The Demonic Temptations of Medieval Nominalism

Proceedings of the Society for Medieval Logic and Metaphysics

Volume 9

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Volume 9: The Demonic Temptations of Medieval Nominalism

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Edited by

Gyula Klima and Alexander W. Hall

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INTRODUCTION*

GYULA KLIMA AND ALEXANDER W. HALL

The *Proceedings of the Society for Medieval Logic and Metaphysics* (PSMLM) collects original materials presented at sessions sponsored by the Society for Medieval Logic and Metaphysics (SMLM). Founded by Gyula Klima (Director), Joshua Hochschild (Secretary), Jack Zupko and Jeffrey Brower in 2000 (joined in 2011 by Assistant Director, Alexander Hall) to recover the profound metaphysical insights of medieval thinkers for our own philosophical thought, the Society currently has over a hundred members on five continents. The Society's maiden publication appeared online in 2001 and the decade that followed saw the release of eight more volumes. In 2011, PSMLM transitioned to print. Sharp-eyed readers of these volumes will note the replacement of our (lamentably copyrighted for commercial use) lions, who guarded the integrity of the body of an intellectual tradition thought to be dead, with the phoenixes that mark our rebirth. Friends of the lions will be happy to note that they remain at their post, protecting PSMLM's online proceedings at http://faculty.fordham.edu/klima/SMLM/.

This volume comprises three sets of papers treating the problem of singular cognition and the metaphysics of the great medieval nominalist philosopher, John Buridan. The papers in Part One are from Society sessions on the topic of singular and universal cognition. The meetings took place in 2008 and 2010, sponsored by the American Catholic Philosophical Association and hosted by Creighton University and Loyola University Maryland, respectively. Parts Two and Three first appeared in volume nine of the Society's *Proceedings* and present papers from two

* The abstracts of *Transduction and Singular Cognition in Thomas Aquinas*, *Universal and Singular Cognition* and *Late Medieval Nominalism and Non-veridical Concepts* were supplied by the papers' respective authors, Adam Wood, Andrea Borghini and Claude Panaccio.

different, yet content-wise essentially related sessions held in 2009, the APA convention in NYC and the UWO Colloquium on Ancient and Medieval Philosophy. The sessions were not formally organized by the Society, but all related to recent research into the thought of John Buridan.

Part One: Universal and Singular Cognition

The problem of singular cognition questions our ability to cognize an individual in its individuality, that is, as the singular entity that it is and none other. Experience sometimes suggests that we do not have singular cognitions, as when we cannot tell apart identical twins. On the other hand, discrimination of an individual in its individuality seems at least in principle to be possible (for instance, dogs can discriminate by scent between identical twins). Yet, if we can have genuine singular cognitions, what allows for this?

Adam Wood's *Transduction and Singular Cognition in Thomas Aquinas* addresses a pair of objections Peter King has put forward against Thomas Aquinas's theory of cognition, arguing in each case that Aquinas fares better than King supposes. The first objection involves Aquinas's supposed inability to specify the cognitive mechanism responsible for translating (or "transducing") sense data into intelligible content. The second claims that Aquinas cannot adequately account for our cognition of singulars. Since both objections involve the relationship between the senses and the intellect, responding to them sheds light on how this aspect of Aquinas's cognitive psychology may best be understood.

Are the most immediate entities of perception particular or, rather, universal? Call PP the thesis that those entities are particular and UP the thesis that they are universal. Andrea Borghini's *Universalism and the Argument From Indifference* presents an argument for UP, which elaborates on a version of what Gyula Klima has labeled 'the argument from the indifference of sensory representation' or, for short, 'the argument from indifference.' After considering three ways to reject the argument, in the concluding section, it is also suggested that UP offers a natural way to argue for universalism (the thesis that *all* denizens of reality are universal).

Peter Weigel's *Singular Cognition: Brief Remarks on Pini and Klima* was read at the 2010 meeting of the Society as a response to *Aquinas versus Scotus on the Cognition of Singulars* and *The Medieval Problem of Singulars* by Giorgio Pini and Gyula Klima, respectively, and serves well

to introduce the final essays of Part One. Weigel describes the problem of singular cognition and notes its reappearance in contemporary, analytic philosophy. The question regarding whether we have perceptions or thoughts of an individual in a manner that captures the individuality of the individual has a rich history in the tradition. Weigel consequently draws attention to Aristotle's *De Anima*, the *locus classicus* of the problem, related issues that arise in subsequent philosophical treatments of the issue, and the argument from indifference, which contends that if what is represented in cognition can indifferently represent multiple, similar particulars, then cognition is not singular. Weigel concludes his remarks on Pini and Klima with reflection on how problems in singular cognition lead to problems with the metaphysics of perception, conceptualization and thought.

Duns Scotus's belief that singulars can at least in principle be thought about but not sensorily perceived reverses the standard, Aristotelian tenet that sense is of the particular, whereas the intellect is of the universal. This reversal is all the more striking given that Scotus's theory is built out of Aristotelian material. In *Aquinas versus Scotus on the Cognition of Singulars*, Giorgio Pini presents Thomas Aquinas as an exponent of the "standard" Aristotelian view, as a preliminary to a consideration of Scotus on the cognition of singulars. For Scotus, experience reveals that sensory powers are not the kind of capacities that can discriminate between qualitatively indistinguishable sensible qualities. Rather, we rely on accidental differences such as location in order to discriminate between individual qualities. As concerns substances, though intellect is naturally suited to grasp individual substances, reliance on the senses prevents us from cognizing individuals as such in this life.

Singular cognition concerns its singular object not in a universal, but in a truly singular manner, targeting this individual as such, and not any other. Experience with forgeries, identical twins and such suggests we lack singular cognition in this sense. Nevertheless, our seeming ability, *in principle*, to discriminate between nearly identical singular objects (as when the forgery of a painting is exposed through an analysis of pigments) argues in favor of singular cognition. If, then, we have singular cognition, how is such possible? Gyula Klima's *The Medieval Problem of Singulars* addresses this question through the writings of the medieval thinkers in which it emerges. Thomas Aquinas argues that cognitive acts encode distinctive information about singulars as such through distinctive representational content sufficient to account for singular cognition,

whereas William Ockham holds that what singularizes a cognitive act is exclusively its actual causal contact with the sensible singular object. Ockham's stance, however, leads to trouble in accounting for singular memory, imagination, and singular reference. Hence, Buridan takes a step back from Ockham in the direction of Aquinas, attributing the singularity of cognitive acts not to their causal link alone, but to their *content*, resulting from that causal link. But this step necessarily leads Buridan to an abstractionist account of universality that thinks of things of a certain kind *with respect* to what they agree in while disregarding their individual differences, an account rejected by Ockham's nominalist views regarding universal cognition.

Part Two: Demon Skepticism

An attempt to synthesize and advance the research collected in Parts Two and Three of this volume has been made in Gyula Klima's recent monograph *John Buridan*, published by Oxford University Press in 2009. Part Two addresses one of the central arguments in that monograph, taken up and criticized in an extremely thought-provoking paper by Claude Panaccio, followed by Klima's reply.

Demon skepticism emerges as a major theme with the rise and spread of fourteenth-century, Ockhamist nominalism and consists in the claim that *it is possible that all our cognitive acts (and hence all our categorematic concepts) are non-veridical*. Gyula Klima's *Demon Skepticism and Concept Identity in a Nominalist vs. a Realist Framework* argues that the appearance of Demon skepticism results from subtle changes regarding the identity conditions of concepts that are introduced in Ockham's nominalist framework that render the veridicality of our mental acts contingent. Ockhamist nominalism, therefore, allows that we can have the very same mental acts appearing to represent the very same objects whether or not they in fact represent those objects, a possibility ruled out by the moderate realist framework, which views intellectual concepts as further processed, abstracted information about the genuine objects of genuine experiences.

Claude Panaccio's *Late Medieval Nominalism and Non-veridical Concepts* notes that several commentators have recently drawn attention to the presence of strong externalist components in fourteenth-century nominalism. The nominalists's causal theories of cognition and their insistence on the singularity of everything that exists favored, in particular, the emergence of some forms of *mental content externalism*. In his latest book, *John*

Buridan (Oxford U. P., 2009), Gyula Klima has argued that the distinctive brand of mental content externalism that is found in authors such as William of Ockham and John Buridan makes them especially vulnerable to demon skepticism and ultimately leads to outright logical contradiction. Panaccio tries to assess this anti-nominalist argument by focusing on one central notion in it: the idea, namely, that a nominalist theory of the Ockham-Buridan sort is committed to the possibility of a human mind endowed *only* (through special divine intervention) with what Klima calls *nonveridical concepts*, a nonveridical concept being defined by him as "one that represents something different from what it appears to represent."

The main claims of the paper are that:

(1) Klima's argument for deriving a contradiction from the nominalist theory fails

(2) contrary to what Klima holds, Aquinas's cognitive theory is in no better position than late medieval nominalism with respect to its capacity for avoiding Demon skepticism

(3) the medieval nominalists were indeed committed to the possibility of nonveridical concepts (and even to the possible existence of beings endowed *only* with such misleading concepts), but this is not nearly as philosophically damageable as Klima thinks it is.

Demon Skepticism and Non-Veridical Concepts, Gyula Klima's rejoinder to Claude Panaccio's *Late Medieval Nominalism and Non-veridical Concepts*, acknowledges the overall accuracy of Panaccio's reconstruction of Klima's position and arguments, but rejects Panaccio's arguments against three of Klima's theses: (A) nominalist externalism opens the door to demon skepticism (B) demon skepticism rests upon a contradictory notion and (C) there is in medieval philosophy another variety of content externalism that does avoid Demon skepticism, namely, that of Aquinas. Klima contends that Panaccio's objections to (A)-(C) are answerable given the late-medieval distinction between formal and material falsity (pertaining to judgments and concepts, respectively) also utilized by Descartes, and Klima's precise understanding of the non-veridical concept as one that appears to represent something that it does not represent.

Part Three: John Buridan – Medieval Nominalism

Gyula Klima's aforementioned *John Buridan* focuses primarily on Buridan's nominalist semantics; yet there is much more to Buridan's nominalism than what transpires in his semantics, as is shown by the exchange between Klima and Henrik Lagerlund, and by Calvin Normore's stimulating paper concerning Buridan's metaphysics *per se* and its "backwards implications" concerning Buridan's logical semantics.

A critic of moderate realist essentialism, John Buridan has difficulty accounting for the identity over time of material substances. Henrik Lagerlund's *John Buridan's Empiricism and the Knowledge of Substances* contends that Buridan's identity conditions entail that absolute terms cannot serve as rigid designators.[1] Gyula Klima's *Buridan on Substantial Unity and Substantial Concepts* offers on Buridan's behalf tentative solutions to these related ontological and epistemological difficulties. Pointing to Buridan's recognition of gradations of unity regarding identity conditions, Klima argues that even this weak sense of identity can supply us with rigid designators, as long as we designate an entity without some extrinsic connotation. On the other hand, Klima finds even tougher, mereological problems in Buridan's account of absolute concepts.

Calvin Normore *Externalism, Singular Thought and Nominalist Ontology* notes that fourteenth-century Nominalistae each held a number of theses, among them:

(1) that there is a language of thought the grammar of which is shared by all humans.

(2) that the terms of spoken language are signs of whatever the terms of mental language with which they are correlated are signs.

(3) that the primitive terms of mental language are concepts.

[1]Henrik Lagerlund's essay does not appear in this volume, but may be found in volume 9 of the Society's online proceedings: http://faculty.fordham.edu/klima/SMLM/PSMLM9/PSMLM9.pdf. A later version of Lagerlund's article appears as "The Changing Face of Aristotelian Empiricism in the Fourteenth Century," in *Quaestio* 10 (2011).

(4) that the most basic concepts are of particular material substances and that all other concepts are acquired either by abstraction from these or by combining concepts previously acquired.

(5) that generality is a feature only of signs – terms of some language – and not of anything non-linguistic.

(6) that a whole just is its parts.

(7) that only spirits – human souls, angels and God – lack parts.

(8) that material objects persist through time.

Issues arise regarding the mutual consistency of these various theses. For instance, (6) and (8) seem to be in tension as material objects gain and lose parts through time. Again, (4) and (8) appear to conflict as a material object's persistence through time, despite gain and loss of parts, suggests we conceive identity conditions at least as basic as concepts of particular material substances. Normore explores these issues against the background of the more general issue as to what extent and in what sense can the fourteenth-century Nominalistae be considered externalists in the philosophy of mind. Normore's discussion is structured around (1) a question – whether it is appropriate to think of the epistemology that seems common coin among fourteenth-century Nominalistae as externalist (2) a puzzle – why Ockham seems to have vacillated on whether there are simple abstractive concepts proper to individuals and (3) a problem – how there can be simple concepts of most individuals at all given both views about the formation of such concepts and views about the nature of identity which Ockham holds and which also seem common coin among the Nominalistae. Gyula Klima's comments on Normore's paper argue that nominalism need not entail a tension between (6) and (8); however, in accordance with Normore's closing comments, he speculates about the kind of natural science that might result from a logic by which substance terms are properly taken to be mass nouns, a logic that Buridan at one point seems to commit himself to, but shies away from, possibly for mere pragmatic reasons.

PART ONE:

UNIVERSAL AND SINGULAR COGNITION

TRANSDUCTION AND SINGULAR COGNITION IN THOMAS AQUINAS

ADAM WOOD

This essay attempts to answer a pair of objections Peter King has put forward against Thomas Aquinas's theory of cognition, and to offer some modest suggestions as to how that theory might best be understood. In one article, King argues that the medieval scholastics' inability to specify adequately a "transducer," a cognitive mechanism responsible for translating sense data into intelligible content, led to the collapse of Aristotelian psychology as a research program.[1] He explains the sense in which transduction was a problem for medieval Aristotelians, and surveys the leading candidates for the transducer role, among them Aquinas's suggestion that the agent intellect renders sense phantasms intelligible by abstracting a form from its individuating conditions. On King's reading, since the agent intellect merely removes individuating conditions, and does not alter sense objects formally in any way, the agent intellect must operate on sensible species that already contain general, classificatory features. But this is problematic. For one thing, it merely pushes transduction back a step — how do sensible species acquire such features? For another, it raises the question why brute animals are incapable of intellectual cognition. So the agent intellect cannot do the work of a transducer. In another article, King rehearses an objection from William de la Mare's *Correctorium fratris Thomae*, according to which Aquinas is unable to explain satisfactorily our thoughts about singulars.[2] According to this

[1] Peter King, "Scholasticism and the Philosophy of Mind: The Failure of Aristotelian Psychology," *Scientific Failure*, ed. Tamara Horowitz and Allen I. Janis (Lanham, MD: Rowman & Littlefield, 1994), 109–38.

[2] Peter King, "Thinking About Things: Singular Thought in the Middle Ages," *Intentionality, Cognition, and Representation in Medieval Philosophy*, ed. Gyula Klima (New York: Fordham University Press, forthcoming), available online at http://individual.utoronto.ca/pking/articles/Thinking_about_Things.pdf.

objection, Aquinas has once again failed to specify the mechanism(s) responsible for explaining several important ways we think about individual objects.

In both objections a key premise is what King calls the "fundamental principle of the neo-Aristotelian synthesis in psychology," namely that "psychological phenomena are to be explained in terms of the internal mental mechanisms that bring them about," and therefore that "the best explanation of psychological phenomena, or at least of cognition, is given by functionally-defined subpersonal mechanisms operating on representations."[3] King notes that in this respect, "the neo-Aristotelian synthesis closely resembles the project of contemporary cognitive science."[4] These are observations with which I largely agree. But if we are going to arrive at a correct understanding of the ways medieval figures correlated functionally-defined subpersonal mechanisms with psychological phenomena, then we must describe these phenomena in terms the medievals would have recognized. It is no good asking for a medieval's account of a peculiarly modern notion like the nation-state. At least, if one does so, one must expect a messy, hybrid sort of account. For this reason, I argue in what follows that King dismisses Aquinas on transduction and singular cognition too hastily. Indeed, a look at certain features of the metaphysics underpinning his psychology and the cognitive mechanisms and operations Aquinas *does* specify, shows that neither issue is an insurmountable problem for him.

1. Transduction

King draws his characterization of transduction from Zenon Pylyshyn's 1984 *Computation and Cognition*, so I'll turn there first.[5] Transducers are mechanisms that convert input of one sort, usually energy or information, into output of another. They are widely used in electrical engineering, but seismographs, microphones, or antennas could also qualify as transducers. So the function itself is common enough, but Pylyshyn thinks that in the particular case of transduction he's interested in, namely "the interface

[3] Ibid., 2.
[4] Ibid.
[5] Zenon Pylyshyn, *Computation and Cognition* (Cambridge, MA: MIT Press, 1984). See chapter 6, "The Bridge from Physical to Symbolic," for Pylyshyn's description of transduction.

between physical and semantic principles," our description must be "constrained in a principled manner, lest the simplification of the problems of perception gained by postulating certain transducers have, as Bertrand Russell is reported to have said once, all the virtues of theft over honest toil."[6] Here are the constraints Pylyshyn proposes:[7]

> (1) The function carried out by a transducer is *primitive* and is itself *nonsymbolic*. At least, the function is not described as carried out by means of symbol processing; it is part of the functional architecture.
>
> (2) A transducer is . . . a stimulus-bound component operating independently of the cognitive system. It is also *interrupt*- or *data*-driven by its environment.
>
> (3) The behavior of a transducer is to be described as a *function* from physical events onto symbols: (a) The domain of the function must be couched in the language of physics. (b) The range of the function must be computationally available, discrete atomic symbols. (c) . . . [T]he transformation from the input, described physically, to the ensuing token computational event, also described physically, follow[s] from physical principles.

King accepts these criteria for the transduction function basically verbatim. For my purposes, there are two main elements to notice here.

First, the transducer is part of our cognitive "functional architecture." Transduction is a low-level process, a simple "one-step" operation rather than one that can be dissected into component steps, and is thus "cognitively impenetrable."[8] It is one of the basic "modules"[9] or building

[6] Ibid., 141, 148.
[7] Ibid., 153–54.
[8] See King, "Scholasticism," 110–11.
[9] King uses this term in "The Inner Cathedral: Mental Architecture in High Scholasticism" (*Vivarium* 46.3 [2008]: 253–74 at 253): "Contemporary philosophy of mind is much concerned with issues pertaining to 'mental architecture' — describing how mental processes are organized, typically by identifying sub-personal functional mechanisms which causally interact, often through the intermediary of a mental representation, thereby giving rise to psychological

blocks of the mind.[10] King and Pylyshyn support these stipulations by appeal to skeptical worries. Transduction must remain relatively independent of our other cognitive processes; for example, its operation must not be affected by our beliefs or desires. Pylyshyn explains that

> [T]he influence of cognitive processes over a transducer's operation must be extremely limited. At some level the following *must* be the case: an organism's contact with the environment must . . . be decoupled from its cognitive processes; otherwise the organism has no stable base of causal interactions with the world from which to develop veridical perceptions.[11]

Obviously the transducer's mind-independence can only be relative; Pylyshyn stipulates that it "excludes such gross influences as are involved in changing direction of gaze," etc.[12] But the transducer must remain independent enough to be describable as data-, environment- or stimulus-driven; that is, it receives its input from "the world," from outside the mind itself. So transduction is a simple and automatic function, and the reason for this has something to do with ensuring the veridicality of perception.

Second, in specifying the input and output of the transduction function Pylyshyn and King importantly part ways. Pylyshyn is interested in how physical input can acquire linguistic character; any function with a domain "couched in the language of physics" and a range comprised of "computationally available, discrete atomic symbols" could be a transducer. King, in contrast, is interested in the relationship between sense and intellect.[13] This difference becomes crucial, I think, at the level of the function's domain. King writes that "to mediate between sense and

---

phenomena. Such internal mental mechanisms can be quite low-level and operate with a degree of relative independence; if so, they may be considered 'modules' or minimal centres of mental activity. A module or a set of modules may be specific to a given domain of phenomena, e.g. only processing visual data. The way in which a set of mental modules is arrayed makes up the architecture of the mind, offering structure to 'inner space.' The detailed structural articulation of the mind offers psychological theories some traction on the slippery realm of the mental."

[10] By "mind" I mean here simply the feature or set of features we have that is responsible for our cognitive abilities.

[11] Pylyshyn, Computation and Cognition, 155.

[12] Ibid., 156.

[13] King recognizes this difference between his analysis of transduction and Pylyshyn's, but doesn't seem to consider it important. See "Scholasticism," n. 2.

intellect, a transducer must map physical input, such as the deliverances of the senses specified physiologically, onto output which is 'intellectual' in nature," that is, "language-like at some level." By stipulating that the transducer's input be sense-deliverances "specified physiologically" King presumably means to mirror Pylyshyn's "couched in the language of physics." But why this stipulation?

For a physicalist like Pylyshyn, it is indeed a good question how physical input can acquire linguistic character. An example of the sort of input-description Pylyshyn has in mind, at a fairly fundamental level, would be waves or particles of light striking the retinas. How does this radiant energy get transduced into the perception of a crowd of philosophers? Pylyshyn sees functional analysis as the best means of answering this question.

For a hylomorphist like Aquinas, however, it is a rather complex issue how best to apply the formula "couched in the language of physics" to the data received into a sense-organ. On my understanding, hylomorphism is a form of structural realism; it holds that in order to give a complete account of a physical object's make-up is to give that account in terms of both material principles ("it's made out of this sort of stuff") and structural principles ("the stuff is structured in such and such a way"). Neither explanation may be eliminated if the object is really to be accounted for. Aquinas thinks that in sense-perception, a sensible species is received into a sense organ. It is received immaterially; that is, what is received into the eye is not the "stuff" of the cat over there on the mat, its fur or flesh or bones, but various features of the cat's structure. We can reflect on this species in various ways. We may attend to the features received by the five external senses, like its visible color or softness to the touch. We may attend to features common to multiple senses like its size, shape, or motion. We may also attend to it as a cat. We may consider it as this particular object here, and in this case our consideration is going to include the particular sensible features of Felix, or whatever cat it is we're considering. We may also consider it, however, just insofar as it is an object of its (feline) kind, and in this case we'll focus just on those elements of its structure that go into making it a cat.

The important point is that all of these structural features are present in the species received into the senses, and this enables us to reflect on that species in different ways, by means of our different faculties of sense or intellect. So it seems to me that an initial reply Aquinas might make to

King's criticism is that he doesn't *need* to specify a transducer — that transduction is a problem particular to physicalist theories of cognition. This reply is only available to Aquinas, though, vis-à-vis transduction in the strict sense spelled out by Pylyshyn above. As I mentioned, this is not exactly the sense King has in mind; he is concerned more loosely with the way information is transmitted from "the world" through the senses into the intellect. Aquinas must clearly possess some explanation of this transmission process — some sort of transduction-analogue. But what job does King suppose Aquinas assigned to the agent intellect in this process? And why does King consider the agent intellect inadequate to the task?

Aquinas's argument for the necessity of positing an agent intellect hinges on the premise that forms of material objects, as they exist in a sensible species or phantasm, are only potentially, not actually, intelligible.[14] Something must first prepare these forms, by stripping away their individuating material features, and must then impress them on the potential intellect, in order for actual understanding to take place. These are the two roles performed by the agent intellect. King concludes that the function Aquinas describes here, converting sensible species into intelligible ones and impressing them on the understanding, is equivalent to transduction.

And he is quite certain that the agent intellect cannot play this role. This is because abstraction, according to Aquinas, does not produce any formal changes in the intentional object under consideration; it merely removes its individuating conditions, as has been said. But in that case, given that the intelligible species has linguistic or symbolic character as it exists in the intellect, it must *already* have had this character as it existed in sense. As King puts it, "the faculty of sense must have recourse to conceptual categories at a level from which they have been excluded."[15] Sensing itself must be capable of sorting its data into kinds — cats, people, sheep, etc. — so that the agent intellect, stripping away what is particular to *this* cat, can think about cats in general. This sort of classificatory sensing is very different, he thinks, than the sort of stimulus-response sensation that animals are supposed to have on the Thomist account. It is one thing to say that sheep respond differently to different stimuli — the smell of grass and the smell of a wolf — but another thing to suggest that sheep have wolf-

[14] *Summa theologiae* (ST) 1a.79.3.
[15] King, "Scholasticism," 118.

and grass-concepts. Yet King thinks this is exactly what the abstractive account of transduction requires: "the essence of the kind, given in the form, must already be determinately present in the sensible species."[16] His worry is that if the essences of material objects were present in sensible species, then we could give no reason why brute animals cannot understand. He concludes that essences are *not* present in the sensible species, and therefore that Aquinas fails to explain when transduction occurs.

I would maintain that King's worry is unfounded, and that his conclusion is the wrong one to make. In fact, the essences of material objects *are* present both in sensible species and phantasms. King's charge that "the essence of the kind, given in the form, must already be ... present in the sensible species" is correct. It is, however, entirely unproblematic. Consider: the *same* information about a piece of music as is received into my ears, is received into a compact disc. But the CD, lacking any sense-powers, cannot *hear* the music! The difference between my cognition of a wolf and the sheep's cognition of a wolf, similarly, is not on account of the sensible species we receive, or of the mental images we form. The essence of the wolf, his lupine form or structure, is present in the sheep's species and phantasms, just as it is in mine. But this does not mean that the sheep will be able to *think* about the wolf, much less *understand* what it is to be a wolf in general. The sheep cannot do so because he lacks an intellect — the cognitive equipment requisite for rendering a *potentially* intelligible object *actually* understood.

As I mentioned, the fact that Aquinas didn't specify a transducer to King's satisfaction should not be taken to indicate that he lacks a transduction-analogue: some account of the faculties and operations mediating between sense and intellect. But I think it is best to speak of multiple faculties and operations responsible for doing this, rather than a single simple transduction function. Pylyshyn's requirement that the transduction function be a simple, cognitively impenetrable, stimulus-bound operation seemed to be motivated by skeptical concerns; it was in order to ensure the veridicality of our beliefs. The idea is that if our antecedent linguistic categories were allowed to play a role in the formation of subsequent linguistic categories, then we could never be certain that a concept had arisen from features genuinely "outside" the mind. If I am right, though,

[16] Ibid., 119.

that it is the very same structure that is present in the wolf, is received into my senses, is "pictured" in a phantasm, and is considered universally by my understanding, then those skeptical concerns vanish. In fact Gyula Klima has argued recently that a powerful anti-skeptical argument can be built upon the scholastic theory of formal identity between a species as it exists intentionally in a knower, and that species as it really exists in the known object.[17] I do not want to enter into the details of that argument here. I simply note that whatever motives Pylyshyn and King may have had for requiring that the transducer be a simple operation are not present for Aquinas. I will outline Aquinas's account of the faculties and operations mediating between sense and intellect, however, in responding to the second objection I mentioned at the outset: the one dealing with singular cognition.

2. Singular Cognition

King introduces the topic succinctly as follows, "In one corner, Socrates; in the other, on the mat, his cat Felix. Socrates, of course, thinks (correctly) that Felix the Cat is on the mat. But there's the rub. For Socrates to think that Felix is on the mat, he has to able to think about Felix, that is, he has to have some sort of cognitive grasp of an individual — and not just any individual, but Felix himself. How is this possible?"[18] There are at least three cognitive phenomena at work here: grasping individuals in their individuality, grasping individuals as the individuals they are, and grasping individuals as members of a kind. Call these three kinds of "thinking about things" the phenomena of singular thought, *de re* thought, and singular judgment respectively. King doubts that Aquinas is capable of specifying the cognitive mechanism responsible for any of them.

This is an objection with a pedigree; de la Mare's *Correctorium* reportedly contained the following: "[Thomas] says that our intellect doesn't cognize

[17] See Klima's "Putting Skeptics in Their Place vs. Stopping Them in Their Tracks: Two Anti-Skeptical Strategies." Unpublished paper presented as inaugural lecture in the 2005-6 Fordham University Philosophy Department Lecture Series, available online at: http://www.fordham.edu/gsas/phil/klima/FILES/Inaugural.pdf; and "*Nulla virtus cognoscitiva circa proprium obiectum decipitur*: Critical comments on Robert Pasnau: 'The Identity of Knower and Known,'" available online at http://www.fordham.edu/gsas/phil/klima/APA.htm.

[18] King, "Thinking About Things," 1.

singulars; since our intellect abstracts an intelligible species from the individuating principles, the intelligible species of our intellect cannot be the similitude of those individuating principles."[19] De la Mare hastens to mention some serious difficulties that would seem to follow. We couldn't deliberate about action since the middle term of a practical syllogism is a singular judgment. Nor could we enjoy the Beatific Vision, since Christ is undoubtedly singular. Why suppose that Aquinas is unable to address these concerns?

As the objection makes clear, the issue is that understanding is only of universal features, those features potentially possessed by many individuals, whereas those features that make Socrates an individual, or make him Socrates, are singular. Aquinas explicitly endorses these propositions: "the principle of singularity in material things is individual matter; whereas our intellect . . . understands by abstracting an intelligible species from such matter. Now what is abstracted from individual matter is universal."[20] According to Aquinas it is Felix's possession of *this* quantity of matter, *here* and *now*, that makes him an individual and makes him Felix. But the abstract concept of felinity I might gather from reflecting on my phantasm of Felix prescinds from any particular chunk of matter, any particular here or now. So how can I think about Felix? King writes: "to think of Felix at all Socrates would have to have an individual intelligible species. Yet as we have seen, it is not possible to have an individual intelligible species naturally."[21] On Aquinas's cognitive theory, therefore, it is apparently impossible to grasp an individual in thought.

This charge would be quite just if Aquinas limited the psychological phenomenon we call "thought" to the operation of the possible intellect in isolation, but I find no reason for supposing that he did. Indeed, for Aquinas thought is a complex phenomenon involving several different faculties. If we are going to understand how thinking works, or how it is

[19] *Les premieres polemiques Thomistses: I. Le Correctorium corruptorii "Quare,"* ed. Palemon Glorieux (Le Saulchoir, 1927), 13. Glorieux (xviv–lv) lists various possible authors of the text, but thinks Richard Clapwell (or Knapwell) the mostly likely candidate. See also *Les premieres polemiques Thomistes: II. Le Correctorium corruptorii "Sciendum,"* ed. Glorieux (Paris, 1956), 34–38 for similar content organized differently.
[20] ST 1a.86.1.
[21] King, "Thinking About Things," 7.

possible to grasp individuals, we must take all of these into account. I mentioned above that I would return to the process corresponding to transduction in Aquinas's cognitive psychology — I'll do this now. A sketch of the powers and operations that mediate between sense and intellect will help me to clarify how Thomas dealt with singular thought.

The transduction process begins when one or more of the five exterior senses is activated by a sense object. In the case of sight, this is color, transmitted through a transparent medium rendered actual by light.[22] The organ of sight, the eye, receives the visible form of its object, the gray color of Felix's fur, and thereby becomes gray. Which would sound odd without the proviso that the color is received "immaterially" so that the eye becomes gray only in *esse intentionale*, not in *esse naturale*.[23] The features apprehended by the exterior senses are called proper sensibilia because they are each proper to just one exterior sense, and *per se* sensibilia because they affect that sense directly. Since we are able to distinguish not only between different deliverances of a single exterior sense (between sweet and bitter), but also between the deliverances of different senses (between white and sweet), Aquinas thinks there must be a common sense that apprehends and scrutinizes all the proper sensibilia alike.[24] The common sense also apprehends features accessible to more than one exterior sense, like magnitude, and motion, the so-called common sensibilia.[25] But neither brutes nor people could operate just on the basis of color-fields, sounds, tastes and the like, even when all these sensations are received and compared by the common sense. A different interior sense, called the estimative power in brutes and the cogitative power in people, is responsible for shaping the proper and common sensibilia into unified intentions[26] like Felix sitting on the mat.[27] Felix is what Aquinas calls a *per accidens* sense object, because while he can sensed by sight, for example,

[22] *Sententia libri de anima* (henceforth SDA) 2.14.424.

[23] SDA 2.24.551–54 and 3.2.588–90. Aquinas sometimes substitutes the terms *reale* or *materiale* for *naturale*, and *spirituale* for *intentionale*.

[24] SDA 3.3.599–605. He calls the common sense the "root and principle of the exterior senses" (*Summa theologiae* 1a.78.4).

[25] SDA 3.1.575–78. Aquinas argues that any common-sensible is *also* a proper, *per se* sensible. So something's shape is the proper, *per se* object of my sight and touch, but also the common object of my common sense.

[26] Or percepts, impressions, representations, or whichever term seems preferable here.

[27] See ST 1a.78.4, SDA 2.13.395–98, or *Summa contra gentiles* 2.60 for details.

he affects my eye only indirectly; what directly affects it is his gray color. These unified intentions allow animals to react instinctively to sources of threat or benefit. A sheep's estimative power tells him to gobble this grass, to flee that wolf, and the cogitative power works similarly for humans. The roster of internal senses is completed by the imagination, which encodes impressions of the proper, common, and accidental sensibilia, and the memory, which stores phantasms and can recall them even when the objects that initially produced them are no longer present. And from phantasms the agent intellect abstracts intelligible species; as Aquinas puts it "phantasms are, to the intellectual part of the soul as sense-objects to the senses."[28]

The intentions of the cogitative power would appear to account for first two kinds of "thinking about things" that I mentioned above. Certainly they are singular thoughts; the sheep senses *that* wolf slinking towards him on the left. I would maintain that they are also *de re* thoughts about particular individuals. For Aquinas, recall, it is because Felix's catty nature informs this chunk of matter, here and now, that he is the cat he is. That was why King rightly thought the intellect alone unable to apprehend him in his individuality. But my cogitative power, being a sense faculty, *can* apprehend him along with his material, local, and temporal conditions, so that I sense Felix sitting on the mat, and none other.[29]

[28] SDA 3.12.770.

[29] At this point Scotus would object that I haven't really cognized Felix, since my sensory representation of the particular cat on the mat is indifferent to any number of gray cats (cf. his arguments against the possibility of apprehending the individual difference in this life in *Ordinatio* 2.3.1.1 and *Quaestiones super Metaphysicam* 7.13.158 and 7.15.20). Do I really know that it is Felix on the mat, and not his identical twin brother? Of course not. As Scotus points out, God could have swapped the two cats while I wasn't looking. If I see the two cats side by side I might be able to distinguish between them, and if I'm told that the one on the left is named Felix, I can keep them straight as long as they are both in my visual field. But simply cognizing a particular cat in no way ensures that I will be able to recognize that same cat on a future occasion. But this should not be taken to mean that I have no *de re* cognition of Felix. Scotus has set the bar for *de re* cognition too high by demanding it include infallible recognition of an individual as the individual it is. Under ordinary conditions, I am reliably capable of telling one individual from another in circumstances when this ability matters. Experts can hone their senses to distinguish individuals even more reliably, and in even more

The third kind of thought about particulars that I mentioned, singular judgment, cannot be accounted for by the cogitative power alone. Instead, this sort of judgment requires the collaboration of two powers: the cogitative power contributes a thought about an individual, while the possible intellect contributes a thought about a universal.[30] It is this sort of judgment that Aquinas has in mind when he discusses "whether the intellect can cognize singulars" in question 86, article 1 of the *prima pars* of the *Summa*. After acknowledging that the intellect cannot cognize singulars directly for the reasons we set down above, he goes on to write there that:

> [I]ndirectly, and as if through a sort of reflection, the intellect can cognize a singular, since, as was said above, even after intelligible species have been abstracted, it is still unable to understand them by its act unless by turning itself toward a phantasm, in which the intelligible species are understood. . . . Thus therefore the intellect directly understands a universal through an intelligible species, but indirectly it also understands singulars, of which are the phantasms. And in this way it forms the proposition, Socrates is a man.

Aquinas evidently wants this sort of judgment to be understood in the context of his claim at question 84, article 7, that the intellect understands nothing at all without conjuring up phantasms as examples to aid it. The idea is that even when engaged in the most abstract speculative reasoning concerning universals, we still hold sense deliverances alongside the universals like a sort of anchor.[31] For example (not that this is especially abstract!), even when we're reasoning, "men are animals, animals have bodies, therefore men have bodies," we constantly think thoughts like "and

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difficult circumstances (think of a trained sommolier or gemologist). But to treat infallibility as the criterion for knowledge is a sure recipe for skepticism.

[30] An account of singular judgment similar in important respects to the one I am proposing here is found in Peter Geach, *Mental Acts* (London: Routledge, 1957; repr. South Bend, IN: St. Augustine's Press, 2001), esp. 65–74.

[31] Aquinas thinks that one sort of justification for this claim can be garnered simply by experience – try to understand anything and you'll inevitably form phantasms for yourself to aid the process. I'm not convinced that this is always true; it doesn't seem to me that I must make use of a phantasm to reason simply "A is B, B is C, so A is C" or "2+2=4." But this matter isn't crucial. The point is that I certainly *can* conjure up phantasms to aid these snippets of thought, and that in much (most) of my thinking I do.

Socrates is example of a man" to aid the process. So for Aquinas the operation of reasoning constantly works in tandem with the cogitative and imaginative powers. With reference to de la Mare's objection, it should be noted that this sort of cooperation is particularly conspicuous in human action, since singular judgments form the middle term of the practical syllogism.[32] Finally, it should be noted that just as the intellect constantly leans on phantasms to function, so too the cogitative power is constantly guided and corrected by the abstract concepts of the intellect. The cogitative power, as Aquinas puts it, "apprehends the individual thing as existing in a common nature."[33] For this reason, Aquinas says, it is sometimes called the "particular reason" or the "passive intellect."[34] And because it "apprehends the individual as existing in a common nature," (i.e., cognizes Felix as this cat, or Socrates as this man) it differs from the estimative power possessed by brutes.

Conclusion

I have claimed that two cognitive operations Peter King discusses, transduction and singular thought, lack direct analogues in medieval psychology, and consequently that it is not reasonable to expect a medieval thinker like Aquinas to specify a single mechanism responsible for carrying them out. Transduction, in its strict sense, is simply not a problem that a hylomorphist like Aquinas faced. On Aquinas's account, since the structural features present in physical objects are the *very same* features that are received into the intellect, there is no need for these features to be "transduced." Aquinas does give us a story about the process by which these feature pass from sense into intellect, but this is ultimately no more mysterious than the process by which a song is encoded on a compact disc.

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[32] About this cooperation Robert Pasnau writes, nicely, I think, that "this is just one of a number of contexts in which we will see Aquinas stress the unified, cooperative character of the soul's various capacities. Individual powers rarely work in isolation; the familiar operations that we call perception, thought, and choice all rest on a complexly interconnected sequence of operations" (*Thomas Aquinas on Human Nature* [Cambridge: Cambridge University press, 2002], 255).

[33] SDA 2.13.398.

[34] It is called the "particular reason in ST 1a.78.4 and SDA 2.13.396, and the "passive intellect," in *Summa contra gentiles* 2.60.1–2, although Aquinas seemingly objects to calling it the passive intellect if this is taken as an endorsement of Averroes's view that this faculty distinguishes us from the brutes.

The various kinds of singular thought, likewise, require a rather complicated story from Aquinas about the different ways that the structural features of physical objects are grasped by the interior senses and the intellect, but this story, again, is clearly present in the Angelic Doctor's thought.

I am probably remiss in waiting until now to note that in neither the transduction nor the singular cognition article does King write specifically with the purpose of criticizing Aquinas. Rather, the objections I've mentioned turn up as components of the broad historical arguments King is interested in making. In the transduction essay he points out difficulties with Aquinas's abstraction theory, Henry of Ghent's illumination theory, and Ockham's non-transductive theory alike in order to show how this issue importantly set the stage for Descartes's invention of the modern notion of mind. In the singular cognition essay he shows how Scotus attempted to solve the problems indicated by de la Mare, and how Ockham criticized Scotus's solution in turn, in order to establish the role of singular thought as the "key to understanding the conceptual heart of the debates in medieval philosophy of psychology."[35] King could be read in both essays as merely reporting an objection against Aquinas, rather than as forwarding one himself. In attempting to respond to these objections on Aquinas's behalf, I am not necessarily disagreeing with King's broad historical arguments, which are very useful and certainly thought-provoking. It may be that Aquinas's contemporaries *did* reject his cognitive theory for reasons very like the ones King puts forward. My claim here, however, is that if they did so, they needn't have.

[35] King, "Thinking About Things," 18.