; that is, what the agent intellect "abstracts" from the phantasm is purely general, and is also called an "exemplar":

The universal, as universal, is not included among the things that exist, but exists merely in something that represents it

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A visual species and seeing are ordered effects of the same object (e.g., color), such that the species is naturally generated prior to seeing (as first act before a second act), and the species *in medio* or in an organ closer [to the object] is generated before one *in medio* or in an organ more distant . . .

<sup>8</sup>From Scotus, *Quod.* 6, nn. 7-8, quoted in Cross (2014a, 43):

[W]e understand universals or the quiddities of things equally whether they have real extramental existence in some suppositum or not; and it is the same for their presence or absence . . .

under such a description...The agent intellect makes [by abstraction] something that is representative of a universal, out of something that was representative of the singular [the phantasm].<sup>9</sup>

The species transferred from object to intellect via this process are then combined in an act of judgment, which may be true or false.

Finally there is a standard for truth in such judgments. This is the “likeness” or similarity between the judgment and the object of the judgment. Scotus sometimes puts this in the language of ‘measurement’, saying that in knowing there is a relation between the measurable (the cognitive act) and the measure (the object the act is about). (Quod. 13, n. 11, Cross 153) Cognitive acts intrinsically, or “naturally” have this relation to their objects in virtue of this likeness:

[An act of cognition] is something that is measurable by an object, that is, is naturally apt in its entity to depend on an object with that special dependence which is its which is likeness by imitation [of] or participation in that thing of which it is a likeness.<sup>10</sup>

This all-too-brief discussion of Scotus’s views on the psychology of judgment is in many ways inadequate, and an overly simple representation of Scotus’s views. But it provides a schematic overview of where, in order for knowledge about objects through sensation to be possible, Divine Illumination might be thought to be necessary. I will sketch below the work Divine Illumination can do according the main contemporary (to Scotus) proponent of the theory, Henry of Ghent. And I will briefly note how Scotus interprets this view within the above psychological picture. Then I

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<sup>9</sup>Cross 65, Ord 1.3.3.1, n. 360. Also representative is the following quote:

The sense senses the thing that is heat; the intellect cognizes the quiddity, but defining it and attributing the definition to the thing defined, by saying that this is a such-and-such, and so seems to know the quiddity, not just thing. (Cross, In Metaph. 1.6, n.44)

<sup>10</sup>Cross 154, Quod. 13, n. 13. Scotus says more on accurate representation in the following passage:

Truth is an act that compares one simple concept to another—that they belong to the same thing in affirmative [propositions] and to different things in negative ones. (Cross 176, In Metaph. 6.3, n. 65)

will turn to Scotus's epistemic argument against Henry's position, which is the primary focus of this paper.

## 1.2 *Wither illumination?*

The main motivation for divine illumination, which is found in Henry of Ghent, is the thought that without some sort of divine assistance this process would fail to produce knowledgeable representations. Henry thinks, like Scotus, that truth in a judgment (and hence knowledge) requires a match or likeness between cognition and object. The paradigm is God's knowledge, which deploys perfect exemplars:

It is this that the truth of a creature requires insofar as it is a creature—namely that it is in its essence that which is its idea perfection in the divine wisdom, which is to say that it entirely agrees, matches, and is conformed to it.<sup>11</sup>

The problem, for Henry, is that the abstractive process fails to provide the intellect with an adequate exemplar. While the ideas in the Divine Mind are perfectly similar the essences of objects—and hence can apprehend truth in creatures—the abstractive process fails to do this. When the mind abstracts ideas from a phantasm produced by the sensation, the resulting idea is inevitably inadequate.<sup>12</sup>

So Henry accepts as a premise that abstracted exemplars will be inadequate in this way, so the only way we can form knowledgeable judgments about sensed objects is by forming judgments using the divine exemplars. This is the sense in which divine illumination is required for Henry: God must somehow place divine exemplars in our mind if we are to have knowledge. Of course, there is another possibility: to have knowledge, we would need the divine exemplars, but since the only exemplars available to us are imperfect, we have no knowledge. But Henry wishes to avoid skepticism, as Pasnau summarizes:

Henry ... thinks that in our current state we not only need but in fact receive divine illumination. His account entails that if God had been withholding such illumination from us over the years, we would be in a severely impoverished epistemological state. (Pasnau, 1995, 69)

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<sup>11</sup>Summa 32.4, v. 27, 175-6; quoted in Pasnau (1995, 58-9)

<sup>12</sup>Summa 1.2, 5vE; see also Pasnau (1995, 57) on the two ways of forming exemplars.



The claim, then, is that if we are to avoid skepticism, we must hold that divine exemplars, and not naturally formed exemplars, are available to cognition. The only way for this to be is if God continually acts to impart the divine exemplars to us, so that they are available to use to form judgments that are candidates for knowledge. Since skepticism is false, it follows that divine illumination occurs.

## 2 Scotus's epistemic argument

We will return below to the question of *why* judgments formed with created exemplars are supposed to be unreliable. But we have sketched enough already to outline Scotus's epistemic argument against divine illumination, and to make a *prima facie* case that it is quite compelling.

The core of Scotus's reply to this argument is in the following passage:

[N]o certitude is possible where something incompatible with certitude occurs. For just as we can infer only a contingent proposition from a necessary and contingent proposition combined, so also a concurrence of what is certain and what is uncertain does not produce certain knowledge.<sup>13</sup>

I will give a reading of this passage which, using tools from contemporary modal metaphysics and anti-risk epistemology, makes the analogy between knowledge and necessity very apt. Specifically, the logical reasons why adding certitude via divine ideas are structurally exactly the same as the reasons for which conjoining a necessary proposition to a contingent one does not (in general) produce a contingent proposition. This makes for a compelling reading of Scotus's reply to Henry's view.

### 2.1 *Logical structure*

First begin with the modal case. In a the standard framework for understanding claims about modality, we begin with a set of indices  $w_1, w_2, \dots$  (commonly thought of as worlds) and an assignment of a truth-value to each atomic proposition  $p_1, p_2 \dots$  at each world. Non-atomic non-modal propositions at an index have truth values that are determined by the usual truth-functional rules. And modal propositions (containing 'necessarily' and 'contingently') are determined by the status of the embedded propositions across all indices. 'necessarily  $p$ ' is true iff

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<sup>13</sup>Ord. 1.3.4 p. 221, Wolter p. 112

$p$  is true at every index; ‘contingently  $p$ ’ is true iff neither  $p$  nor  $\neg p$  is necessary.<sup>14</sup>

With this framework in hand, we can illustrate the modal claim in the above quote from Scotus. If  $p$  is necessary, then  $p$  is true at every index. And if  $q$  is contingent, then  $\neg q$  is true at some index. Call this index  $w$ . Since  $p$  is true at  $w$  and  $q$  false at  $w$ , the conjunction  $p \& q$  is false at  $w$  as well. And since  $p \& q$  is false at  $w$ , it is not necessary, since it is not true at every index. So adding contingent  $q$  to necessary  $p$  produces a contingent conjunction.

This is a simple point from modal logic. But Scotus clearly thinks, in the passage stating the epistemic argument quoted above, that an analogous principle holds for epistemic notions. Spelling it out in detail can help elaborate a reading of the analogous principle in epistemic logic. And, we will see, Scotus’s main criticism of the going version of divine illumination is that it runs afoul of this point in epistemic logic.

We can begin the analogy by taking the indices  $w_1, w_2, \dots$  not to be points in modal space, but rather points in epistemic space. (One way to think of points in epistemic space is to think of each index as a world that is compatible with what is known; this will be filled out in richer detail below.) As before, atomic propositions  $p_1, p_2 \dots$  have a truth value at each index, and values of logically complex propositions are a truth function of the values of atomic propositions. The distinctive epistemic aspect enters when we add belief-propositions at each index—propositions  $Bp_1, Bp_2, \dots$  about whether the agent in question believes  $p_1, p_2 \dots$  at the index. Truth-values of belief-propositions are not functions of the atomic propositions (an agent might believe a false proposition). And beliefs agglomerate, so if  $Bp$  holds at an index and  $Bq$  holds at the same index, then  $B(p \& q)$  holds as well. A proposition is known at an index just in case it or its negation is truly believed at each index; that is, if  $Kp$  holds at  $w$ , then at every world  $w^*$ ,  $Bp$  iff  $p$ . Thus it is not known just in case there is some index where it is believed but its negation is true.<sup>15</sup>

The analogy with necessity and contingency is straightforward in this setting. A piece of knowledge (a certitude—*cf.* our discussion of knowledge and certitude in §0) is a belief that is true at all indices; a belief that is not knowledge (an uncertainty) has some index where that belief is held but is false. Let  $w$  be an index where  $Bq$  but  $\neg q$ —hence, a world where a

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<sup>14</sup>*Cf.* Kripke (1963). Here I ignore the “accessibility relation” on worlds in the standard Kripke framework, and assume that every world is accessible from every other world.

<sup>15</sup>For more sophisticated frameworks see Hintikka (1962) and Williamson (2013).

false belief is held.  $q$  is not known. If  $p$  is known, then  $Bp$  and  $p$  both hold at  $w$ . But, since beliefs agglomerate,  $B(p \& q)$  is held at  $w$  as well, and by the truth table for  $p \& q$ ,  $p \& q$  is false at  $w$ . So the belief  $B(p \& q)$  is false at  $w$ , and  $p \& q$  is not known. Adding an unknown (uncertain) belief to a known (certain) belief produces an unknown, and not a known, belief. The reason why this is so is exactly the same as in the modal case.

Of course in both cases the formal model is just that—a formal representation of some structural features of metaphysical and epistemic modality. We haven't yet made the case that the formal structure maps on to any interesting, substantive modal or epistemic notions. Fortunately there is a natural interpretation of the machinery in the epistemic case which is especially illuminating of the epistemic model. And the substantive understanding of the model is suggested by the substantive reasons given by Henry of Ghent for thinking that beliefs formed with created exemplars will be uncertain. That is, in deploying this epistemic model, Scotus is relying on common ground with Henry, since Henry uses a similar substantive understanding of what certainty requires when he claims that abstraction from phantasms does not produce certainty. The connection is forged by what is called "anti-luck" epistemology in contemporary debates. I will briefly sketch below how it can help understand the formal framework, and then show that Henry and Scotus rely on some very natural connections between knowledge and risk in their respective arguments.

## 2.2 *Anti-luck epistemology*

The basic insight behind anti-luck approaches in epistemology is that in many cases where true, justified belief is present but no knowledge, there is an intuitive sense in which the true belief is the result of a kind of accident of luck. For instance: take the familiar case from Gettier (1963), where Jones truly believes that the person who will get the job has 10 coins in her pocket, but believes this because she believes that Smith will get the job, and that Smith has 10 coins in her pocket. Jones's true belief is the product of an accident of luck, since, unbeknownst to Jones, she also has 10 coins in her pocket and will get the job. It is natural to think that, even though she has a (justified) true belief, it is only true owing to an accident of luck, which prevents the belief from being knowledge.<sup>16</sup> Other cases involving broken clocks and nearby fake barns lend themselves to similar

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<sup>16</sup>Unger (1968)

glosses as well. This has inspired the thought that knowledge is subject to a “safety” condition, which restricts the claims an agent knows to those claims that she is not at risk of falsely believing.

The crucial element here is notion of what it is for a belief to be at “risk” of being false. Risky beliefs in this sense rely on luck if they turn out true. If in forming a belief there was a risk that I formed a false belief, and yet I managed to form a true belief, I must have been the beneficiary of luck in some sense.

These notions of risk and luck can be refined in the modal framework sketched in §2.1. The indices in the framework can be thought of as nearby worlds—i.e., worlds one could easily have been in, or (when the outcomes in the worlds are suitably bad) are worlds one is at risk of being in. One way for a belief in  $p$  to be at risk is for there to be a nearby world where one believes  $p$  but where  $p$  is false. But there are other ways for a belief to be at risk which do not involve that very belief being false in nearby worlds. Instead, it is often enough for a sufficiently similar belief to be false in a nearby world. For instance, if I am a geographical neophyte and believe that Denver is in North America by guessing, I am in the relevant sense lucky to be right. But this isn’t because Denver could easily have been on a different continent. Rather, it is because if I am guessing, I could easily have formed a suitably similar but distinct belief that is false. That is, my guessing might have led me to believe that Denver is not in North America, or that Denver is in Europe. These beliefs are similar enough to my actual (true) belief that the fact that I could easily have formed them puts my actual geographical beliefs at risk of error.

Another refinement that will be important to have in mind is that the *process* by which a nearby similar false belief is formed is relevant to questions of epistemic risk and luck. In the last paragraph we considered only geographical beliefs formed by random guessing—hence each nearby belief is the product of a relatively similar process, which involves guessing. But we need to control for nearby beliefs that are formed by suitably dissimilar processes. For instance I might happen turn my head just at the right moment to see John outside as he walks by a window. If I hadn’t have turned by head at that precise moment, I would have believed, on statistical grounds, that John has not walked by that window in the last 5 minutes. So in a sense I am lucky to have a true belief about John’s recent proximity to particular windows, since I could easily have not turned my head at that very moment, and hence could have easily believed that John has

not recently walked by the window.<sup>17</sup> But here the luck involved doesn't prevent me from knowing—after all, I *saw* John walk by the window, and we can suppose that my vision in my present environment is as reliable as we like. So we need to restrict the notion of risk of error to involve only beliefs that are formed by sufficiently similar processes.<sup>18</sup> The fact that it is formed by statistical inference rather than perception makes it irrelevant to whether my perceptual beliefs are at risk of being false or not.

We can encode these observations in the following “Safety” principle:<sup>19</sup>

SAFETY An agent *a* knows *p* in *w* only if, for all nearby worlds *w\** where *a* has a belief in *p\** that is similar to the belief in *p* in *w*, and the token causal process that produces *a*'s belief in *p\** in *w\** is sufficiently similar to the token causal process that produces *a*'s belief *p* in *w*, *a*'s belief in *p\** is true in *w\**.

With this refined SAFETY principle in place, Scotus's modal analogy works just as before. Restricting our attention to nearby worlds where the beliefs formed are suitably similar (call these *counterpart beliefs*, and are the products of sufficiently similar processes, the argument is as follows. Take a belief *b* which is not known, because it is at risk of being false. This means there is a nearby world—call it *w*—where the counterpart of *b* is false. Even if we add a similar belief *b\** which is true in *all* nearby worlds, neither *b* nor *b\** are known. For the effect of the counterpart belief in *w* is to put both beliefs at risk of error, and to prevent them from being knowledge. The risk of error is not eliminated by the introduction of an infallible belief; instead it infects the infallible belief and blocks knowledge.<sup>20</sup>

Of course it is something of an anachronism to read modern safety principles into Scotus's work. Scotus had no knowledge of the history of post-Gettier epistemology (he was, after all, very much pre-Gettier) and would not have thought about knowledge and related notions in terms of

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<sup>17</sup>For similar cases see Pritchard (2004).

<sup>18</sup>Here I think of processes as individuated as finely as possible—i.e., so any two token processes which are not duplicates are distinct processes. What matters is *how* dissimilar the processes are; I return to this issue in the final section.

<sup>19</sup>Cf. Sosa (1999), Pritchard (2004), Williamson (2000)

<sup>20</sup>There is one additional benefit to formulating Scotus's epistemic argument in terms of Safety. In the crude framework introduced above, we assumed that beliefs agglomerate, and showed that an unknown belief agglomerates with a known belief to produce an unknown conjunctive belief. Here we have something stronger: since we are dealing with counterpart beliefs, the agglomeration is unnecessary; even an infallible belief which is true at every world will have a false counterpart, and hence the unknown belief prevents the infallible belief itself (and not just an agglomerated belief) from being knowledge.

the refined SAFETY principle I sketched above. So I am not claiming that Scotus was, in replying to Henry, actually deploying in any strict sense a SAFETY principle.

But the differences between Scotus's thinking and such a principle should not be overlooked either. SAFETY is a modal reliability condition on knowledge, and it will become very clear below that reliability of this kind is in the forefront of the debate between Henry and Scotus over divine illumination. They are quite aware that sensory judgments might be true, but that more than just truth matters to the epistemic status of a these beliefs. That is, they are sensitive to the importance of a true judgment also being true across *nearby* worlds. If this kind of reliability cannot be secured, Scotus and Henry are not prepared to confer honorifics like *certainotitia* on true beliefs.

As we will see, Henry's views on cognition imply that this kind of reliability is not available without divine illumination. Scotus's reply is that, if Henry is right about this, then the reliability cannot even be achieved *with* divine illumination. The form of the argument for this is exactly as I sketched in abstract form above. I will be using the refined SAFETY principle above to clarify this dispute, but it should be clear that much of the substance of this viewpoint can be retained even if we prefer to use original instruments and dispense with the anachronism of modern safety-theoretic approaches to knowledge.

### 2.3 Risk in abstraction

At the end of this section I will use the above epistemic framework to explain why Scotus thinks that divine illumination fails to help with skeptical worries. The first part of this project, however, is to say what Scotus takes the skeptical worry to be—that is why, according to Henry of Ghent, skepticism follows if we reject divine illumination.

The short answer is that the process of abstraction from phantasm introduces the kind of risk that precludes knowledge. Beliefs formed using exemplars abstracted from the natural process of sensation will have false nearby beliefs.

Scotus understands this argument to begin with the distinction between a "created" exemplar (*exemplar creatum*) and an "uncreated" exemplar. The former is "the species of the universal caused by the thing", the latter is "the idea in the divine mind."<sup>21</sup> Scotus, as an aside, acknowledges

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<sup>21</sup>Wolter, p 108.

Henry's concession that there is a sense in which the senses 'know' a thing when they sense it. This isn't cognitive act, but is rather the existence of a thing's species imprinted on the sense organ. For this kind of knowledge purely in the senses, Scotus uses the term *notitia* (209) and denies that the operation of the intellect is involved. There is also "knowing the truth", or "knowledge of a thing", which Scotus uses the terms *cognitione veritatis*, and *infallibilis notitia veritatis* <sup>22</sup> which does require deployment of an exemplar by the intellect.

This latter kind of knowledge is the subject of the dispute between Scotus and Henry. The latter holds that *infallibilis notitia veritatis* requires divine illumination, since without it no certitude would be possible. Scotus then attributes to Henry the following related arguments for this conclusion:<sup>23</sup>

But it seems wholly impossible that such an acquired exemplar should give us infallible and completely certain knowledge of a thing. [...] The first reason runs something like this. The object from which the exemplar is abstracted is itself mutable; therefore it cannot be the cause of something unchangeable. But it is only in virtue of some immutable reason that someone can be certain (*certa notitia*) that something is true. An exemplar such as this, then, provides no such knowledge (*certa notitia*) [...]

The second reason goes like this. Of itself the soul is changeable and subject to error. Now a thing which is even more changeable than the soul itself cannot correct this condition or prevent the soul from erring. But the exemplar which inheres which inheres in the soul is even more mutable than the soul itself. Consequently, such an exemplar does not regulate the soul so perfectly that it makes no mistake.<sup>24</sup>

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<sup>22</sup>pp. 210, 211

<sup>23</sup>Scotus here lists three arguments from Henry. Since his goal is to show that Divine Illumination does not help with avoiding skepticism, it will be sufficient for Scotus's purposes to show that, if one of Henry's arguments for the impossibility of knowledge with created exemplar is any good, then that argument will also show that knowledge with an uncreated exemplar is impossible. For this is sufficient to show that Henry must either revise his position to hold that knowledge with a created exemplar is in fact possible (i.e., Scotus's position), or embrace widespread skepticism. So I will not discuss the third argument here, which concerns the ability to distinguish truthful from erroneous judgments. For discussion of Scotus's position on this matter, see Adams (1987, 574 ff.).

<sup>24</sup>Wolter pp. 108-9, Ord. pp. 211-212

Both of these arguments aim to show that there is something changeable in created exemplars which renders them incapable of producing knowledge. The alleged source is different in each case: first, it is said that since the objects of sense perception are changeable, the exemplars abstracted from the sensory process must be changeable as well. And second, it is said that since the process of abstraction is an activity of the soul, and the soul is changeable, the abstracted (created) exemplar must be changeable as well. But fundamentally what these arguments have in common is that they allege that changeability prevents created exemplars from being deployed in reliably true beliefs.

With the framework laid out in previous sections, it is easy to see why changeability in the created exemplar would threaten skepticism. First, recall the semantic role of the exemplar: it is a component in the cognitive act of judgment-formation, and judgments are true just in case they resemble their subject matter in the appropriate way. If the exemplar changes, then what it resembles will change, and hence whether it represents truthfully can change. Changeability in an exemplar thus subjects cognitive judgments with the kind of risk of error that is incompatible with knowledge.<sup>25</sup>

Scotus's epistemic argument against divine illumination provisionally grants this premise: judgments formed using a created exemplar cannot be knowledge. The problem is not that the judgments are all actually false; for all the Henry's position says, the judgments formed with these exemplars might actually be true. The problem is just that they (or very similar judgments) could *easily* have been false; they are at risk of error. This sets the stage for the argument that divine illumination does nothing to avoid skepticism here. For even if judgments formed using uncreated exemplars are not mutable in the same sense, a divinely supplied provision of such exemplars won't do anything to eliminate the risk of false judgments. This is, I will argue, the basis for Scotus's main criticism of divine illumination: just as adding a contingent proposition to a necessary one produces a contingent proposition, likewise adding a judgment using an uncreated,

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<sup>25</sup>Note that this doesn't amount to the argument that every such judgment actually is false. Even if we are fortunate to find our exemplars relatively unchanged, change could easily have happened, and that is enough to destroy knowledge. Adams (1987, 563) says of the created exemplar on Henry's view that "even if an image or a species provided us with an accurate cognition of things as they are or of their truth, it would not provide us with a stable grasp of them. For, as mutable, such an image or species is apt to go out of existence at any time and to be replaced by another that might perhaps misrepresent things."



risk-free exemplar to a judgment using a created, risk-prone exemplar only produces a judgment that is at risk of error.

#### 2.4 *The epistemic argument, explained*

Scotus summarizes (what he takes to be) Henry's conclusion from the unreliability of created exemplars:

From all this they conclude that if man can know the infallible truth and possess certain knowledge (*certam scientiam*) it is not because he looks upon an exemplar derived from the thing by way of the senses [...] It is necessary that he look upon the uncreated exemplar.

It is this conclusion that Scotus contests with the passage I quoted at the beginning of this section, and repeat below:

[N]o certitude (*certitudo*) is possible where something incompatible with certitude (*quod repugnat certitudini*) occurs. For just as we can infer only a contingent proposition from a necessary and contingent proposition combined, so also a concurrence of what is certain and what is uncertain does not produce certain knowledge (*cognitio*).

We are now in a position to say exactly what the certainty and the uncertainty Scotus is referring to are, and why it is plausible that, for essentially logical reasons, divine illumination does not the the epistemic work set out for it.

What is uncertain are, given Henry's arguments, the judgments formed with created exemplars. In the framework outline above, the uncertainty in these judgments consists in these judgments, or some very similar judgments, being false somewhere in the space of nearby worlds. In this case, the falsity of the nearby judgments is a product of their easily taking form that makes them inaccurately represent their subject matter.

Scotus's illuminationist opponent holds that there are also some exemplars that are not susceptible to error in this way. These are the judgments formed with uncreated exemplars. Such judgments are highly reliable. Does this show that an actual true judgment formed using an uncreated exemplar can be knowledge? No, it does not: the existence of judgments formed in nearby worlds using created exemplars prevents this.

This is the crux of Scotus's epistemic argument. To illustrate, take the following simple application of the epistemic framework. For any judgment about a sensory proposition  $s$ , there are nearby worlds where an agent suffers the misfortune of having her acquired exemplars mutate, and forms a false belief similar to belief in  $s$ . Let  $w_1$  be a nearby world where this happens, i.e., a world where the agent believes something similar to  $s$  using a created exemplar, and owing to the vicissitudes of mutation has a false belief. Next let's add divine illumination to the picture. Supposing divine illumination occurs, if an agent forms a belief in  $s$  using an uncreated exemplar, there are no nearby worlds where she forms a false belief *with that created exemplar*. But the problem is that this does nothing to eliminate the false belief in  $w_1$ . It is natural to think of it as a similar belief formed by a similar process to a belief formed with an uncreated exemplar. So even beliefs with uncreated exemplars will have false counterparts, and hence will not be knowledge. Divine illumination does nothing to eliminate risk. The beliefs formed with uncreated exemplars will be cases of true but unknown beliefs.

Notice that this style of argument works regardless of the precise account on offer of why exactly beliefs formed using created exemplars are unreliable. Scotus summarized two arguments for this conclusion. On one, it is the mutability of the objects which produce the phantasms from which created exemplars are extracted explains the unreliability of the resulting beliefs. And on the other, it is the mutability of the soul which performs the abstraction which explains the unreliability. Regardless, so long as the unreliability manifests itself in the form of false beliefs in some nearby worlds, beliefs formed using uncreated exemplars will suffer a downgrade in epistemic status just as beliefs formed using created exemplars. Divine illumination fails to provide the promised epistemic payoff.

### 3 A closer look

So far I have presented the argument against divine illumination primarily on Scotus's terms. I have, in particular, utilized Scotus's psychological views in sketching the role of abstraction in forming judgments. And I have relied on his own presentation of Henry's arguments for divine illumination in sketching Scotus's own claim the need for divine illumination leads to skepticism.

As I have sketched it, the argument Scotus gives is very powerful. Take any alleged argument that a natural process could not produce knowledge,

because the natural process involves mutable and changeable material, and hence in nearby worlds produces false beliefs. Even if there were a process of divine illumination, by which judgments could be formed using non-changeable (and hence more reliable) material, it would still be the case that there are nearby false beliefs owing to the alleged existence and unreliability of the natural process. Nothing here hinges on the details of Scotus's psychology or precise understanding of Henry's arguments.

### *3.1 Pasnau on mutability in objects and exemplars*

Once we see the argument as resting essentially on a structural point about the logic of knowledge, it is worth revisiting some commentary on the debate between Scotus and Henry. I will not pretend to give an extensive overview here, but I will try to sketch briefly some passages where commentators have picked up on possible infelicities in Scotus's understanding of Henry's illuminationist position. But with the logical structure of Scotus's argument in mind, I will suggest that these errors in Scotus's interpretation do not undermine the force of his argument, as commentators suggest.

Pasnau, after a lengthy and highly nuanced discussion of Henry's views on cognition and divine illumination, moves to discuss Scotus's criticisms. He quotes Scotus as objecting to Henry in the following passage:

[T]his does not follow: if the object is mutable, then what is produced by it is not representative of anything under the aspect of immutability. For it is not the object's mutability that is the basis of the production. Instead, the basis of production is the mutable object's nature, which is, actually, immutable. Therefore, that produced by the object represents the [object's] nature per se. (Pasnau 72, quoted from Ord. I.31.4 p. 246, in Wolter p. 124)

Here Scotus is clearly discussing his reading of the first of Henry's arguments for Divine Illumination: that, since sensed objects are mutable, the exemplars abstracted from the sensory process must be mutable too. Pasnau treats the quoted passage from Scotus harshly:

Scotus's reply misunderstands the argument. First, he wrongly takes Henry to deny that we can have universal concepts, which is not the issue at all [...] Next, Scotus simply asserts, without

argument, that the basis of the resultant cognition is the object's nature. Then he makes an unwarranted inference: the object's immutable nature is the basis of the resultant cognition; therefore, the resultant cognition "represents the [object's] nature per se". (Pasnau 73)

Pasnau goes on to describe in more detail where he thinks Scotus has misread Henry on this final point. At issue is whether the immutable nature of an object can be a causal component in the sensory process; Pasnau says (rightly, it would seem) that Henry accepts this: the immutable natures are somewhere present in the causal chain. That is:

Henry, as we have seen, agrees that there are such [immutable] natures in physical objects. He might also be willing to accept that these natures are the basis of our cognitions of those objects—if this means only that that nature is the remote cause of the resultant cognition. Henry wants to claim, however, that the proximate cause of the cognition of, say, a human being is not a human nature. Indeed, Henry would think of that nature as being several steps removed from the resultant cognition. (Pasnau 73)

So, according to Pasnau, Scotus has not taken into account Henry's views about whether the natures in objects are merely remote causes in sensation, or if they are proximate causes that (eventually) become available as intelligible species in cognition.

But Scotus's epistemic argument *can* be seen as an argument that Henry is wrong as to whether an object's nature is a proximate cause of sensation. At least, it is an argument *if* we grant the additional premise that scepticism is false. For the epistemic argument shows that positing a divine proximate cause of cognitions is not enough to avoid scepticism—such proximate causes do nothing to eliminate objectionable risk of error. So if scepticism is false, a natural proximate cause of cognition must be able to produce a knowledgeable judgment. Scotus is entitled to this much as a result of his epistemic argument; his ignoring it does not, as Pasnau suggests, give rise to an unconvincing attack on Henry.<sup>26</sup>

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<sup>26</sup>There is also some evidence that Scotus is not directly attacking Henry in the passage Pasnau quotes from. This occurs in paragraph 246 of *Ordinatio I*, *disputatio 3* (question 4). But Scotus's original criticism, which was the focus of §2, occurs much earlier than that. It is in paragraph 221 (also I.3.4), and Scotus explicitly says that he is doing very different things in these two passages.

The reading of Scotus's epistemic argument that I gave in §2 renders this question largely moot. The details of why natural cognition and judgment is unreliable on Henry's view do not matter to Scotus's argument. We can, in fact, remain completely agnostic about the causes of the unreliability of this process on Henry's account. All that Scotus needs is that there is *some* cause of the unreliability of the natural process, and that this produces error in nearby worlds. Scotus's argument is against divine illumination. And the unreliability of judgments formed by the natural process is all he needs for this argument: once there are nearby worlds where judgments about a subject matter go wrong, these worlds will not only destroy the claim to knowledge of judgments formed using the outputs of the natural process; the worlds in question will *also* destroy the claim of judgments formed by using their divinely provided replacements. The structure of Scotus's central argument, therefore, is remarkably resilient with respect to (mis)understandings of the workings of Henry's account of cognition.

### 3.2 *Adams on the mutability of the soul*

Adams (1987, Ch. 15, §5) adopts a different line of defense of Henry's position. We noted, in the section 2.3 discussion, two arguments from Henry that suggest judgments which are purely the products of natural processes will be unreliable. Both have to do with mutability: in the first, it

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[I]n the first [article] I show that these arguments are not a basis for any true opinion [...] Instead they lead to the view of the Academicians. In the second [article] I show how the view of the Academicians, which seems to follow from these reasons, is false. In the third, I answer these arguments in so far as they are inconclusive. (Wolter (1962, 111))

Scotus's epistemic argument, which was the focus of §2, is contained in the first article: thus in that passage, Scotus takes himself to be showing that the arguments cannot be correct, since they support skepticism (i.e., Academic skepticism, the "view of the Academicians"). And as we have seen, this is exactly what Scotus does: he shows that, if Henry's argument that created exemplars cannot produce knowledge is sound, then even if divine illumination occurs, skepticism follows. But the passage Pasnau quotes is from the third article, where Scotus provides his own replies to the arguments. The important part is that, in Pasnau's passage, Scotus doesn't take himself to need to refute Henry's position—he thinks he has already done that, by showing that Henry's position leads to skepticism. Instead by the third article Scotus is designed to show how, in his view, skepticism is avoided. If divine illumination is no help, then there must be some explanation for why the natural processes of sensation and cognition can produce knowledge. Scotus aims to give such an explanation here. So while Scotus is situating his own view in with and eye to Henry's own view (or what he takes it to be), his main argument attacking Henry is to be found earlier in the text.

is the mutability of the proximate causes of sensation—namely sensory objects—that produce mutability (and hence unreliability) in cognition. This is the subject of Pasnau’s discussion above. The second argument is different: since the *soul* is mutable, and the soul is what is responsible for cognition, the tools with which the soul engages in cognitive activity (e.g., exemplars) will themselves be mutable. It is in the context of this second argument that Adams mounts a limited defense of Henry.

Recall that Scotus summarizes second argument as follows:

The second reason goes like this. Of itself the soul is changeable and subject to error. Now a thing which is even more changeable than the soul itself cannot correct this condition or prevent the soul from erring. But the exemplar which inheres which inheres in the soul is even more mutable than the soul itself. Consequently, such an exemplar does not regulate the soul so perfectly that it makes no mistake.<sup>27</sup>

Scotus goes in for a particularly strong attack on divine illumination in response to this alleged unreliability of naturally produced cognition. In addition to the main “epistemic argument” I have discussed at length here, he (in the passage immediately preceding the epistemic argument) says:

Likewise, if the mutability of the exemplar in our soul makes certitude impossible, then it follows that nothing in the should could prevent it from erring, for everything inhering in such a subject is also mutable—even the act of understanding itself.<sup>28</sup>

The implication is that even divinely provided exemplars will not be epistemically helpful given this view. For the relevant exemplars will be stored in the soul, and if everything in the soul is mutable, then the divine exemplars will be mutable too.

This is actually just a particularly strong version of the epistemic argument I have been focusing on. For the mutability of divinely provided exemplars will be a barrier to knowledge because there will, owing to their mutability, be some nearby worlds where those exemplars (or very similar exemplars) are deployed in false judgments about a subject matter. Thus even true beliefs using divine exemplars will not be knowledge: there will

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<sup>27</sup>Wolter (1962, 108-9); Ord. 211-212

<sup>28</sup>Wolter (1962, 111); p. 220

be false nearby beliefs and, what is more, these false nearby beliefs will be formed using divinely provided exemplars!

Adams raises a natural reply in response to this argument on behalf of Henry. She says:

Henry can reply here by granting that divine action cannot alter the fact that an effect produced in the soul has the ontological status of being an accident inhering in a mutable substance. But he can maintain that it is only as a result of the natural order of causes that the existence of such accidents in the soul is less stable than the existence of the soul itself. Hence, the latter fact can be altered by divine intervention: if God wills an accident to have uninterrupted existence in the soul, that accident will so persist. Nevertheless, Scotus's objection calls to our attention at least one thing divine illumination must do, if it is to remove the defect of instability from our knowledge.<sup>29</sup>

As a response to the strong version of Scotus's argument, Adams's suggested replay on behalf of Henry seems immensely helpful. If the causes of non-natural processes in the soul are not mutable, then there is no argument that even the exemplars provided from divine illumination will be involved in nearby false beliefs.

But it should be clear from how we have set out Scotus's argument in §2 that this does not substantially improve Henry's position. For even if non-naturally caused effects in the soul are not mutable, the naturally caused effects will be. And among these effects are the created exemplars derived from the natural process of sensation and abstraction. Judgments formed with these exemplars will be false in nearby worlds owing to their mutability. Since they will resemble true judgments formed using the (immutable) divine exemplars, even true judgments with divine exemplars will not be knowledge, since there are nearby similar but false beliefs.

So while Adams's suggestion is certainly helpful to Henry for avoiding one source of risk of error, Scotus's epistemic argument succeeds regardless of whether Henry adopts the suggestion or not. Fundamentally the problem is that Adam's suggestion does not eliminate *all* of the sources of falsity in some nearby counterpart beliefs, which are incompatible with knowledge. Adding more true beliefs in the form of beliefs formed using divine exemplars to the space of nearby worlds does nothing to address

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<sup>29</sup>Adams (1987, 564)

this. The false nearby beliefs are still there, and, as Scotus points out, will be impediments to knowledge for both beliefs formed using created and uncreated exemplars.

#### 4 Conclusion: refining Safety

To facilitate discussion of Scotus's epistemic argument against divine illumination, I have used a contemporary version of a safety principle, reproduced here:

**SAFETY** An agent  $a$  knows  $p$  in  $w$  only if, for all nearby worlds  $w^*$  where  $a$  has a belief in  $p^*$  that is similar to the belief in  $p$  in  $w$ , and the token causal process that produces  $a$ 's belief in  $p^*$  in  $w^*$  is sufficiently similar to the token causal process that produces  $a$ 's belief  $p$  in  $w$ ,  $a$ 's belief in  $p^*$  is true in  $w^*$ .

While the structure of Safety—relating knowledge to what goes on in nearby worlds—provides fruitful connections between knowledge and other notions, it is not a full precise condition on knowledge. Questions about what counts as a nearby world, what constitutes a similar belief, and what counts as a similar process. The language of similarity and nearbyness provides some helpful constraints on the structural relationship between knowledge and beliefs in other worlds, but they do not fully settle the question of which possible false beliefs are incompatible with knowledge.

Some calibration of these notions is needed in further theorizing in safety-centric terms. Here is not the place to deal with these nuances in full detail. But the foregoing application of a SAFETY principle to discussion of divine illumination provides an entryway to discussion of some important issues that will need to come up in any refinement of the SAFETY principle.

One way to introduce the issue is through a misguided but important response to the epistemic argument from §2. One might pick up on the following assumption that we have been making throughout this paper: that a sensory judgments formed with a divine exemplar is produced by a process that is fairly similar to the process that produces the same judgment, formed with a created exemplar. This assumption is important for (my reading of) Scotus's argument since, in order for a false belief with a created exemplar to be a relevant counterpart to a belief with a divine exemplar, the processes that produced the two beliefs can't be radically dissimilar. Otherwise the falsity of one belief won't put the other belief at risk of error, in the relevant sense.



One might, in the context of a discussion of divine illumination, latch on to this condition and insist that any belief formed with a divinely supplied exemplar is not formed by a sufficiently similar process to a belief formed with a created exemplar. And one might make this claim with a view to defending divine illumination from Scotian critiques: if no belief with a created exemplar is a nearby belief to a belief with a divine exemplar then the fact that some beliefs with created exemplars will be false in nearby worlds is irrelevant to whether a belief with a divine exemplar can be knowledge.<sup>30</sup>

So insisting that the origin of the divine exemplar makes a process of belief-formation using a divine exemplar very different from a process of divine illumination using a created exemplar would, in the present framework, re-open the path for divine illumination to secure knowledge in the face of sceptical worries. But this application of the process-similarity component of SAFETY is tendentious, and it is interesting to see why both for general epistemological reasons and for the sake of its connection to Scotus's criticism of divine illumination.

#### 4.1 *Some analogies*

The issue is not an essentially a theological one, as one can easily imagine similar cases where a non-divine agent is allegedly involved in a causal process in a way that shields false nearby beliefs from destroying knowledge. Here are a few:

GLOW. A prescient neuroscientist is watching a real-time brain scan as you are forming beliefs as to whether it is raining in various distant locations now. (Moreover this neuroscientist is very concerned with your mental state and is watching in all nearby worlds as well.) After you are queried about a particular distant location, the neuroscientist can identify, on the basis of the progression of the brain scan, whether you will form the belief that it is raining at that location or not prior to you actually forming that belief. You have no special insight into the meteorological forecast for any location, so you are more or

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<sup>30</sup>On this response, the nearby beliefs with created exemplars stand to beliefs formed with divine exemplars in the same way that a nearby belief formed on the basis of a statistical generalization stands to a belief formed on the basis of perception. Even if their contents are relatively similar, the risk that one forms a false belief via the former process is irrelevant to whether one can know by coming to believe via the latter process.

less guessing about the matter. But the neuroscientist knows the rain situation for any of the queried locations. And the neuroscientist reliably deploys the following trick: when she sees that you are about to guess the right answer, she presses a button that causes a neurological reaction in your brain that constitutes an imperceptible feeling of a warm glow. When you are about to form a false belief she does nothing. So every true belief is a product of a process that includes the imperceptible glow feeling. And no false belief is a product of such a process.

DEDUCTION LOTTERY. Someone who knows whether it is raining in various locations right now knows that you will draw a ticket at random from a box and come to form a *de re* belief of the location named on that ticket that it is now raining there. She puts proper names of only places where she knows it is not raining on tickets. And she only puts definite descriptions of places where she knows it is raining on tickets; moreover she puts on such tickets extra identifying information so that you can deduce from the definite descriptions on such tickets the *de re* fact that it is raining in such locations (e.g., if she knows it is raining in Paris, she puts a ticket that contains 'the capital of France' and the ancillary information 'Paris = the capital of France'). She knows that you will always perform the deduction to arrive at the *de re* belief of such places that it is raining there. So, you will arrive only true beliefs and no false beliefs via a process of deduction from definite descriptions.

In these cases it is fairly clear that you don't know the target facts concerning the rain in various locations. It would be nice to have a diagnosis of why this is within the framework of Safety, rather than having to give up on a generally appealing principle or introduce additional machinery to handle these cases. But the threat that one's belief in GLOW and DEDUCTION LOTTERY does satisfy SAFETY is clear: since only true beliefs will be accompanied by glow, or will be arrived at via deduction, there is a sense in which the causal process leading to true beliefs will be different than that which leads to false beliefs in these cases. And this suggests that any false belief in nearby worlds will not be relevant to whether actual true beliefs satisfy Safety. In the last subsection here I will turn to sketching some strategies for avoiding this suggestion.

## 4.2 *Safety and process manipulation*

The first thing to be pointed out is that these cases cannot be handled by appeal to the fact that one doesn't know the relevant facts about the set-up. That is, the fact that one doesn't know that the neuroscientist is manipulating one's neural processes is irrelevant to why one can't know about the rain in Paris. Likewise the fact that one doesn't know about the relationship between deduction and truth in the lottery case can't know about the rain in Paris. Forming a belief by a token process which is locally reliable within a subject matter may be necessary for knowledge. But knowing that the process is reliable definitely is not. In general one doesn't need to know that a process is reliable in order to come to know something by that process. (For instance I can remember that I had breakfast this morning without antecedently knowing that memory is reliable.)

A more promising approach is to look more closely at the similarity-relation on token causal processes. The intuitive thought is that the token processes leading to true beliefs in GLOW and DEDUCTION LOTTERY does not, in virtue of containing a psychological glow or a tokening of a deductive inference, automatically become highly dissimilar to all processes that do not contain glows or deductions. But more needs to be said to make this a satisfying and fully general account.

Begin with a standard contrast case where one clearly does know on the basis of performing a deduction. In such a case, one knows  $p$ , and knows if  $p$  then  $q$ , and comes to believe  $q$  on the basis of deducing it from these premises. Of course there might be nearby worlds where one knows  $p$  and if  $p$  then  $q$  but for some reason comes to belief  $\neg q$  because one simply guessed as to whether  $q$  and did not take advantage of one's knowledge. These worlds might be nearby but if one did in fact deduce  $q$ , one knows. It seems clear that the nearby false beliefs are formed by a sufficiently different token process so as to not constitute a relevant threat of error for one's actual true belief.

It is undeniable that in both case the token causal process in DEDUCTION LOTTERY does involve a deduction in some sense. Even in DEDUCTION LOTTERY, a full description of the neural goings-on that eventually produced the belief that it is raining in Paris would include a description of neural processing that constituted deducing *it is raining in Paris* from *it is raining in the capitol of France* and *Paris is the capitol of France*. Equally one would have to describe the neural realization of a deduction when one describes the token causal process in the standard case of knowledge by deduction.

The deduction, if it actually occurred, is certainly *one* cause of the belief.

But there is a difference in the explanatory import of the deduction in the two cases. In DEDUCTION LOTTERY, the causal explanation of why you believe that it is raining in Paris does not rely heavily on the fact that you performed a deduction: the designer of the lottery could easily have designed a lottery with a proper name for Paris on a card, and you would have believed that it is raining in Paris on that basis as well. The explanatory contribution of the deduction is minimal. (This is even clearer in GLOW: *ex hypothesi* the neuroscientist is looking at your neural developments and predicting what you will believe when deciding whether to give you the glow or not.) This is very much unlike the standard case of knowledge by deduction where the causal process involves a deduction that is highly explanatorily relevant to whether you even believe *q*.

While causal explanation is not equivalent to counterfactual relevance, counterfactual relevance is at least a good test for causal explanatoriness. And it is worth noting that in the standard case of knowledge by deduction, it needn't even be *true* that, if you hadn't performed the deduction, you still would have believed *q*.

So the presence of a deduction in DEDUCTION LOTTERY doesn't play much of a role in a causal explanation of your true belief, and this is unlike the presence of a deduction does play in a standard case of knowledge by deduction. Moreover one doesn't know the deduced beliefs in the former case. So it is natural to think that what makes for similarity of token causal processes producing a belief is not just a matter of which properties enter into the causal process, but in addition depends on *how much* of an explanatory contribution the properties make.

Here is one very simple and schematic way to implement this thought. (The aim here isn't to present a fully fleshed-out theory, but to provide a working model to apply to our discussion of similarity of beliefs formed with or without divine exemplars.) Shared properties confer similarity to some degree—and different shared properties confer similarity to different degrees: being red confers more similarity than being red or orange. Some properties also are, for a particular token causal chain, more explanatorily relevant than others. The very natural thought in this case is this: similarity-conferringness should be weighted by explanatory relevance.

We can get a feel for the general structure of the idea by considering a very simple partial implementation. Take two token causal chains, *c* and *c\**. We want to know how similar *c* and *c\** are overall. This is a function of the contribution of the similarity-conferringness of the properties instantiated

by both chains, and the properties instantiated by one chain but not the other. A property  $P$  that is instantiated by both  $c$  and  $c^*$  will in general contribute to the resemblance of two things that instantiate it to degree  $S$ . (We can think of this as the degree to which two spacetime regions that instantiate  $P$ , and which are such that no subregion instantiates  $P$ , resemble each other in virtue of instantiating  $P$ .) Moreover  $P$  will contribute to the causal explanation of the belief at the end of  $c$  and  $c^*$  to some degree—call these  $E$  and  $E^*$ . If  $P$  is instantiated by both  $c$  and  $c^*$ , then, the contribution of  $P$  to the overall similarity between  $c$  and  $c^*$  is the average of  $S \times E$  and  $S \times E^*$ . (Thus for example if  $P$  confers lots of resemblance in general but is not important to the causal explanation in either case,  $S$  will be high and  $E$  and  $E^*$  will be low. So  $P$  will not contribute nearly as much to the overall resemblance between the chains as it would contribute to the resemblance between minimal spacetime regions that instantiate it.)<sup>31</sup>

The work that can be done by weighting similarity-conferringness by explanatory relevance is attractive. While in standard cases of knowledge by deduction are cases where the deduction is highly explanatorily relevant to the belief, deduction will confer a high degree of similarity between nearby processes where the belief is likewise formed by deduction. (And with an account of the contribution of non-shared properties to overall similarity, non-deductively formed beliefs will not be formed by token process that resemble the deduction processes.) In GLOW and DEDUCTION LOTTERY, the token processes that produce true beliefs are not distinguished by highly explanatory properties. But these properties will not significantly contribute to dissimilarity with processes that produce false beliefs.

There is a straightforward upshot in this for the response to Scotus's epistemic argument against divine illumination that we sketched at the beginning of this section. This response emphasised *some* difference in the causal chain that leads to a belief formed with divine exemplars, on the one hand, and the causal chain that leads to a similar belief formed with exemplars obtained via abstraction, on the other. So let's grant, for the sake of illustration, that an exemplar's having a divine origin intrinsically confers a high degree of similarity between it and other divine exemplars (and a low degree of similarity with non-divine exemplars). But the

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<sup>31</sup>This is an incomplete sketch; one pressing way in which the account needs to be extended is to account for how properties that are not shared by causal chains contribute to the lack of resemblance between the chains. Very roughly this addition to the theory will need to weight the degree to which a property which is not shared is explanatorily relevant.

explanatory contribution of the divine property of an exemplar to the token causal explanation of a belief at the end of the chain will be minimal. After all, both Scotus and Henry explicitly grant that the created exemplar exists, and if a belief with a divine exemplar were not formed, a very similar belief which employs the created exemplar would have been formed instead. (In fact it is an interesting question how we can ensure that we regularly use the divine exemplars that are provided to us on Henry's view.) So the fact that a particular token process uses a divine exemplar will not contribute much to its dissimilarity with processes that use non-divine exemplars, just as the fact that one process includes glow or a deduction does not contribute much to the dissimilarity of those processes with non-glowy or non-deductive processes. This is the kind of refinement we need, in general, for a proper understanding of SAFETY. And it delivers the result that the falsity of some nearby beliefs that use non-divine exemplars will be enough to prevent the true beliefs formed with divine exemplars from being knowledge, just as Scotus's epistemic argument claims.

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