Scotus had strong views on natural kinds. He famously argued that individuals (for example, individual horses or individual human beings) are grouped into kinds by virtue of their possessing a common essence whose identity is independent of our classifying those individuals under the same concept.¹

In addition to this metaphysical issue, Scotus also dealt with two other questions concerning natural kinds. The first question is epistemic: what do we know about natural kinds? The second question is semantic: what do our natural-kind terms mean?

1. The Standard Picture and Its Problems

Scotus’s position may be best understood as a reaction to the standard later medieval view on natural kinds. The standard view is found in Thomas Aquinas as well as in several other thinkers of the end of the thirteenth century.² The supporters of this view assumed that individuals in the world are divided into natural kinds. They also claimed that the individuals belonging to each kind share the same essence, where the sense of “sharing” and “same” is usually left vague. The ultimate metaphysical ground of these essences was thought to be ideas in God’s mind. These ideas function as models for the essences in the world.³ It was at best controversial whether we have any

¹ Ord. II, d. 3, p. 1, q. 1, nn. 7–40 (Vat. VII, 393–408); Lect. II, d. 3, p. 1, q. 1, nn. 8–36 (Vat. XVIII, 230–9). Scotus's arguments concern not only natural kinds such as cats and dogs (i.e. what Scotus considered as substances) but also qualities such as the color white, quantities such as this specific weight, etc. (i.e. what Scotus considered as accidents). Here the focus will be on Scotus’s claims on substances. All references to Scotus’s Ordinatio (Ord.) and Lectura (Lect.) are taken from his Opera omnia (Civitas Vaticana: Typis Polyglottis Vaticanis, 1950–); all references to Scotus’s Reportatio I-A (Rep.) are taken from The Examined Report of the Paris Lecture. Reportatio I-A, eds. A.B. Wolter and O. Bychkov, vol. 2 (St. Bonaventure, N.Y.: Publications of the Franciscan Institute, 2008); all reference to Scotus’s Quaestiones super Metaphysicam and Quaestiones super Praedicamenta are taken from his Opera philosophica [OPh] (St. Bonaventure, N.Y.: Publications of the Franciscan Institute, 1997–2006).

² See for example Henry of Ghent, Quodlibet III, q. 9, in Quodlibeta (1518; repr., Louvain: Bibliotheque S.J., 1961), ff. 60v-62r (metaphysical and epistemic issues); Summa quaedam ordinaria (1520; repr., St. Bonaventure, N.Y.: Publications of the Franciscan Institute, 1953), a. 73, q. 9, ff. 277M–278N (semantic issue).

cognitive access to divine ideas. Thomas Aquinas and most Aristotelians denied that this is the case. Fortunately, this did not constitute a problem, for Aquinas and his followers maintained that we do not need any cognitive access to divine ideas in order to know what natural kinds there are and what their essences are. Specifically, Aquinas maintained that we have direct, that is, non-inferential cognitive access to the essences of natural kinds in the world. Since it was a common Aristotelian assumption that all the information we have comes from the senses, Aquinas held that we grasp the essences of natural kinds by a process of selection and re-elaboration of this information, that is, by the process of abstraction. Accordingly, he assumed that there is a basic correspondence between the concepts in our minds and the real essences in the world. Natural kinds’ essences are grasped by simple acts of cognition.

Similarly, with regard to natural-kind terms such as “cats” and “human beings,” it was usually assumed that common terms mean things in the way such things are understood. So for example, if I conceive of cats as four-legged animals with a soft fur, the term “cat” means “four-legged animal with a soft fur.” Accordingly, natural-kind terms match concepts of natural kinds just as concepts of natural kinds match natural kinds in the world. As it was often said, a thing is named as it is understood.

A proponent of this view did not need to distinguish between nominal essences as the meanings of our terms and real essences as the constituents of the world, for it is true that natural-kind terms mean concepts in our mind, but these concepts are nothing else than faithful representations of real essences—as it was said, concepts are “things as understood” (res ut intellectae). Terms such as “cat” and “human being” mean real essences as they are grasped by our intellect by way of simple concepts obtained by abstraction from sensible individuals.

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6 ST I, q. 13, a. 2, ad 3.
8 Aquinas, Expositio libri Peryermenias, in Opera omnia I* 1 (Roma: Commissio Leonina; Paris: Vrin, 1989), I, 2, 10–11.
A key feature of this account is that we are able to grasp essences by a non-inferential act of our intellect, which was described as a simple act of cognition, also called “apprehension.” This simple act of cognition was regarded as the first of three acts. By the second act, our intellect composes together into complex concepts what it has grasped by its first act. By the third act, our intellect reasons from one complex content to another by way of inferential reasoning. By the intellect’s simple act of cognition, we get direct cognitive access to the building blocks of the world, that is, natural kinds’ essences.

This claim, however, turned out to be problematic. The problem may be presented as follows. It is part of the standard view that all cognitive content comes to our intellect through the senses. But it is also an essential element of Aquinas’s and his followers’ Aristotelianism that only sensible qualities are the direct objects of the senses. These are qualities such as colors, sounds, smells and the like. Such superficial properties of natural kinds are what we are directly acquainted with through our senses. Now these properties are accidents; thus, it follows that our senses are directly acquainted only with accidents. But since all our cognition is based on information coming from the senses and our intellect adds no new cognitive content to what is sensed, it follows that our intellect is directly acquainted only with sensible qualities, that is, accidents.

So, for example, we may sense and conceive of the blackness and softness of a cat’s fur, its purring and maybe its graceful movements. But as to the subject behind those accidents, that is, the cat, we cannot get at it by an act of abstraction but only by an act of inference—from the presence of certain accidents, we infer the presence of a certain subject behind them, the cat. So it seems that, contrary to what Aquinas was initially willing to say, our intellect does not grasp real essences by an act of simple apprehension. The

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real essences behind sensible accidents are reached, if they are reached at all, by an act of inference.\footnote{Summa contra gentiles (Turin and Rome: Marietti, 1961) IV, 1, n. 3340; ST I, q. 29, a. 1, ad 3; ST I, q. 77, a. 1, ad 7. On Aquinas’s claim that essences are at least initially unknown to us, see Kretzmann, Infallibility, 187; Pasnau, Thomas Aquinas on Human Nature, 166–68.}

Accordingly, we must introduce a complication into this account of how we know natural kinds’ essences. For now it turns out that the essences of natural kinds are cognized by way of an inferential act that takes us from what is known directly, that is, sensible qualities, to what is at least at first unknown, that is, the subjects in which these qualities inhere. We do not have any direct acquaintance with these underlying subjects. We can only describe them by way of complex concepts such as “the thing that is black and soft and purrs.” The essential features of cats—as of any natural kind—are in themselves unknown to us.

This conclusion is perplexing. First, it runs counter to Aquinas’s explicit claim that the proper object of the intellect is the quiddity of material things, or, as we may put it, the essence of natural kinds. Second, it threatens one of the key aspects of Aquinas’s epistemology, namely that it is impossible for the intellect to err in its grasp of essences, for Aquinas repeatedly claimed that only simple acts of cognition are error-free. When building up complex concepts and when drawing inferences, our intellect may go wrong.\footnote{ST I, q. 85, a. 6.} But if essences are known by an act of inference, it follows that our intellect may err in singling out the very building blocks out of which the world is constituted. And this is a worrisome perspective.

This problem concerning the epistemic question of what we know about natural kinds’ essences has some important consequences on the semantic question as well, that is, what natural-kind terms mean. It was generally assumed that words mean things as those things are grasped by our intellect. But now we have come to the conclusion that we fail to grasp what natural kinds’ essences are in themselves; we manage only to cognize them by way of complex concepts constituted out of accidental qualities. It follows that natural-kind terms mean those complex concepts—they do not mean natural kinds as they are in the world. Thus, the word “cat” means “the thing that is black and soft and purrs,” if this is indeed what we know about cats on the basis of our experience. It does not mean a cat’s real essence. But if this is the case, the project of an Aristotelian science of the physical world based on our knowledge and definitions of real essences is seriously threatened.\footnote{On Aquinas’s concept of science, see J. I. Jenkins, Knowledge and Faith in Thomas Aquinas (Cambridge: Cambridge University Press, 1997), 11–50; Stump, Aquinas, 217–43.} A gap has

\footnote{ST I, q. 85, a. 6.}
opened up between, on the one hand, natural kinds in the world and, on the other hand, our natural-kind concepts and terms.

This is no small problem. It is not surprising that the generation of thinkers coming after Aquinas was busy trying to solve it.\textsuperscript{15} In this context, Scotus started developing his views on natural kinds.

2. What We Know about Natural Kinds: The Eucharist and Twin Earth

Scotus distinguished between the metaphysical and the epistemic questions about natural kinds. With regard to the metaphysical question, he argued that the essences of natural kinds have some sort of mind-independent unity. Several of his arguments are based on the existence of mind-independent relations among things in the world, such as univocal causation and similarity. Cats generate cats and not dogs, no matter whether we pay any attention to this fact or not. Also, cats are more similar cats than to dogs, and again this fact does not depend on what we may think about it. Scotus argued that these relations can be accounted for only by positing real essences.\textsuperscript{16}

But what do we know about these real essences apart from the fact that they account for real relations such as univocal generation and similarity? Not very much, according to Scotus. He explicitly endorsed the view that only sensible accidents are directly known to us, for only sensible accidents impress their likenesses on our senses, and, in turn, all our concepts are abstracted from what we apprehend through the senses.\textsuperscript{17} It follows that we have no simple concept of any substantial natural kind.

It may have taken Scotus some time to work out all the consequences of this view. At first, he actually entertained the idea that we do grasp real essences by way of simple concepts.\textsuperscript{18} Later in his career, Scotus clearly came to think that we should distinguish two different cases when we speak about concepts. On the one hand, there are concepts of sensible accidents, such as red, sweet, hot, etc. We may consider them as concepts of sensible superficial properties. Since our senses are directly acquainted with these properties, we are able to grasp these accidents by way of simple concepts (in Scotus’s


\textsuperscript{16} See above note 1.

\textsuperscript{17} Quaest. super Metaph. II, q. 2–3, n. 76, 77, 83, 114, 115 (OPh III, 223–25, 232–33).

\textsuperscript{18} Quaest. super Praed., 4, n. 53 (OPh I, 290).
jargon, the intelligible species of these accidents are present in our intellect. On the other hand, there are concepts of the substances underlying these accidents. Unlike accidents, substances do not leave any direct impression on our senses.\textsuperscript{19}

Scotus’s argument to demonstrate that we do not have direct knowledge of the essences of natural kinds is based on transubstantiation. By Scotus’s time, this argument had become fairly standard.\textsuperscript{20} After transubstantiation has occurred, all the sensible superficial properties of bread remain unchanged—its color, taste, and consistency are still there to be sensed. According to Catholic dogma, however, the essence of bread is not there anymore. All the same, if we just consider what we know through our senses, we are not able to tell that there is actually no bread when we are confronted with a consecrated host. Since according to Scotus (and any Aristotelian) the content of our thoughts comes to our minds through the senses, it follows that what we think about is exactly the same when the essence of bread is there and when it’s not. But Scotus notices that if a cognitive power knows something, then it also knows when that thing is not there. Now the case of the Eucharist clearly shows that our intellect cannot tell when a substance such as bread is not there. It follows that our intellect does not know whether that substance is there at all.

The case of transubstantiation teaches us a general truth about our knowledge of substances. If God destroyed any substance and just left its sensible superficial properties, our concepts would remain unchanged. So, for example, if God decided to destroy all cats and to leave only their sensible superficial properties, we would not be able to tell that this had happened and our knowledge of cats would remain the same, even though no cat existed anymore.\textsuperscript{21} Conversely, if God decided to destroy all sensible accidents and keep only the substantial essences underlying them, we would be unable to identify any of those essences since we are able to identify a substantial essence only by virtue of its accidents.\textsuperscript{22}


\textsuperscript{20} See for example Richard of Middleton, \textit{Super Sententias} II, d. 24, art. 2, 310.


\textsuperscript{22} \textit{Lect. I}, d. 3, p. 1, q. 1-2, n. 266 (Vat. XVI, 266): “Unde si per impossibile Deus ostenderet intellectui tuo essentiam hominis ... et non ostenderet tibi descriptiones accidentium quae intelligis vel quibus cognoscis substantiam, nescires utrum esset essentia hominis vel non.”
It may be objected that this argument fails to distinguish between two kinds of cognition that Scotus was willing to separate. On the one hand, there is what Scotus calls “intuitive cognition,” that is, the act of intellectually grasping something as present and existing. On the other hand, there is what Scotus calls “abstractive cognition,” that is, the act of intellectually grasping something with no indication as to its presence or existence. Now it may be objected that the Eucharist argument shows that there is no intuitive cognition of substances, since we fail to know whether there is bread present before and after the act of consecration. But this argument does not apply to abstractive cognition. So it may be contended that we do have some cognition of bread, and more in general of the essence of any natural kind, even though this cognition is abstractive and not intuitive. In other words, it may be contended that, even though we do not know whether a certain essence is present, we do grasp what that essence is in itself. Scotus, however, was willing to deny even this. His answer to this objection was that abstractive cognition always presupposes, at some point, that its object be present to our cognitive powers. If that were not the case, that object could have left no likeness in our intellect; but since abstractive cognition takes place when the likeness of an object (its so-called “intelligible species”) is present in our intellect, no abstractive cognition could ensue if there had never been any direct acquaintance with the object of cognition. If I have a concept of what a cat is, at some point I must have been acquainted with cats (barring a special illumination from God). Otherwise, there is no way I could know what a cat is.

So some past acquaintance with the object as present is a necessary requirement for abstractive cognition of that object to take place. But then, Scotus contends that you and I have the same thought about a certain thing even though I have never been exposed to that thing but you have. Scotus concludes that, contrary to what we may expect, you have not been acquainted with that thing either—the thing was indeed present, but you never acquired abstractive cognition about it. All that both you and I know about that thing is a general description, that is, that that thing is something underlying the sensible accidents we are acquainted with. But this knowledge is reached by inference, not by direct acquaintance.

The crucial step in this argument is the claim that two people may have the same thought about a certain thing even though one of them has never been exposed to that thing. Scotus demonstrated this claim by way of an

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23 See, for example, Scotus, Quodl., q. 13, n. 8 in Opera omnia XXV (Paris: Vivès, 1895), 321.
24 Ord. I, d. 3, q. 3, n. 141 (Vat. III, 88).
interesting thought experiment. Suppose that somebody (let us call him “Paul”) has seen for all his life only consecrated hosts and never actual bread. Now take another person (let us call her “Mary”). Suppose that Mary has seen actual bread. So whereas Paul has never been exposed to the real presence of bread, Mary has been. Should we conclude that Paul has no abstractive cognition of bread, whereas Mary does have abstractive cognition of bread—namely, Mary does but Paul does not know what bread is?

Against this conclusion, Scotus observed that Paul’s experience of his act of thinking about what he sees is in every respect similar to Mary’s experience of her act of thinking about what she sees. It is interesting to notice that Scotus did not conclude from this observation that our acts of thinking are not individuated by our psychological states. Rather, Scotus rejected the suggestion that Paul’s thought about what he sees and Mary’s thought about what she sees are different kinds of thoughts as an absurd suggestion that is clearly in contrast with our experience. By contrast, he concluded that both Paul and Mary are thinking about the same thing, but that neither of them is thinking about the real essence of bread. Rather, what they are thinking about is the subject underlying the superficial sensible properties with which both of them are acquainted, whatever that subject may be. So what they are thinking about is captured by a description such as “something that is white, with such and such a consistency, etc.” Neither of them has knowledge of the real essence of bread. And the link between this descriptive thought and the real essence of bread is contingent, as is clear from the fact that to the same thought there corresponds actual bread in the case of Mary and no actual bread in the case of Paul. We have no de re thoughts about natural kinds.

Scotus’s argument has a striking resemblance to the famous Twin Earth thought experiment. Think of Mary as somebody on Earth acquainted with water and think of Paul as somebody on Twin Earth acquainted with a substance that has all the same superficial phenomenological properties as

Ord. I, d. 3, p. 1, q. 3, n. 143 (Vat. III, 88–89): “Contra primum: cognitio abstractiva necessario prae-supponit aliquando haberi realem praesentiam illius a quo ipsa derelinquitur, vel species, quae est eius principium. Qui tantum vidit eucharistiam, numquam habuit realem praesentiam obiecti causativi, mediate, intellectionis abstractivae, — alius qui vidit alium panem, habuit: ergo primus non habebit cognitionem abstractivam panis, secundus habebit, quod statim est contra experientiam, quia uterque potest simillem actum intelligendi panem experiri in se;” n. 145 (Vat. III, 89): “Nullus igitur conceptus quiditativus habetur naturaliter de substantia immediate causatus a substantia, sed tantum causatus vel abstractus primo ab accidente, —et illud non est nisi conceptus entis.”


water but is not water. Interestingly, if faced with the Twin Earth thought experiment, Scotus would not conclude that Paul, on Twin Earth, is not thinking about water whereas Mary, on Earth, is thinking about water. Rather, he would conclude that Mary’s thought and Paul’s thought have the very same content but that neither of them is about the real essence of water; both thoughts are de dicto thoughts about any subject that happens to underlie the phenomenological properties that on Earth we associate with water.

Should we conclude that Scotus is an internalist about the content of mental states, that is, that for him mental content is fixed exclusively by what is inside the thinker’s head? No. Both Paul and Mary are directly acquainted not with their internal experiences but with sensible accidents, such as the color of bread, its taste, its consistency, etc. Now Scotus (like all his contemporaries) regards these accidents as components of the real world. So our thoughts about sensible accidents are thoughts about items in the world, and such thoughts are individuated because they are about certain items and not about others. Thus, it would seem more appropriate to consider Scotus an externalist. Our thoughts are about accidents in the world.

As to substances, Scotus’s point is not that our thoughts about substances can be individuated without any reference to anything extramental; his point is merely that our thoughts about substances are actually thoughts about some otherwise unknown entities whose existence we infer behind the accidents we are acquainted with. The point is that the contemporary philosophical distinction between internalism and externalism seems to make sense only once sensible qualities have been moved from the world to our minds and the corresponding distinction between secondary and primary qualities ensues—a move and a distinction that took place only in the seventeenth century.

Scotus’s conclusion was that the real essence of any natural kind is beyond our reach. All the same, he maintained that we do know something about natural kinds. We cannot grasp their essences by a simple act of cognition, but we can arrive at them by inference. Scotus described the

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29 See notably Locke, An Essay, II.8; M. Ayers, Locke (London and New York: Routledge, 1991), 2: 28–37. Admittedly, God could supernaturally cause in us a thought about a sensible quality even though that quality does not exist or does not play any causal role on the formation of our thought. See Ord. I, d. 3, p. 3, q. 2, nn. 477–9 (Vat. III, 285–86). This is an interesting issue, but it is different from the one considered here. For a discussion of similar cases in William of Ockham, see S. Brower-Toland, “Intuition, Externalism, and Direct Reference in Ockham,” History of Philosophy Quarterly 24 (2007): 317–35.
process by which we reach inferentially the essences of natural kinds in some
detail. We happen to perceive the same color, say white, in association with
different qualities. Accordingly, we ask what accounts for the fact that
sometimes we perceive white together with certain qualities and other times
together with some other qualities. Scotus held that the answer to this question
must be that the color white inheres in different subjects. Only a different
underlying subject can account for a quality regularly occurring in
conjunction some times with certain qualities and other times with other
qualities. Scotus’s example is that of the color white inhering some times in a
piece of wood and other times in a stone and being associated consequently
with different kinds of accidents. We reason from the different cluster of
accidents with which the same accident is associated to different underlying
subjects. But what do we know about this underlying subject, whether wood
or stone? Nothing else, according to Scotus, apart from the fact that it is a
body, that is, a substance that can receive dimensions. In turn, the concept of
a substance can be analyzed into the concept of something or a being that acts as the substratum of accidents. So, if we consider what we know about a
substance in itself, without taking into consideration the accidents that inhere
in that substance, we can only describe that substance as a being or
something or a thing (ens, aliquid, res). Apart from these very generic labels
(the so-called ‘transcendental concepts’), we do not have any knowledge of
what a substance is in itself. In Scotus’s own terms, we have no quidditative—
that is, essential—concept immediately caused by a substance.

Scotus therefore concluded that all our knowledge about the essence
of a natural kind, say the natural kind cat or human being, is a complex

30 See *Ord. I, d. 22, q. unica, n. 7* (Vat. V, 344–5): “Nam concipiuntur ab aliquo multa
accidentia, concurrentia in eodem, puta talis quantitas et talis qualitas,—et probatur neutrum
illorum esse alterum, quia utrumque illorum manet sine altero; probatur etiam utrique illorum
aliud aliud esse subjectum commune, quia utrumque illorum potest destructo uno non destructo:
ergo aliud conicitur esse subjectum utrique, ut qualitati et quantitati,—illad autem quod
subest, non concipitur in conceptu quiditativo nisi entis, vel ‘huius entis’. Et cum frequent
contingat quod talis quantitas et talis qualitas coniunguntur in aliquo et alibi non coniunguntur, et
cum non est ex natura qualitatis et quantitatis, ut praestensum est,—coniunguntur quod hoc est ex
natura illius tertii, in quo fundantur ambo ista; non autem coniunguntur talia in isto toto, qualia in
illo: ex quo enim diversis modo coniunguntur in diversis, conicitur substratum istis esse diversum
a substrato ills, et ex hoc conicitur hoc esse aliu ab alio tertio.” Scotus described the same
process also in *Quaest. super Metaph. II, q. 2–3, n. 115* (OPh III, 233). The details vary, but the
gist is the same.

differentia in natura substrata, ibi diversis modo variantur accidentia et diversis modo coniunguntur,
et sic etiam aliud et aliud est substratum colori vel albedini ut est in ligno et ut est in lapide. Quid
ergo concipio de illo substrato, scilicet ligno vel lapide? Dico quod habeo conceptum corporis,
substantiae, et ultimus conceptus est conceptus entis.”
concept or description (descriptio). This description is a list of concepts resulting from the conjunction of the concept of being with as many accidents as we can add. By way of these complex descriptions, we come as close as possible to what a natural kind is. Once we have collected as much information as we can about cats and dogs, we may be able to tell one natural kind apart from another one. But we never have any direct grasp of what distinguishes cats from dogs apart from superficial features such as their dimensions, their shapes, their ways of moving, etc. All these are accidents. The only concept that captures what any natural kind is in itself is the concept of being. But this concept does not pick out that natural kind from any other natural kind, for all natural kinds are beings. When we say that a natural kind is a being, in this sense of the word “being,” we are merely saying that it is a real constituent of the world.

The description resulting from the conjunction of the concept of being and as many accidental qualifications as we can add is nothing else than what we may call a nominal essence. Scotus was aware that we arrive at these descriptions by a long process of inquiry. Our first concept of cats may be very rudimental, as simple as “something with four legs, moving around in a graceful way.” Gradually, however, we become able to form increasingly sophisticated concepts by adding more and more qualifications to our descriptions.

Accordingly, Scotus held that there is a gap between the structure of the world, constituted by real essences, and the way we grasp those real essences. We do not get to know real essences by way of simple acts of cognition that latch onto them with precision. We can merely describe essences by way of complex descriptions that are never de re, as they may at least in principle pertain to more than one essence. Scotus maintained that this cognitive limitation is probably a consequence of the Fall. Accordingly, it does not follow from our nature, but it is contingent. All the same, in our current state, it is a limitation we cannot escape.

Then, Scotus’s account faces a very serious problem. Granted, our concepts of the essences of natural kinds are complex descriptions constituted by the concept of being followed by as many accidental qualifications as we can add in order to pick out one natural kind. But the foundation of our

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32 Quaest. super Metaph., II, 2-3, n. 115 (OPh III, 233): “Sed ultra conceptum entis nihil specialius intelligitur de quiditate alicuius substantiae; nec separatae, nec materialis .... Sed ipsi enti coniungimus accidentia positiva vel privativa, quae cognoscimus ex sensu, et facimus ex ente et multis talibus unam descriptionem, quae tota numquam invenitur nisi in tali specie. Et conceptus talis descriptionis est perfectior conceptus quem habemus de tali species.”
33 Ord. I, d. 27, q. 1-3, n. 74 (Vat. VI, 92).
scientific knowledge is constituted by definitions. So what about these definitions? Take for example the definition of a human being as a rational animal. If Scotus’s account is correct, we arrive at the concept of human being by forming a description constituted by the concept of being followed by several qualifications. The problem is that all these qualifications describe sensible superficial properties of human beings. How can this procedure generate the definition of a human being as a rational animal? Scotus was willing to claim that this is the definition of a real essence, picked out by way of genus and proper differentia. But if his account is correct, it seems that we can never arrive at the knowledge of the genus and the proper differentia of anything—neither of human beings nor of any other substantial natural kind. Apart from the fact that a natural kind is a being, all we know about it are accidents. So where do “rational” and “animal” come from? Should we just interpret them as tags for accidental features?

Scotus’s answer to this objection was brief and enigmatic. But there is considerable merit in it. He quickly referred to our “naming ability” or “naming disposition” (habitus vocalis). In order to understand Scotus’s answer, one should turn to his position on the question about what natural-kind terms means.

3. The Meaning of Natural-kind Terms

So what do natural-kind terms mean? Given Scotus’s position on what we know about natural kinds, one may expect him to say that natural-kind terms such as “gold,” “cat” and “human being” mean nominal essences, that is, the descriptions or complex concepts that capture what we know of those natural kinds. If this were the case, Scotus would be adopting a position similar to the one that is usually associated with John Locke and criticized by a consolidated trend in contemporary philosophy (Hilary Putnam, Saul Kripke and their followers). Scotus, however, emphatically denied that our natural-kind terms mean the descriptions that capture what we know about natural kinds. Rather, he claimed that natural-kind terms mean real essences, even though we do not have any distinct knowledge of what those real essences are in themselves.

In order to reject the view that our natural-kind terms mean natural kinds as they are described by our complex concepts and not as they are in

35 Quaest. super Metaph. II, q. 2–3, n. 117 (OPh III, 234); Ord. II, d. 3, p. 1, q. 1, n. 32 (Vat. VII, 403); Ord. I, d. 3, p. 1, q. 3, n. 164 (Vat. III, 101–2).
themselves, Scotus focused on the key assumption on which this claim depends, that is, the view that a certain thing is named as it is understood. Both Thomas Aquinas and Henry of Ghent, whose position Scotus took directly into consideration, repeatedly endorsed this claim.\textsuperscript{37} But if this claim is true and if we know the essence of natural kinds only through descriptions constituted by accidental characteristics, it follows that natural-kind terms mean descriptions constituted by accidental characteristics. For example, if my concept of a cat is that of something with four legs moving around in a graceful way, the meaning of the term “cat” will be, for me, “something with four legs moving around in a graceful way.”

Scotus, however, rejected the assumption from which this consequence is drawn, that is, the claim that things are named as they are understood.\textsuperscript{38} He held that, even though we know substantial natural kinds only by way of complex descriptions that capture nothing more than their accidental characteristics, the names we use to refer to those kinds mean those kinds as they are in themselves, not as we understand them. So it may be true that what I know of cats is just that they are four-legged beings moving around in a graceful way. All the same, when I use the term “cat,” this term means the natural kind cat as it is in itself, no matter how imprecise and inadequate my concept of a cat is. Something can be named \textit{more} distinctly than it is understood, according to Scotus. No matter how confused our concept of a cat is, our term “cat” picks out precisely the appropriate natural kind.

Scotus argued that this is the case both when the name giver and the name user are different persons and when the name giver and the name user are one and the same person. The former case accounts for the majority of our uses of names. Most of the time, we use names that were not given by us. These names were originally given to natural kinds that were identified thanks to some accidental features. Scotus observed that this origin is often reflected in the etymology of the name. He referred to the same example that Aquinas had mentioned to distinguish between that from which a name is given (\textit{a quo nomen imponitur ad significandum}) and that which a name means (\textit{id ad quod

\footnotesize{\textsuperscript{37} See above, notes 2 and 8. Scotus reports this claim in \textit{Rep.} I-A, d. 22, q. unica, nn. 11, 12, 13 (ed. Wolter and Bychknov, 3–4).}

\footnotesize{\textsuperscript{38} \textit{Ord.} I, d. 22, q. unica, n. 4 (Vat. V, 343): “Potest dici ad quaestionem breviter quod ista propositio communis multis opinionibus—scilicet quod ‘sicut intelligitur, sic et nominatur’—falsa est si intelligitur praecise, quia distinctius potest aliquid significari quam intelligi.” See also \textit{Lect.} I, d. 22, q. unica, n. 2 (Vat. XVII, 301); \textit{Rep.} I-A, d. 22, q. unica, nn. 22, 23. On the claim that something can be named more distinctly than it is understood, see E.J. Ashworth, “Can I Speak More Clearly than I Understand? A Problem of Religious Language in Henry of Ghent, Duns Scotus and Ockham,” \textit{Historiographia Linguistica} 7 (1980): 29-38.}
significandum nomen imponitur). Scotus argued that this distinction actually presupposes that terms mean things not as we understand them. The name “stone” (lapis), was given to stones because of their property of hurting our feet. But even though the concept that the name-giver had of a stone was probably just that of a something hurting her feet, the term “stone” (lapis), does not mean “something hurting our feet.” Rather, it means a real thing in the world, that is, a stone, as it is in itself. The same conclusion applies to all natural-kind terms.39

What about the case in which the name giver and the name user are one and the same person? Unlike Aquinas, Scotus held that even the first name giver had no clear knowledge of what he was naming. Adam had a very confused knowledge of the animals and plants to which he was giving names. We may be willing to contrast the knowledge of the first name-givers to the knowledge that scientists have of the same things. Scotus made basically the same point by contrasting Adam’s knowledge to Christ’s knowledge. Unlike Adam, Christ has a clear understanding of all the essential features of any natural kind. All the same, no matter how inadequate Adam’s knowledge was in comparison to Christ’s knowledge, Adam succeeded in giving names that pick out what natural kinds are in themselves. This is just part of what the act of naming and the concept of meaning are. To have a distinct concept of a certain thing is not a necessary condition in order for somebody to name that thing and for a term to mean that thing in a distinct way.40

Since Scotus rejected the parallelism between naming and knowing, he could maintain the distinction between what we may call real and nominal essences while at the same time holding that our natural-kind terms signify real and not nominal essences. No matter how ignorant I am of the chemical composition of wood, when I say “wood,” that word means the real essence of wood, not the very confused concept that I may have of what wood is. Similarly, we may give the name “stone” to a stone because of its sensible superficial properties, such as its annoying characteristic of hurting our feet, but the meaning of the word “stone” is independent of any of those properties. As a matter of fact, Scotus held that the meaning of “stone” would remain the

39 Ord. I, d. 22, q. unica, nn. 5-6 (Vat. V, 343–4). See Aquinas, ST I, q. 13, a. 2, ad 2.
40 Rep. I-A, d. 22, q. unica, n. 16 (ed. Wolter and Bychknov, 5). On Christ’s knowledge, see Lect. III, d. 14, q. 1-2 (Vat. XX, 341–58). By contrast, see Aquinas on Adam’s knowledge, ST I, q. 94, a. 3. Since Aquinas posited a strict correspondence between naming and knowledge, he thought that Adam could name animals because he had perfect knowledge of their natures (ibid., ad 3).
same even if stones had no accidental property at all. And the same is true for any natural kind.\textsuperscript{41}

So what about real definitions? Remember that definitions such as “human beings are rational animals” seemed to pose a problem to Scotus’s view that we know natural kinds only by way of descriptions resulting from the conjunction of the concept of being with as many accidental features as we can add. A definition such as “rational animal” seems to mean a real essence as it is in itself, not the roundabout description by which we know that real essence. In the light of Scotus’s views on the semantics of natural-kind terms, it is now possible to interpret his answer to this objection. We are forced to consider definitions such as “human beings are rational animals” as nominal as opposed to real definitions only if we assume that something is named in the way it is understood. Since we do not have distinct concepts of what animality and rationality are, we may be tempted to conclude that this epistemic limitation is reflected on our own definition of human beings as rational animals. But Scotus rejected the assumption on which this conclusion was based, namely, that things are named as they are understood. Consequently, he could maintain that we do not have a clear concept of what animality and rationality are and at the same time he could claim that we can use the terms “animal” and “rational” to mean exactly what animals are in themselves and what rationality is in itself. As a consequence, the definition of human beings as rational animals, like any other definition of a natural kind, is a real definition. Such definitions pick out actual aspects of reality, even though we do not have any distinct understanding of those aspects, just as by the term “water” I mean exactly what water is, even though I may lack any clear understanding of water’s chemical structure.

So Scotus avoided making all our definitions nominal. Our definitions do pick out real essences, but the result of his view is quite surprising. We use natural-kind terms as tags for entities whose natures we do not know, even though we do know that these things belong to the same natural kind and share a common nature, which is currently hidden to us.

Scotus made an interesting comparison to illustrate the way we use natural-kind terms. Suppose that I am ignorant of the sounds of the letters of the Hebrew alphabet. All the same, suppose that I know what each letter in

\textsuperscript{41} Rep. I-A, d. 22, q. unica, n. 23 (ed. Wolter and Bychkmov, 8): “Ergo non naturaliter cognoscimus quiditatem substantiae secundum propriam rationem eius, et tamen aliquod nomen ei imponimus ad significandum propriam rationem eius et hoc individuum sub genere substantiae, sub illa etiam ratione sub qua non cognoscimus eam. Imponimus enim huic substantiae insensibili quae laedit pedem, posito quod esset sine omnibus accidentibus, nomen lapidis et substantiae rationali nomen hominis. Constat enim quod non est homo per accidentia; non ergo oportet quod sicut intellectus cognoscit rem quod sic ei nomen imponat.”
the Hebrew alphabet looks like. I also know that the sounds of the letters in the Hebrew alphabet are ordered one after the other, so that there is a first sound, a second sound, and so on, even though I am ignorant of which sound is the first sound, which sound is the second sound, and so on. Now suppose that I decide to use the written symbol for the first letter in the Hebrew alphabet as the sign of the first sound in the Hebrew alphabet, whatever that sound may be. Moreover, I decide to use the written symbol of the second letter in the Hebrew alphabet as the sign of the second sound in the Hebrew alphabet, whatever that sound may be, and so on for all the letters and all the sounds of the Hebrew alphabet. In other words, I associate a letter to a sound even though I am ignorant of what that sound actually is. I do not have any de re knowledge of the sounds of the Hebrew alphabet. I only know them under the descriptions of “the first sound in the Hebrew alphabet,” “the second sound in the Hebrew alphabet,” and so on. Now, Scotus noticed that even though I am ignorant of what each letter and each sound of the Hebrew alphabet are in themselves, I am able to use each letter to mean distinctly each sound.

In this example, letters function just as they do in algebra and symbolic logic. Scotus’s suggestion is that by using natural-kind terms and definitions, we are in the same situation as I am when using Hebrew letters in this example. We use natural-kind terms and the terms appearing in their definitions as tags for things of whose essences we do not know anything except that they are beings. All the same, we use those terms in a rigorous and precise way in order to mean exactly that essence or that component of an essence, for example, a human being or animality or rationality. Even though we think about natural kinds and their components by way of descriptions consisting of accidental features, we pick them out as what they are, thanks to our names.

Scotus also compared our use of such terms and definitions to the way someone blind from birth makes valid deductions about colors. Even though the person born blind is not acquainted with colors and does not have any concept corresponding to the colors she is reasoning about, her deductions are nonetheless valid, and her conclusions are true. Interestingly, this example comes from Aristotle. Aristotle also compared the blind person making deductions about colors to people talking about words to which they

\[42\] Ord. I, d. 22, q. unica, n. 8 (Vat. V, 346); Rep. I-A, d. 22, q. unica, n. 26 (ed. Wolter and Bychknov, 9).

\[43\] Quaest. super Metaph., II, 2–3, n. 119 (OPh III, 234): “Ad primum horum dicendum quod de substantiis habemus habitum vocalem, sicut caecus natus syllogizat de coloribus, quia nec ipsa genera intelligimus, nisi ens.”
associate no thought. Aristotle had used this example to illustrate the situation of those who are unable to discriminate what is self-evident from what is not and, as a consequence, make the mistake of proving what is evident by virtue of what is not evident. Specifically, this is the situation of those who try to prove that there is such a thing as nature.\footnote{Aristotle, \textit{Physica} II, 1, 193a6-8. See also \textit{Analytica posteriora} I, 18, 81a38, for the statement that somebody without a sense doesn’t have the science pertaining to that sense.}

Similarly, Aquinas had referred several times to the case of the person blind from birth making deductions about colors in order to illustrate the situation of somebody who lacks scientific knowledge about what she is talking about.\footnote{In \textit{octo libros de Physico audito sive Physicorum Aristotelis Commentaria}, eds. F. Angeli and M. Pirotta (Naples: M. D’Auria, 1953), II, lect. 1, n. 306.} After Aquinas, Henry of Ghent had made use of the same example to illustrate the situation in which we human beings would be if we used names meaning God according to the understanding that the blessed (who see God) have of him. Henry claimed that such a use would not take us to any knowledge about the truth of the divine essence, for we would not be able to associate any concept to such names, just as a person born blind does not associate any concept to the name of a color.\footnote{Henry of Ghent, \textit{Summa quaestionum ordinariarum}, art. 73, q. 9, f. 277M. See also Vital du Four, \textit{Quaestiones de cognitione}, q. 1, 161.} So both Aquinas and Henry of Ghent had used the example of the person blind from birth making deductions about colors to illustrate a case of absence of knowledge. By contrast, Scotus used the same example to illustrate the task of the metaphysician. Both the person born blind making deductions about colors and the metaphysician reason about items of which they do not know what they are—colors and natural kinds, respectively. But what is striking is not so much the severity of their cognitive impairment as their ability to achieve certain knowledge notwithstanding their very serious limitations. They can reach this result through the correct use of language and logic. Logic and our naming ability survived the catastrophe of the Fall, which is the probable cause of our current inability to get at the essences of natural kinds. These are the two tools we can trust to sidestep our current cognitive limitations and figure out with certainty the structure of the world.\footnote{I presented versions of this paper at the 2008 APA Central Division Meeting and at the 2008 Cornell Summer Colloquium in Medieval Philosophy. I am grateful to audiences on both occasions for extremely valuable comments.}