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❖ this recovery is only possible if we carefully reflect on the logical framework in which those insights were articulated, given the paradigmatic differences between medieval and modern logical theories.

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## EDITOR'S NOTE:

Volume 10 of the PSMLM presents two sets of essays that discuss the interrelated themes of causality and skepticism. The pieces of the first set were read by Edward Feser, Gyula Klima and Michael Rota at the 2011 SMLM session on the theme of causality in its modern and medieval contexts, sponsored by the American Catholic Philosophical Association and hosted by St. Louis University. Henrik Lagerlund and Antoine Côté presented the second collection of essays at the 2011 International Congress on Medieval Studies, hosted by Western Michigan University, on the theme of medieval skepticism and the turn to epistemology in the later Middle Ages.

Volume 10 is the first volume that comes out online nearly at the same time as the printed version. To "synchronize" the two versions, the online version comes out with a 2012 "imprint". The online version still functions as a "pre-print" and can retroactively change (or even disappear) without notice. Therefore, please heed the note posted on the front page of the **SMLM**:

Besides the online version available at the above link, now the **Proceedings** are also available in printed format from **Cambridge Scholars Publishing** through **Amazon** and other book sellers. **Note** that after their publication, ***only the printed volumes are suitable for scholarly reference***.

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## Edward Feser:

# The medieval principle of motion and the modern principle of inertia

## I. The purported contradiction

Aquinas's First Way of arguing for the existence of God famously rests on the Aristotelian premise that "whatever is in motion is moved by another."[1] Let us call this the "principle of motion."[2] Newton's First Law states that "every body continues in its state of rest or of uniform motion in a straight line, unless it is compelled to change that state by forces impressed upon it."[3] Call this the "principle of inertia."

It is widely thought that the principle of motion is in conflict with the principle of inertia, and that modern physics has therefore put paid to medieval theology, or at least to its notion of God as the Unmoved Mover of the world. The assumption is that Aquinas and other Scholastics held that an object cannot keep moving unless something is continuously moving it, but that Newton showed that it is simply a law of physics that once set in motion an object will remain in motion without any such mover.[4] Hence Anthony Kenny judges that "it seems that Newton's law wrecks the argument of the First Way."[5]

Common though this view is, it is not only mistaken, but unfounded. To think otherwise requires reading into each of the principles in question claims they do not make. When we consider what medieval philosophers actually said about the principle of motion and what modern physicists have actually said about the principle of inertia, we will see that they do not

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[1] *Summa Theologiae* I.2.3, as rendered by the Fathers of the English Dominican Province in their original 1911 edition of the *Summa Theologica*. The revised 1920 edition instead reads "whatever is in motion is put in motion by another." The change was no doubt motivated by considerations about inertia of the sort we will be discussing.

[2] Here I follow John F. Wippel, *The Metaphysical Thought of Thomas Aquinas* (Washington, D.C.: Catholic University of America Press, 2000), p. 453. The premise is labeled the "motor causality principle" by William A. Wallace in "Cosmological Arguments and Scientific Concepts," in *From a Realist Point of View: Essays on the Philosophy of Science*, Second edition (Lanham, MD: University Press of America, 1983). It is called the "mover causality principle" by Thomas McLaughlin in "Local Motion and the Principle of Inertia: Aquinas, Newtonian Physics, and Relativity," *International Philosophical Quarterly*, Vo. 44, No. 1 (2004).

[3] This is a common rendering of Newton's statement in Latin of his First Law in *Philosophiae Naturalis Principia Mathematica* (London, 1687).

[4] In *Worldviews: An Introduction to the History and Philosophy of Science* (Oxford: Blackwell, 2004), Richard DeWitt contrasts Newton's principle of inertia with what he calls the "Pre-1600s Principle of Motion," according to which "an object in motion will come to a halt, unless something keeps it moving" (p. 109).

[5] Anthony Kenny, *The Five Ways: St. Thomas Aquinas' Proofs of God's Existence* (London: Routledge and Kegan Paul, 1969), p. 28.

contradict one another. Indeed, when we consider the philosophical issues raised by motion, by the idea of a law of nature, and so forth, we will find that there is a sense in which the principle of inertia *presupposes* the principle of motion.

## II. Why the conflict is illusory

There are at least five reasons to think that any appearance of conflict between the two principles is illusory:

*1. No formal contradiction*: Suppose that "motion" is being used in the two principles in the same sense. Even given this assumption, there is no *formal* contradiction between them. Newton's law tells us that a body *will* in fact continue its uniform rectilinear motion if it is moving at all, as long as external forces do not prevent this. It does not tell us *why* it will do so. In particular, it does not tell us one way or the other whether there is a "mover" of *some* sort which ensures that an object obeys the First Law, and which is in that sense responsible for its motion. As G. H. Joyce writes:

> Newton, indeed, says that a body in motion will continue to move uniformly in a straight line, unless acted upon by external forces. But we need not understand him to deny that the uniform movement itself is due to an agency acting ab extra; but merely [to deny] that it is produced by an agency belonging to that category of agents which he denominates "external forces"… forces whose action in each case is of necessity confined to a particular direction and velocity.[6]

Of course, one might ask what sort of "mover" an object obeying the principle of inertia could have if it is not an "external force" of the sort Newton intended to rule out. One might also ask whether such a mover, whatever it might be, really serves any explanatory purpose, and thus whether we ought to bother with it given Ockham's razor. Those are good questions, and we will return to them. But they are beside the present point, which is that the principle of motion and the principle of inertia do not actually contradict one another, *even if* we assume that they are talking about the same thing when they talk about motion.

*2. Equivocation*: In any event, we shouldn't make that assumption, because they are *not* talking about the same thing, or at least not exactly the same thing. "As usually happens when science appears to contradict philosophy," notes Henry Koren, "there is here an ambiguity of terms."[7] Newton's principle of inertia is concerned solely with *local* motion, change with respect to place or location. When Aristotelians speak of "motion," they mean change of *any* kind. This would include local motion, but also includes change with respect to quantity, change with respect to quality, and change from one substance to another. More to the point, for the Aristotelian all such change involves the actualization of a potency or potential. Hence what the principle of motion is saying is that *any potency that is being actualized is being actualized by something else (and in particular by something that is already actual).*

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[6] George Hayward Joyce, *Principles of Natural Theology*, Second edition (London: Longmans, Green and Co., 1924), p. 100.

[7] Henry J. Koren, *An Introduction to the Philosophy of Nature* (Pittsburgh: Duquesne University Press, 1962), p. 95.

So understood, the principle of motion is, so the Aristotelian would say, something we can hardly deny. For a potency or potential, being merely potential, can hardly actualize itself or anything else. In any event, the principle is, we see once again, not in formal contradiction with the principle of inertia because they are not talking about the same thing. When the Newtonian principle states that a body in motion will tend to stay in motion, it isn't saying that a potency which is being actualized will tend to continue being actualized. Even if it were suggested that the principle *entails* this claim, the point is that that isn't what the principle of inertia itself, as understood in modern physics, is *saying*. Indeed, modern physics has defined itself in part in terms of its eschewal, for purposes of physics, of such metaphysical notions as act and potency, final causality, and the like. So, it is not that modern physics has falsified the principle of motion so much as that it simply makes no use of it.

Now one might ask whether modern physics has not for that very reason made the principle of motion otiose and of nothing more than historical interest. We will return to this question as well, but it is also beside the present point, which is that there is no *necessary* conflict between the principle of motion and the principle of inertia.

*3. The "state" of motion*: Having said all that, we must immediately emphasize that there is a sense in which the Newtonian principle implicitly *affirms* at least an aspect of the Aristotelian principle it is usually taken to have displaced. To see how, consider first that modern physics characterizes uniform motion as a "state." Now this has the flavor of paradox. Reginald Garrigou-Lagrange objects:

> Motion, being essentially a change, is the opposite of a state, which implies stability. There is no less change in the transition from one position to another in the course of movement, than in the transition from repose to motion itself; if, therefore, this first change demands another cause, the following changes demand it for the same reason.[8]

Yet the modern physicist would respond to this objection precisely by collapsing the distinction between repose and motion. As Lee Smolin writes:

> Being at rest becomes merely a special case of uniform motion—it is just motion at zero speed.
>
> How can it be that there is no distinction between motion and rest? The key is to realize that whether a body is moving or not has no absolute meaning. Motion is defined only with respect to an observer, who can be moving or not. If you are moving past me at a steady rate, then the cup of coffee I perceive to be at rest on my table is moving with respect to you.
>
> But can't an observer tell whether he is moving or not? To Aristotle, the answer was obviously yes. Galileo and Newton were forced to reply no. If the earth is moving and we do not feel it, then it must be that observers moving at a constant speed do not feel any effect of their motion. Hence we cannot tell whether we are at rest or not, and motion must be defined purely as a relative quantity.[9]

Now, this sort of move raises philosophical questions of its own. As Smolin goes on to note:

> This is a powerful strategy that was repeated in later theories. One way to unify things that appear different is to show that the apparent difference is due to the difference in the

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[8] Reginald Garrigou-Lagrange, *God: His Existence and His Nature*, *Volume I* (London: B. Herder, 1939), p. 273. Cf. Joyce, *Principles of Natural Theology*, p. 95.

[9] Lee Smolin, *The Trouble with Physics* (New York: Mariner Books, 2007), pp. 21-22.

> perspective of the observers. A distinction that was previously considered absolute becomes relative….
>
> Proposals that two apparently very different things are the same often require a lot of explaining. Only sometimes can you get away with explaining the apparent difference as a consequence of different perspectives. Other times, the two things you choose to unify are just different. The need to then explain how things that seem different are really in some way the same can land a theorist in a lot of trouble.[10]

Indeed, I will suggest later on that the attempt to explain away what Aristotelians mean by "motion" by means of such relativizing moves faces limits in principle.

But the point to emphasize for the moment is that, precisely because the principle of inertia treats uniform local motion as a "state," it treats it thereby as the *absence* of change. Moreover, it holds that external forces *are* required to move a thing out of this "state" and thus to bring about a change. One more quote from Smolin:

> There is an important caveat here: We are talking about uniform motion—motion in a straight line… When we change the speed or direction of our motion, we do feel it. Such changes are what we call *acceleration*, and acceleration *can* have an absolute meaning.[11]

But then the Newtonian principle of inertia hardly conflicts with the Aristotelian principle that "motion"—that is to say, change—requires something to cause the change. The disagreement is at most over whether a particular phenomenon *counts* as a true change or "motion" in the relevant sense, *not* over whether it would require a mover or changer if it *did* so count.

*4. Natural motion*: If Newton is closer to the Aristotelians than is often supposed, so too are the Aristotelians (or at least Aristotle and Aquinas) closer to Newton than is often supposed. As James A. Weisheipl has shown, the idea that Aristotle and Aquinas held that no object can continue its local motion unless some mover is continuously conjoined to it is something of an urban legend.[12] To be sure, this was the view of Averroes and of some Scholastics, but not of Aristotle himself or of St. Thomas. On the contrary, their view was that a body will of itself tend to move toward its natural place by virtue of its form. That which generates the object and thus imparts its form to it can be said thereby to impart motion to it, but neither this generator nor anything else need remain conjoined to the object as a mover after this generation occurs. Aquinas comments:

> [Aristotle] says, therefore, that what has been said is manifested by the fact that natural bodies are not borne upward and downward as though moved by some external agent.
>
> By this is to be understood that he rejects an external mover which would move these bodies *per se* after they obtained their specific form. For light things are indeed moved upward, and heavy bodies downward, by the generator inasmuch as it gives them the form upon which such motion follows... However, some have claimed that after bodies of this kind have

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[10] Ibid., pp. 22-23.

[11] Ibid., p. 22.

[12] See the essays collected in James A. Weisheipl, O. P., *Nature and Motion in the Middle Ages*, ed. William E. Carroll (Washington, D. C.: Catholic University of America Press, 1985).

> received their form, they need to be moved per se by something extrinsic. It is this claim that the Philosopher rejects here.[13]

Even Aquinas's understanding of projectile motion is more complicated than modern readers often suppose:

> An instrument is understood to be moved by the principal agent so long as it retains the power communicated to it by the principal agent; thus the arrow is moved by the archer as long as it retains the force wherewith it was shot by him. Thus in heavy and light things that which is generated is moved by the generator as long as it retains the form transmitted thereby… And the mover and the thing moved must be together at the commencement of but not throughout the whole movement, as is evident in the case of projectiles.[14]

To be sure, even though that which initiated a projectile's motion need not remain conjoined to it for the motion to continue, Aquinas still thought projectiles required other, conjoined movers given that a projectile's motion is not motion toward its *natural* place but is rather imposed on it contrary to its natural tendency. But as Thomas McLaughlin points out, the motions of projectiles require such conjoined movers in Aquinas's view

> because of the *kinds* of motions that they are and *not* because of a general conception of the nature of motion itself. In this respect, projectile… motions resemble accelerated motions in Newtonian physics, for accelerated motions require a force to act on a body throughout the time that it is accelerating.[15]

And insofar as *natural* motions require no such conjoined mover, the Aristotelian-Thomistic view sounds to that extent quite Newtonian indeed: "Thus, the Law of Inertia in the sense of absence of forces is similar to Aristotle's concept of natural gravitation, which is very remarkable."[16]

Obviously, the Aristotelian notion of an object having some specific place toward which it tends naturally to move is obsolete, as is Aquinas's view that projectile motions require a continuously conjoined mover. There are also questions to be raised about Aquinas's view that the generator of a natural object moves that object instrumentally by virtue of having imparted to it its form. For how can the generator move the object as an instrument if by Aquinas's own admission it is no longer conjoined to it?

We will return to this question. The point for now is just to emphasize yet again that when one examines the principles of motion and inertia more carefully, the assumption that they are *necessarily* in conflict can readily be seen to be unfounded.

*5. Natural science versus philosophy of nature*: That certain key aspects of Aristotelian physics have been falsified is not in dispute. However, as contemporary Aristotelians often

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[13] *Sententia de caelo et mundo* I.175, as translated in St. Thomas Aquinas, *Exposition of Aristotle's Treatise On the Heavens*, trans. Fabian R. Larcher and Pierre H. Conway (Columbus: College of St. Mary of the Springs, 1964).

[14] *Quaestiones disputatae de potentia Dei* 3.11 ad 5, as translated in St. Thomas Aquinas, *On the Power of God*, trans. English Dominican Fathers (Westminster, MD: The Newman Press, 1952).

[15] McLaughlin, "Local Motion and the Principle of Inertia," p. 243. Emphasis added.

[16] Antonio Moreno, O. P., "The Law of Inertia and the Principle '*Quidquid movetur ab alio movetur*,'" *The Thomist*, Vol. 38 (1974), p. 323.

complain, the moderns have been too quick to throw the Aristotelian metaphysical baby out with the physical bathwater. Though Aristotle and pre-modern Aristotelians did not clearly distinguish the metaphysical aspects of their analysis of nature from the physical ones (in the modern sense of "physical"), these aspects *can* in fact be clearly distinguished. In particular, questions about what the natural world *must* be like in order for any natural science at all to be possible must be distinguished from questions about what, as a matter of *contingent* fact, are the laws that govern that world. The latter questions are the proper study of physics, chemistry, biology, and the like. The former are the proper study of that branch of metaphysics known as the philosophy of nature. Geocentrism, the ancient theory of the elements, and the notion that objects have specific places to which they naturally move, are examples of Aristotelian ideas in physics that have been decisively superseded. But the theory of act and potency, the doctrine of the four causes, and the hylemorphic analysis of material objects as composites of form and matter are examples of notions which have (so the contemporary Aristotelian argues) abiding value as elements of a sound philosophy of nature.

Now the principle of motion is, the Aristotelian will insist, another thesis whose import is *metaphysical*, a corollary of the distinction between act and potency which is the foundation of the Aristotelian philosophy of nature. The principle of inertia, by contrast, is a claim of natural science. Since the domains they are addressing are different, there can be no question of any conflict between them, certainly no direct or obvious conflict.

Physics, as that discipline is understood in modern times, abstracts from concrete material reality and describes the natural world exclusively in terms of its mathematical structure. Though philosophers and scientists beholden to scientism suppose that it thereby gives us an exhaustive picture of reality, in fact what it gives us is very nearly the opposite. As Bertrand Russell once wrote:

> It is not always realised how exceedingly abstract is the information that theoretical physics has to give. It lays down certain fundamental equations which enable it to deal with the logical structure of events, while leaving it completely unknown what is the intrinsic character of the events that have the structure. We only know the intrinsic character of events when they happen to us. Nothing whatever in theoretical physics enables us to say anything about the intrinsic character of events elsewhere. They may be just like the events that happen to us, or they may be totally different in strictly unimaginable ways. All that physics gives us is certain equations giving abstract properties of their changes. But as to what it is that changes, and what it changes from and to—as to this, physics is silent.[17]

Newton's laws of motion reflect this tendency, insofar as they provide a mathematical description of motion suitable for predictive purposes without bothering about the origins of motion or the intrinsic nature of that which moves.

The philosophy of nature, however, and in particular the principle of motion and the other components of the Aristotelian metaphysical apparatus, are concerned precisely to give an account of the intrinsic nature of material reality, of which modern physics gives us only the abstract mathematical structure. Now, some Aristotelians have gone so far as to insinuate that the principle of inertia really has only an instrumental import, with the Aristotelian philosophy of nature alone providing a description of the reality of motion. Hence Joyce

[17] Bertrand Russell, *My Philosophical Development* (London: Unwin Paperbacks, 1985), p. 13.

writes that "the mathematician may for practical purposes regard motion as a *state*. Philosophically the concepts of movement and of a state are mutually exclusive."[18] And Garrigou-Lagrange claims: "[T]hat the motion once imparted to a body continues indefinitely, is a *convenient* fiction for *representing* certain mathematical or mechanical relations of the astronomical order."[19]

But the Aristotelian need not go this far, and I think most Aristotelians would not. A mathematical description of nature is not an exhaustive description, but it can capture real features of the world. And that the principle of inertia has been especially fruitful in physics is reason to think that that it does capture them. As Thomas McLaughlin writes:

> Because inertia is common to so many different kinds of bodies, the proper principles of many different natures can be neglected for various purposes and nature can be analyzed at a minimal level. That a given inertial body is a pumpkin is irrelevant for some purposes, and this is not only a consequence of the mathematization of nature. Inertia is undoubtedly a thin treatment of nature, but that is not the same as treating a body as if it had no nature nor need it exclude a fuller treatment of a body's nature. Failure to recognize this point may mislead a thinker into maintaining that the principle of inertia denies inherent principles of nature.[20]

In short, just as acceptance of the Newtonian principle of inertia does not entail rejection of the Aristotelian principle of motion, neither need the Aristotelian take an instrumentalist or otherwise anti-realist approach to the Newtonian principle. They can be regarded as describing nature at different but equally real levels.

## III. How the principles are in fact related

But what, specifically, does this claim amount to? If the principle of motion and the principle of inertia are not at odds, how exactly are they related?

Whatever else we say in answer to these questions, the Aristotelian will insist that real change of any sort is possible only if the things that change are composites of act and potency. And since no potency can actualize itself, whatever changes is changed by another. In this way the principle of motion, as a basic thesis of the philosophy of nature, is necessarily more fundamental than the principle of inertia—at least if we allow that the latter principle does indeed apply to a world of real change. (More on this caveat presently.) Determining how the principle of motion and the principle of inertia are related, then, has less to do with how we interpret the former principle than with how we interpret the latter. And here there are several possibilities:

*1. Inertial motion as change*: We have noted that writers like Garrigou-Lagrange object to the idea that inertial motion is a kind of "state." Suppose then that we took that to be merely a loose way of speaking and regarded inertial motion as involving real change, the actualization of potency. As Andrew van Melsen describes it:

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[18] Joyce, *Principles of Natural Theology*, p. 95.

[19] Garrigou-Lagrange, *God: His Existence and His Nature, Volume I*, p. 275, note 24. Emphasis in the original.

[20] Thomas J. McLaughlin, "Nature and Inertia," *Review of Metaphysics*, Vol. 62, No. 2 (2008), p. 259.

> The moving body goes continuously from one place to another, say from A towards B, from B towards C, etc. If this body is actually in place A, then it is *not* in place B, but is moving towards B. Therefore, there is a definite potency of being at B. The arrival at B means the actualization of that potency… However, the arrival at B includes the potency of going on to C, etc. In other words, each moment of the motion has a definite tendency towards some further actualization, and it is this which gives the motion its unity.[21]

The question, then, is what actualizes these potencies. Now the very point of the principle of inertia is to deny that the continued uniform rectilinear local motion of an object requires a continuously operative external force of the sort that first accelerated the object; so such forces cannot be what actualize the potencies in question. But could we say that the force which first accelerated the object is itself what actualizes these potencies? For example, suppose a thrown baseball were not acted upon by gravitational or other forces and thus continued its uniform rectilinear motion indefinitely, with the actualization of its potency for being at place B followed by the actualization of its potency for being at place C, followed by the actualization of its potency for being at place D, and so on *ad infinitum*. Could we say that the thrower of the baseball is, in effect, himself the actualizer of all of these potencies?

It might seem that Aquinas could sympathize with such a view, since as we have seen, he regarded the motion of an object to its natural place as having been caused by whatever generated the object. The notion of a natural place is obsolete, but if we substitute for it the notion of *inertial* motion as what is natural to an object, then—again, so it might seem—we could simply reformulate Aquinas's basic idea in terms of inertia. That is, we could say that the inertial motion of an object, which involves an infinite series of actualized potencies with respect to location, is caused by whatever force first accelerated the object (or, to preserve a greater parallelism with Aquinas's view, perhaps by whatever generated the object *together with* whatever accelerated it). But there is a problem with this proposal. Natural motions, as Aquinas understood them, are finite; they end when an object reaches its natural place. Inertial motion is not finite. And while there is no essential difficulty in the notion of a finite cause imparting a finite motion to an object, there does seem to be something fishy about the idea of a finite cause (such as the thrower of a baseball) imparting an *infinite* motion to an object.[22] Furthermore, as noted above, Aquinas also regarded the motion of an object toward its natural place as being caused *instrumentally* by the generator of the object, even though the generator does not remain conjoined to the object. And this seems problematic even when modified in light of the principle of inertia. For how could the inertial motion of the baseball in our example be regarded as caused *instrumentally* by the thrower of the baseball, especially if the ball's motion continues long after the thrower is dead?[23]

So, it is difficult to see how inertial motion, when interpreted as involving real change, could have a *physical* cause. But as we implied above, even if its lacks a physical cause, there is nothing in the principle of inertia that rules out a *metaphysical* cause. Indeed, if inertial

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[21] Andrew G. van Melsen, *The Philosophy of Nature*, Second edition (Pittsburgh: Duquesne University, 1954), p. 175.

[22] Cf. Garrigou-Lagrange, *God: His Existence and His Nature, Volume I*, p. 274.

[23] Cf. Joyce, *Principles of Natural Theology*, p. 98: "What is no longer existing cannot be actually operative."

motion involves real change, then given the principle of motion together with the absence of a physical cause, such a metaphysical cause is necessary.

Of course, that raises the question of what exactly this metaphysical cause is. One suggestion would be that it is something *internal* to the object—an "impetus" imparted to it by whatever initiated its inertial motion, and which continuously actualizes its potencies with respect to spatial location.[24] But as Joyce notes, there are serious problems with the impetus theory.[25] For one thing, a finite object (such as the baseball of our example) can only have finite qualities. And yet an impetus, in order to have local motion *ad infinitum* as its effect, would at least in that respect be an infinite quality. In other respects it would be finite (it would, for example, be limited in its efficacy to the object of which it is a quality) but that leads us to a second problem. For an impetus would continually be bringing about new effects and thus (as a finite cause) itself be undergoing change; and in that case we have only pushed the problem back a stage, for we now need to ask what causes these changes in the impetus itself.

If inertial motion involves real change, then, only a metaphysical cause *external* to the moving object could be the ultimate source. And we already have a model for such a cause in the Aristotelian tradition. For the motions of celestial bodies were in that tradition regarded as unending, just as inertial motion is (barring interference from outside forces) unending; and while this view was associated with a mistaken astronomy, a metaphysical kernel can be extracted from the obsolete scientific husk. Now the causes of celestial motion in this earlier Aristotelian tradition were, of course, intelligent or angelic substances. Such substances are regarded as *necessary* beings of a sort, even if their necessity is ultimately derived from God.[26] What makes them necessary is that they have no natural tendency toward corruption the way material things do (even if God could annihilate them if He so willed). Given this necessity, such substances have an unending existence proportioned to the unending character of the celestial motions they were taken to explain. And while it turns out that celestial objects do not as such move in an unending way, *inertial* motion (including that of celestial bodies, but that of all other objects as well) *is* unending. Hence the only possible cause of inertial motion—again, at least if it is considered to involve real change—would seem to be a necessarily existing intelligent substance or substances, of the sort the earlier Aristotelian tradition thought moved celestial objects. (Unless it is simply God Himself causing it *directly* as Unmoved Mover.)

*2. Inertial motion as stasis*: Alternatively, of course, we could take seriously the idea that inertial motion is a state, involving no real change and thus no actualization of potency. In this case, the question of how the principle of motion and the principle of inertia relate to one another does not even arise, for there just *is* no motion in the relevant, Aristotelian sense going on in the first place when all an object is doing is "moving" inertially in the Newtonian sense. To be sure, *acceleration* would in this case involve motion in the Aristotelian sense,

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[24] The impetus theory is associated historically with Buridan. Garrigou-Lagrange is one recent advocate.

[25] Joyce, *Principles of Natural Theology*, pp. 98-99.

[26] For the reasons why, see Aquinas's Third Way, which I discuss and defend at pp. 90-99 of *Aquinas* (Oxford: Oneworld Publications, 2009).

but as we have seen, since Newtonian physics itself requires a cause for accelerated motion, there isn't even a prima facie conflict with the Aristotelian principle of motion.

Now some defenders of the Aristotelian argument from motion for the existence of God as Unmoved Mover of the world have suggested that precisely for this reason, the principle of inertia really poses no challenge at all to that argument. As long as the Newtonian admits that acceleration involves real change, that will suffice for an argument which, given the principle of motion, leads inexorably to an Unmoved Mover. The other three kinds of change (qualitative, quantitative, and substantial) will also serve well enough for the argument. Newton will have eliminated real change in one area (inertial motion) but not in the others.

But things are a bit more complicated than that. For the tendency of the mechanical picture of the world, of which Newtonian physics is a chief component, has been to try to reduce the other kinds of change to local motion. Qualitative, quantitative, and substantial changes are all, on this view, "really" just a matter of (say) the local motions of basic particles, and any appearance to the contrary is just that—mere appearance, a feature of our subjective, conscious representation of the external world but not of that world as it exists objectively, apart from us. Local motion, in turn, is on this picture then taken to be eternal and thus in no need of any explanation in terms of a first mover—or at least it is so taken by the atheistic successors of early modern thinkers like Descartes and Newton (who themselves did not go in this atheistic direction).

The details of this kind of story have gotten increasingly complicated since the Greek atomists first introduced it, but the basic idea is clear enough. Yet the story is insufficient to eliminate *all* possible starting points for an Aristotelian argument from motion to an Unmoved Mover, as long as local motion is admitted in *some* respect or other to involve real change. As serious students of the argument know, what matters in reasoning to an Unmoved Mover is not whether motion had a beginning in time, but what *keeps motion going* (even if has been going on perpetually).[27] But that brings us at last to another view of motion, inertial and otherwise, associated with modern science.

*3. The world as stasis*: To some, bothering with the question of how the Aristotelian principle of motion relates to the Newtonian principle of inertia might seem quaint. For it might be thought that the controversy has, for the Newtonian no less than for the Aristotelian, been made moot by Einstein, or at least the construction Hermann Minkowski famously put on relativity theory. As Michael Lockwood sums up a common view:

> To take the space-time view seriously is indeed to regard everything that ever exists, or ever happens, at any time or place, as being just as real as the contents of the here and now. And this rules out any conception of free will that pictures human agents, through their choices, as selectively conferring actuality on what are initially only potentialities. Contrary to this common-sense conception, the world according to Minkowski is, at all times and places, actuality through and through: a four-dimensional *block universe*.[28]

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[27] I discuss and defend the argument from motion for God's existence at pp. 65-81 of Feser, *Aquinas*.

[28] Michael Lockwood, *The Labyrinth of Time* (Oxford: Oxford University Press, 2005), pp. 68-69.

Leave aside the question of free will, with which we are not concerned here. What is relevant is Lockwood's point that on the Minkowskian interpretation of relativity, there is in the natural order no real actualization of potency or potentiality; everything in the world, whether "past," "present," or "future," is all "already" actual, as it were. Thus there is no genuine *change* in the world—not even the sort Newtonian physics would allow occurs with the acceleration of an object. As Hermann Weyl put it:

> The objective world simply *is*, it does not *happen*. Only to the gaze of my consciousness… does a section of this world come to life as a fleeting image in space which continuously changes in time.[29]

Thus, as Karl Popper noted, does Einstein recapitulate Parmenides.[30]

Now, I don't myself believe for a moment that modern physics really *has* shown that there is no genuine change in the physical world. But supposing for the sake of argument that it has, even that would not show that the Aristotelian principle of motion has no application, for two reasons. First, what we have in this case is another instance of the strategy we saw Smolin describe earlier, wherein science attempts to unify phenomena by relativizing the apparent differences between them to the observer. But the observer himself—the "the gaze of [his] consciousness," as Weyl would put it—remains. And as Popper pointed out, there is no getting around the fact that change really occurs *at least within consciousness itself*. Hence if Einstein is Parmenides *redevivus*, his position faces the same incoherence the Eleatic philosopher's did, at least *if* the Minkowskian interpretation is correct and *if* we want to say that the conscious subject is a *part* of a natural world that is purportedly free of change. Alternatively, we could adopt a dualist view according to which the conscious subject is *not* a part of that world. That will save the Minkowskian view from incoherence, but at the cost of merely relocating change rather than eliminating it. (And also, of course, at the cost of leaving us with the problem of explaining how the conscious subject *is* related to the natural world if it is not part of it.)

A second point is that unlike Parmenides' own block universe, the block universe of Minkowski is supposed to be governed by laws that are *contingent*.[31] And if they are contingent, then, the Aristotelian will argue, they are merely potential until actualized. That means that even if there were no real change or actualization of potency *within* an Einsteinian four-dimensional block universe, the sheer existence of that universe as a whole *would* involve the actualization of potency and thus (given the principle of motion) an actualizer or "mover" distinct from the world itself.

## IV. The mythology of inertia

It seems, then, that we simply cannot avoid the existence of change, and thus the actualization of potency, and thus the principle of motion. The most we can do is move them around like

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[29] Hermann Weyl, *Philosophy of Mathematics and Natural Science* (Princeton: Princeton University Press, 1949), p. 116.

[30] Karl Popper, "Beyond the Search for Invariants," in *The World of Parmenides* (London: Routledge, 1998).

[31] But see the qualification in note 34.

the pea in a shell game, producing thereby the *illusion* that we have eliminated them. The notion that they have been largely or completely abolished by modern physics is therefore a myth—part of what we might call "the mythology of inertia," to borrow a phrase from David Braine.[32]

That the world is inherently "inert" or changeless is only part of the myth, however. The other part of the myth is the idea that "physical laws," such as the law of inertia, suffice all by themselves to explain what philosophers traditionally took to be in need of a *metaphysical* explanation. Braine cites some remarks from Wittgenstein in the *Tractatus*:

> The whole modern conception of the world is founded on the illusion that the so-called laws of nature are the explanations of natural phenomena.
> Thus people today stop at the laws of nature, treating them as something inviolable, just as God and Fate were treated in past ages.[33]

The supposition that "the so-called laws of nature are the explanations of natural phenomena" is, for the Aristotelian, an "illusion" for two reasons (which do not necessarily correspond to Wittgenstein's reasons). First, "laws of nature" are mere abstractions and thus cannot by themselves explain anything. What exist in the natural order are concrete material substances with certain essences, and talk of "laws of nature" is merely shorthand for the patterns of behavior they tend to exhibit given those essences. As David Oderberg puts it, "*the laws of nature are the laws of natures*," i.e. of the natures or essences of the things that behave in accordance with the laws.[34] This is as true of the law of inertia as it is of any other law.[35]

Second, that some fundamental material substances (basic particles, say) exist and behave in accordance with such laws can also never be the ultimate explanation of anything, because we need to know, not only how such substances came into existence, but what keeps them in existence. For as compounds of act and potency, they cannot possibly account for themselves, but require something outside them to actualize them at every moment. Or so the Thomist will argue.[36]

So, neither the Newtonian principle of inertia nor the existence of material substances which behave in accordance with that principle either undermine the Aristotelian principle of motion or obviate the need to explain the existence and operation of material substances in

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[32] David Braine, *The Reality of Time and the Existence of God* (Oxford: Clarendon Press, 1988), p. 14.

[33] Braine, *The Reality of Time and the Existence of God*, pp. 14-15. The Wittgenstein passage is from the D. F. Pears and B. F. McGuinness translation of *Tractatus Logico-Philosophicus* (London: Routledge and Kegan Paul, 1961), at 6.371 and 6.372.

[34] David S. Oderberg, *Real Essentialism* (London: Routledge, 2007), p. 144. For this reason, laws of nature are, as Oderberg explains, *not* contingent—they describe the ways things *necessarily* behave or at least tend to behave, given their natures—but they can be said to be contingent in a loose sense insofar as the *existence* of the things that behave in accordance with the laws is contingent.

[35] See McLaughlin, "Nature and Inertia," for a useful analysis of the law of inertia as a description of how material bodies will tend to behave given their natures, in the Aristotelian sense of "natures."

[36] For a defense of this claim, and of the further claim that what actualizes them can only be God, see my article "Existential Inertia and the Five Ways," *American Catholic Philosophical Quarterly*, Vol. 85, No. 2 (2011).

accordance with the latter principle. Physics provides genuine explanations, but not complete or ultimate explanations. Only metaphysics can do that.

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Michael Rota: "Comments on Feser's "The medieval principle of motion and
the modern principle of inertia", pp. 17-19.

## Michael Rota:

# Comments on Feser's "The medieval principle of motion and the modern principle of inertia"

I'm grateful for having had the chance to read Professor's Feser's paper, and find myself in agreement with one of his main theses, that the principle of motion (PM) and the principle of inertia (PI) are not necessarily in conflict. I also enjoyed and benefitted from his erudite discussion of Aquinas on projectile motion. But this sort of effusive praise and obsequious flattery won't help anyone, so I'll try to be of some use and offer some critical comments.

Professor Feser asks how PM and PI relate, and maps out some possibilities. Either uniform straight-line locomotion is real change, or it's not. If it is, we're left with the question, what is the mover called for by the principle of motion? An object moving with constant velocity is experiencing zero total external force. So whatever is the mover is doing the moving without exerting a force. Feser considers a few possibilities: (1a) the mover is whatever force accelerated the moving object, or perhaps (1b) there are two movers (whatever accelerated the moving object, plus whatever generated the object), or (2) there is an impetus impressed on the moving object, and this impetus is the mover. We can think of the impetus as a causal power (or dispositional property) that the object (say, a baseball) has been caused to acquire. On account of having this causal power, the ball moves in a certain direction at a certain rate.

Feser raises problems for all of these possibilities. I want to examine a few of his arguments in that section of the paper. He writes: "Natural motions, as Aquinas understood them, are finite; they end when an object reaches its natural place. Inertial motion is not finite. And while there is no essential difficulty in the notion of a finite cause imparting a finite motion to an object, there does seem to be something fishy about the idea of a finite cause (such as the thrower of a baseball) imparting an infinite motion to an object." (p. 11)

Feser raises a similar problem for the impetus view. He writes, "a finite object (such as the baseball of our example) can only have finite qualities. And yet an impetus, in order to have local motion ad infinitum as its effect, would at least in that respect be an infinite quality" (p. 12).

I question the strength of these arguments. At any given time, the motion that has been produced (the motion of the baseball) is finite. So the effect in question is only potentially infinite. And it is not obvious that a finite cause couldn't produce an effect that is "infinite" in this sense. To support this claim, I offer the following thought experiment. Suppose God has created a very large finite spherical universe, which literally has a spherical brick wall at the boundaries. And He's told us this. There's a baseball in deep space, enjoying rectilinear uniform locomotion. It is still light-years from the wall. So the motion of the baseball, it would seem, is finite. It's not even potentially infinite, because the wall is there. And this means that we should allow that it is metaphysically possible for the ball to have no current

cause of motion other than the thrower, or the impetus. Then suppose God decides to annihilate the wall and create infinite empty space on the other side. Now, all of sudden, the motion of the ball could continue forever. And so now, according to the worry Ed is considering, it is no longer metaphysically possible for the baseball to continue moving without help from an external metaphysical cause. So if God annihilates the wall (light years away), then He either has to step in and start moving the ball, or it will stop. That doesn't seem right.

A second point. Also arguing against the theory that an impetus could be the mover, Feser makes an interesting inference on p. 12. He writes "For an impetus would continually be bringing about new effects and thus (as a finite cause) itself be undergoing change." I'm just not sure that this follows. Why couldn't the impetus be continually producing the same effect (move to the right), or, even if it is producing new effects, why does that mean it is changing? Feser's argument would be strengthened if we had answers to these questions.

Lastly, a brief comment about the validity of the principle of motion. Feser writes that "the Aristotelian will insist that real change of any sort is possible only if the things that change are composites of act and potency. And since no potency can actualize itself, whatever changes is changed by another" (p. 10). While this reasoning has much to recommend it, it may be worthwhile to note that more than one influential scholastics thinkers denied, or at least qualified, the claim that (PM) whatever is changes is changed by another. Thus Allan Wolter on Scotus:

> [I]n the preceding q. 14 [on Aristotle's *Metaphysics*]…Scotus has effectively challenged the so-called metaphysical principle "Whatever is moved is moved by another," commonly attributed to Aristotle… Among other instances of "self-movement" Scotus singles out the human will's ability to determine itself. As an active potency, the will is formally distinct from, but really identical with, the soul substance, and is either the exclusive or at least the principal efficient cause of its own volition. This volition...is an immanent action that falls under the Aristotelian category of quality, and resides in the soul as subject. When the will makes a positive decision, and thus elicits a voluntary act of either nolition or volition, therefore, it is determining itself, and hence one can correctly say the soul "moves itself" from a state of indeterminacy to a positive state…[1]

And Scotus himself, on Aristotle: "[H]ow can that be called a principle from which so many absurdities follow? I don't believe Aristotle could have assumed any proposition to be—not a first, no! not even a *tenth* principle, which has, in so many particular instances, such obviously absurd consequences."[2]

Here's a way of explaining how the case of free will makes trouble for (PM). Suppose I have libertarian free will. My will is endowed by God with an inclination to happiness – that inclination is a particular actualization of my power of will. Now, suppose I come to believe that doing A will lead to happiness. Of course there are other actions that will lead to happiness too, I believe. Still, I freely choose to do A. So I have changed from not being in a state of choosing to do A, to being in a state of choosing to do A. And it seems that I myself

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[1] Allan Wolter, *Duns Scotus on the Will and Morality* (Washington, D.C.: Catholic University of America Press, 1986), pp. 36-7.

[2] *Quaestiones subtilissimae super libros Metaphysicae Aristotelis*, q. 14, n. 23, translation by Wolter, loc. cit.

am the cause of this change. Is it really necessary that I (or my will) has been changed by another? We could say that God has moved it, just in virtue of implanting and sustaining my desire for happiness. But He hasn't had to do anything extra beyond that, one might think. Why can't we say that once I have the will to happiness, I have all the actuality I need to change myself in the way involved in freely elicited acts of will? It is epistemically possible that I can change (i.e. move) myself. And thus (PM) is doubtful.

I don't assert that this argument is sound – it may or may not be. But I raise it to make the point that a strong argument for the existence of God which relies on (PM) will need to address Scotus's worries. In *Disputatio Metaphysicae* 29, Francisco Suarez notes that (PM) is not as evident as a different principle, "whatever is produced is produced by another". So, in order to base his argument for the existence of God on the most evident principle possible, he uses "whatever is produced is produced by another", rather than "whatever is moved is moved by another". It's worthwhile to ask whether those interested in arguing for the existence of a First Cause would be wise to follow Suarez in this, or whether it is unnecessary to do so because (PM) can be defended.

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Edward Feser: "Reply to Michael Rota", pp. 20-21.

## Edward Feser:

## Reply to Michael Rota

I thank Michael Rota for his comments on my paper. Mike raises three objections. The first is directed at the suggestion that there is something fishy in the idea that a finite cause might impart infinite motion to an object, so that an additional mover is needed. Appealing to the example of a baseball in motion, Mike writes:

> Suppose God has created a very large finite spherical universe, which literally has a spherical brick wall at the boundaries. And He's told us this. There's a baseball in deep space, enjoying rectilinear uniform locomotion. It is still light-years from the wall. So the motion of the baseball, it would seem, is finite. It's not even potentially infinite, because the wall is there. And this means that we should allow that it is metaphysically possible for the ball to have no current cause of motion other than the thrower, or the impetus. Then suppose God decides to annihilate the wall and create infinite empty space on the other side. Now, all of sudden, the motion of the ball could continue forever. And so now, according to the worry Ed is considering, it is no longer metaphysically possible for the baseball to continue moving without help from an external metaphysical cause. So if God annihilates the wall (light years away), then He either has to step in and start moving the ball, or it will stop. That doesn't seem right.

If I understand Mike correctly, he is suggesting that it is implausible to suppose that whether the ball is in need of an additional, external mover is the sort of thing that could depend on whether or not God annihilates a certain wall. So far so good; I agree that that is implausible. Mike concludes from this—again, if I understand him correctly—that if the ball doesn't need an additional, external mover before God annihilates the wall, then neither does it need such a mover after God annihilates it. Again, so far so good. But this will only count as an objection to what I said in my paper if the antecedent of this conditional is true—that is to say, if it is the case that the ball doesn't need such an external mover before God annihilates the wall. And the problem is that as far as I can tell Mike hasn't given us any good reason to think this *is* the case.

Mike assumes that whether the ball's motion is potentially infinite depends on whether or not God annihilates the wall. If God does not annihilate the wall, Mike says, then the ball's motion is not potentially infinite and the question of an external mover therefore does not arise. But that, it seems to me, is a mistake. The right thing to say, I think, is rather that the ball's motion is potentially infinite even if God does not destroy the wall. The presence of the wall does not *take away* the ball's potential for infinite motion. Rather, it threatens to *frustrate* that potential. But the potential remains, for it is something inherent in the ball itself, and the presence or absence of a certain wall does not change what is inherent in the ball itself. But in that case we are still left with the question of how a finite cause could have imparted this inherent potential for infinite motion to the ball. And that was the sort of question that led us to consider the need for an external mover in the first place. Hence the question of whether an external mover is needed arises even if God does not annihilate the

wall. Perhaps there is some reason to doubt that such a mover is needed, but I don't think that Mike's wall example gives us such a reason.

Mike's second objection is directed at my suggestion that if an impetus is continually bringing about motion, it would be bringing about new effects and thus itself be undergoing change. Mike asks: "Why couldn't the impetus be continually producing the same effect (move to the right), or, even if it is producing new effects, why does that mean it is changing?"

Recall that the remarks about the impetus theory Mike is alluding to were made in a context where I was supposing, at least for the sake of argument, that inertial motion involves real change and is not strictly a "state." That alone gives us the answer to Mike's first question. If inertial motion is real change, involving the successive actualization of potencies, then if the impetus is what causes this change, it follows that the impetus is successively actualizing potencies and thus continually bringing about new effects rather than producing just one effect. Now in the nature of the case, this would occur over time. The impetus would thus at successive points in time be generating effects it was not generating at previous points in time. And that entails that it is undergoing change itself as it changes that to which it imparts motion.

Mike's third objection is to suggest, following Scotus, that free will might pose a problem for the principle of motion. He writes:

> [S]uppose I come to believe that doing A will lead to happiness. Of course there are other actions that will lead to happiness too, I believe. Still, I freely choose to do A. So I have changed from not being in a state of choosing to do A, to being in a state of choosing to do A. And it seems that I myself am the cause of this change. Is it really necessary that I (or my will) has been changed by another?

This obviously raises a number of complicated issues. Suffice it for present purposes to say the following. The principle of motion, as I have characterized it, entails that nothing that is merely potential can actualize itself, but must be actualized by something that is itself already actual. Is Mike's example a counterexample to this principle? I don't see how. The choice to do A, before it is made, is merely potential and not actual. Does that choice actualize itself? Mike doesn't show that it does, and I doubt he would claim that it does. Whatever we say does actualize that choice—whether we say it is the will, or the soul, or the agent as a whole, or God—would be distinct from the (initially merely potential) choice itself. That would seem sufficient to prevent it from being a counterexample to the principle of motion as I have interpreted it.

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Gyula Klima: "Whatever Happened to Efficient Causes?", pp. 22-30.

## Gyula Klima:

# Whatever Happened to Efficient Causes?

To dispel any possible false hopes at the beginning, I do not know the answer to the question raised in the title. All I am going to argue for in this paper is that "a funny thing happened" to efficient causes, or rather to our notion of them, "on the way" into modern philosophy and science; indeed, that "the funny thing" that happened was a *paradigmatic change* well worth investigating in a more comprehensive fashion than the confines of a single lecture would allow.

As it is well-known to anybody familiar with the history of science and philosophy, the prevailing pre-modern notion of causality was "codified" in the scholastic-Aristotelian system of four causes, distinguishing formal, material, efficient and final causes. By contrast, the modern notion of 'cause' seems to be restricted to what Aristotle would call efficient causes, whereas the other 'causes' distinguished by him would rather be relegated to the role of certain explanatory principles or reasons: as when we say that the reason why a knife cuts butter is that it is made of steel which is naturally harder than butter, and the reason why it cuts even hard wood is that it is sharp and the sharp shape enables it to cut even a relatively hard material, and the reason why a knife is sharp is precisely that it is used for cutting even relatively hard materials. Clearly, these explanations are typical, and they obviously refer to what Aristotle would identify as the material, the formal, and the final cause of the knife, respectively.

But in modern parlance, these would hardly be regarded as "causes" of the knife; indeed, outside history of philosophy classrooms one could expect a rather quizzical look in return, if one were to ask what the cause of this knife is. Once the knife is in existence, *it's just there*, and if some of its features call for some explanation, we may provide the types of explanations provided earlier, but hardly what *causes the knife itself*. In fact, from this modern perspective, as far as the existence of the knife is concerned, what may require a genuine causal explanation would rather be *the coming to be* of the knife. We know that knives do not come into existence spontaneously, so we would say that the knife's coming into existence was caused by the preceding action or actions of the blacksmith. But the existence of the knife, once it is made, is not something that calls for an explanation, let alone a cause "making it to be", as it were.

However, one strange thing about the pre-modern notion seems to be just this: the existence of the cause, indeed, the existence of anything other than the First Efficient Cause is in fact in need of a cause, well, "making it to be". In fact, if we think about it, any of the so-called cosmological arguments can possibly "work" for proving the *present* existence of a First Efficient Cause, only if the present existence of its effects is taken to be in need of its present activity (conditioned on its present existence), for otherwise a series of causes reaching back into the past would at best lead to the Big Bang, which may perhaps have needed some powerful player to kick off the workings of the universe, but that player, for all we know, may

well have retired or even died in the meantime (see the idea of deism or the "clockwork universe").

So, even on this quick, superficial comparison, it would appear that those who would claim that the four Aristotelian causes are just four kinds of explanatory principles, only one of which, namely, efficient causes are preserved in modern scientific thought, are wrong even in the claim that the Aristotelian-scholastic notion is *preserved at all in the modern notion*. In fact, I am going to argue that the Aristotelian-scholastic notion of efficient cause is so radically different from the modern notion that some implications of the former are diametrically opposed to those of the latter. Nevertheless, I am also going to argue that some modern sciences, in particular, thermodynamics and the surprisingly closely related discipline of information theory are actually using a notion of causality that is very close to the Aristotelian one, which, therefore, should prompt a systematic, post-mechanistic philosophical reflection on our notion of cause especially in these sciences, and its conceptual as well as historical relation to the pre-modern, Aristotelian-scholastic notion.

But this observation also suggests that we cannot really treat "the modern notion of cause" as indistinctly as the previous quick, superficial comparison did. (Indeed, as we shall see, the same goes for "the Aristotelian-scholastic notion" as well, but we are going to get to that point later, if at all, in the present discussion.) There are various notions of causality intuitively used in modern science that hardly ever make their way into philosophical discussions on causality, which, in turn, still tend to be informed by the typically mechanistic modern notion, exemplified by Hume's rolling billiard ball knocking a stationary one into motion (or, perhaps, bouncing back from, or jumping over it). So, let us take a closer look at this notion first.

Taking Hume and his paradigmatic example as my paradigm-case for the modern notion of causality should not be interpreted as stemming from a crude identification of this presumed "modern notion" with Hume's idea. I rather picked this one modern idea of the whole range of available options both because it is still rather influential in philosophical discussions and because it is perhaps the farthest removed from the Aristotelian notion, making for a particularly sharp contrast.

So, what are the distinctive characteristics of this "modern notion", as opposed to "the Aristotelian-scholastic notion"? In the first place, it would appear that it is primarily a relation among *successive events*, and only secondarily of the things participating in these events. To be sure, even if in the modern parlance we may say that what caused the second billiard ball to move was *the first ball* rolling toward it, but this is just a sort of paraphrase for the proper expression that the event consisting of the second ball's getting to move was caused by the event that consisted in the first ball colliding with it. Thus, since the "modern notion" of cause is that of a relation between successive events, it is a *diachronic relation*, connecting the earlier event, the cause, to the later event, the effect, over time, in such a way that the occurrence of the latter is conceived to be determined by the occurrence of the former. Indeed, it is this idea of *determination* or "necessary connexion" between cause and effect that Hume's critique famously undermines, and Kant somewhat desperately restores at least for our phenomenal reality.

But given the modern notion of causation, which would demand that the occurrence of an earlier event determines of necessity the occurrence of the later event, Hume's critique should

seem very plausible to our Hollywood-trained imagination: for even if we would naturally expect the usual pattern of events to occur when, for instance, one billiard ball is rolling towards another, stationary one, or the support of a heavy body is suddenly removed, it is perfectly imaginable (and a Hollywood cgi can actually make it visible) that the rolling ball, instead of stopping while knocking the other in motion, turns into a toad that swallows the other ball, or that the heavy body, say, an anvil, instead of falling on the top of the head of Wile E. Coyote, turns around and blows up in Road Runner's face. However, if a contrary occurrence is possible, then the regular occurrence is not necessary, and so, our expectations are not based on the rational, scientific knowledge of a necessary law of nature, but rather on our brutish conditioning by customary patterns in our experiences. In any case, since in a succession of distinct events the occurrence of the earlier is always imaginable without the occurrence of the regularly expected later event, and the earlier is the cause and the latter is the effect, the inference moving from cause to effect is always invalid, unless we have a universal "covering law" licensing that inference, say, something like the "law of the uniformity of nature" to the effect that similar causes always cause similar effects. However, such a covering law is not knowable *a priori* (since it would always have possible refuting instances provided at least by our imagination that can freely recombine simple ideas in unusual, never before experienced patterns) and admits no question-begging justification *a posteriori* from experience (since in moving from past events to future events that we have not yet experienced, we would have to assume the validity of the law that we are trying to justify), as Hume's argument establishes. Thus, the idea of a necessary (and for that matter, even probable) connection between cause and effect is under serious threat, given "the modern notion", which treats efficient causality as a necessary, diachronic relation between successive events.

But even if we do not swallow Hume's empiricist assumptions exploited in his argument, and we allow that we can somehow figure out (or project onto our phenomenal reality) the universal laws that determine the necessary patterns of events occurring in nature, we still face some rather odd consequences of this notion of causality. For if we simply *assume* that *there is* such necessary determination of later events by earlier events, then we can soon conclude that even the slightest variations in antecedent circumstances may yield vast differences in their subsequent effects; see the much-discussed "butterfly effect" in chaos-theory or fantasies about time travel, involving trying to "fix things" that are wrong in the present by going back in time to modify the past, as a result of which things will usually go *horribly* wrong on account of some unintended consequences. But such unintended consequences are in fact *inevitable* on this conception, which would simply arbitrarily pick out any earlier event as *the cause*, without which an equally arbitrarily identified later event, *the effect*, would not have occurred, *other things being equal*.

For instance, on this account we would have to swallow the odd consequence that the mailman was killed by a little bird who started singing in a tree, which caused a cat trying to catch it, which caused a dog to chase the cat, which caused the mailman to stumble over the dog out to the road, right under the wheels of a speeding truck. Well, what is this, a conspiracy? Certainly not; rather, it is a series of events, eventually, but, *caeteris paribus* inevitably, leading to the tragic death of our poor mailman. But the chief cause, not to say, "the prime mover", in this dismal series of events is the one that started it, namely, the little bird; so, we have our killer. In fact, there is another consideration incriminating the dangerous little creature: for as the *caeteris paribus* clause indicates, on this conception, if everything

had stayed the same and the little bird had *not* started singing, our mailman could still happily distribute the daily mail, but once the little evildoer sprang into action, *caeteris paribus*, the postman's fate was sealed.

This is the idea of necessary connection pushed to the extreme, namely, the idea of total causal determinism, according to which any earlier total state of the world fully determines any later state, which seems to be an *appealing* idea, when it comes to scientific predictions, but an *appalling* idea, when it comes to assigning moral or legal responsibility. For it would seem that on this deterministic picture just any event in the past can be singled out as a cause of any event in the present *caeteris paribus*, so, in the end it was not the murderer's action that caused the victim's death, but rather the murderer's being molested in his childhood by his drunk father, whose drinking in turn was caused by a genetic flaw, resulting from a solar flare at the time of his conception, etc. But even if one would say that such accidental patterns of events cannot be regarded as genuine causal chains on account of their irregularity, one may say that there is trouble with this view even considering regular patterns, such as the periodic sequence of night following day and day following night repeatedly, for even with all the regularity of this pattern it would be absurd to claim that night *causes* day or *vice versa*.

But such and similar problems stemming from the above-described characteristics of our "modern notion" of causality, as well as their attempted solutions (say, biting the bullet and denying free will, or arguing for compatibilism in terms of dualistic theories of "mental causation" or "indeterministic causation" flirting with quantum mechanics, etc.) are not my present concern. Indeed, here I am not even trying to provide an exhaustive list of these problems, let alone their attempted solutions; rather, at this point I am merely trying to register those characteristics of "the modern notion" that give rise to these problems to distinguish it from "the Aristotelian-scholastic notion" that seems to avoid these problems. So let us now take a closer look at that other notion, in particular, as it was articulated by Thomas Aquinas.

Let me start, however, with the proviso similar to the one I made concerning "the modern notion": by singling out Aquinas' view as representative of "the Aristotelian-scholastic notion of efficient causality" I do *not* mean to imply that I take that notion to be absolutely homogeneous, or that I take Aquinas' notion to be the only, or even the dominant or prevailing notion in his own age, with all its implications. All I mean here is that Aquinas' notion along with closely related notions of other thinkers of his age was significant enough in his own age, as is Hume's along with closely related modern notions in our age, and significantly different from the modern notion characterized earlier.

So, again, what are the distinctive characteristics of Aquinas' Aristotelian-scholastic notion, as opposed to "the modern notion" described above? In the first place, the relation of efficient causality on this conception is primarily *not* a necessarily diachronic relation between successive events, but rather a possibly synchronic relation, primarily among primary substances having their active and passive powers determined by their nature: the one acting by means of its active power is the agent, or efficient cause, whereas the one receiving the action of the agent by means of its receptive or passive power is the patient, or the effect in a particular causal relationship. But this is far from the end of the story. Popular accounts of Aristotelian natural philosophy and metaphysics usually stop at the brief description and exemplification of the four kinds or *genera* of causes, and completely disregard their various *modes*, i.e., subordinate kinds that are not necessarily *species* in the strict technical sense, in

that they may not be distinguished in terms of essential, specific differences. But the differences are important, indeed, crucial, nonetheless, for a proper understanding of this conception.

Aquinas, in his brilliant, succinct summary of Aristotle's doctrine, *De Principiis Naturae*, distinguishes (among others) the following *modes* of causes in each of the four *genera*: some are actual causes, others are potential; again, some are *per se*, others *per accidens*; again, some are particular, others are universal; and finally some are proximate, and others are remote.

Since we are dealing only with efficient causes here, let me clarify these distinctions regarding those only. The reason why these distinctions are regarded as distinguishing different *modes*, rather than *species*, of causes, as I've said, is that these distinctions are not made in terms of specific differences, telling us *what* the members of a species *essentially* are *like*, but rather in terms of *how* they *are*, or *how* they *are conceived*.

The *first distinction*, between actual and potential causes, is a distinction of the first kind, distinguishing an agent that merely has a certain capacity to act in a certain way from an agent that is actively using that capacity in actual operation. But of course any created agent can be one way or the other, so the distinction does not distinguish distinct kinds of causes sorting them into mutually exclusive classes; rather, it distinguishes between the different ways in which one and the same causes can be. For instance a doctor on vacation is a merely potential cause with regard to healing, for even then he *can* heal, but does not. By contrast, the same doctor actually practicing his art of medicine is an actual cause, actively exercising his ability to heal.

The *second distinction*, between *per se* and *per accidens* causes, is of the second sort, that is distinguishing between *how* – in particular, in terms of which of their various causal powers – various causes *are conceived*, and are accordingly denominated, in a particular causal relation. For instance, if our doctor also happens to be a pianist (think Albert Schweitzer), then of course a patient whom he has just cured can truthfully say that a pianist cured her, but everybody would assume that it is a mere coincidence that the person who cured her happened to be a pianist, for it was not by his music that he cured her. Or, conversely, a concert goer can truthfully say that at the concert a doctor played the piano, nevertheless, everybody would take it to be a mere coincidence that the pianist happened to have a medical degree, as it is causally irrelevant to his musical abilities. Again, when I see a sugar cube, I certainly see a sweet thing and when I taste it, I taste a white thing, but of course in these examples, the features whereby I perceive it (i.e., whereby it affects my senses causing its perception) are not the features whereby it is denominated: it is not its taste that affects my sight and it is not its color that affects my taste. In short, in these cases, the same cause is denominated in terms of its merely coincidental, in the given causal relationship causally irrelevant features, thus, in these cases we have described *per accidens* causes. By contrast, if I say that I see a white thing or I taste a sweet thing, then I am denominating the cause of my perceptions from its causally relevant features; thus, I am describing *per se* causes. In general, in a given causal relation, an efficient cause is conceived and denominated as the *non-coincidental*, *per se* cause of its *per se* effect, if in that causal relation both the cause and the effect are denominated in terms of their causally relevant features (active and passive powers, if we are denominating potential causes, and actual actions and passions, if we are denominating actual causes), otherwise the cause and the effect are denominated as *per accidens* or *coincidental*

cause and effect. Now, since the agent or efficient cause is what actualizes its effect and the patient is its effect getting or being actualized, there are four important conclusions that immediately follow from this description.

*First*, the coincidence of *per se* and *per accidens* causes: since this is a distinction made in terms of how something is conceived and accordingly denominated, the same thing in the same causal relation can be denominated either as a *per se* or as a *per accidens* cause, depending on whether it is denominated in terms of its causally relevant feature or not, as should be clear even from the examples.

*Second*, the necessity of *per se* causality: since the agent is a thing that has an active power (an ability to act), on account of which it is capable of bringing into actuality something, the patient, in some respect, namely, in that respect in which it is in potency to become actual, the action of the agent and the actualization of the patient are the same process; as Aquinas put it: "… action and passion are not two motions, but they are one and the same motion: for insofar as it is from the agent, it is said to be action, and insofar as it is in the patient, it is said to be passion."[1] But then, if the act of the agent as such and the act of the patient as such are one and the same in reality, but distinct only as to how they are conceived, then the one cannot be without the other in reality, even if the one *can be conceived* without it being conceived as the other: for one and the same thing cannot be there and not be there, no matter how it is conceived; therefore, the act of the *per se* cause cannot be there without the act of the *per se* effect, that is to say, the *per se* effect of a *per se* cause has to be there as long as the agent is acting and the patient is receiving its action, for the action and the reception are one and the same process of actualization inherent in the patient, coming from the agent. For example, there is illumination if and only if an illuminating thing actually illuminates a thing being illuminated. Clearly, a no matter how luminous thing is not an illuminating thing unless it illuminates something and an illuminable thing is actually illuminated only if an illuminating thing actually illuminates it: *illuminans illuminat illuminatum* – what can be more necessary than this?

The *third* conclusion is the irreflexivity of *per se* causality; this is actually Aquinas's sub-argument in his First and Second Ways of proving God's existence in the *Summa Theologiae*, although he fails to mention that this conclusion and the reasoning backing it up concern only *per se* causes and effects (because the prospective theology students for whom he wrote his textbook could reasonably be expected to know this, as opposed to modern scholars, leading to a number of futile objections in the contemporary secondary literature, including those in my very first published paper – written in Hungarian exactly thirty years ago).[2] Since the *per se* agent or efficient cause is active, i.e., is in actuality in precisely that respect in which the *per se* patient is passive, i.e., in potentiality or in a state of being receptive of the agent's action, one and the same thing cannot be the *per se* cause of itself, for that would mean that it would have to be agent and patient, active and passive, i.e., actual and potential in the same

[1] "… actio et passio non sunt duo motus, sed unus et idem motus: secundum enim quod est ab agente dicitur actio, secundum autem quod est in patiente dicitur passio." *In Phys*., lib. 3 l. 5 n. 7.

[2] Klima, G. "Az Öt Út: Aquinói Szent Tamás istenbizonyítékai", (The Five Ways: Saint Thomas Aquinas' Proofs for God's Existence) *Világosság*, 22(1981), pp. 1-30.

respect and in the same way, which is impossible, for then it would have *to be and not be* in the same respect, which is an explicit contradiction.

The *fourth* conclusion is the non-circularity and linear hierarchy of a series of *per se*, actual causes. The non-circularity of a series of *per se* causes is a direct consequence of the irreflexivity and transitivity of *per se* causation: suppose A is the *per se* cause of B, and in turn, B is the *per se* cause of A, constituting circularity. But then, by transitivity (which is generally assumed in any form of causation), A would have to be the *per se* cause of A, which contradicts the irreflexivity of *per se* causation just proved. Therefore, *per se* causes and their *per se* effects have to be arranged in a linear, but possibly branching ordering, insofar as a cause of a cause of an effect can also be the cause of another cause and through that, also the cause of another effect, as for instance the same transformer house can power the pair of wires lighting up this light bulb here, and through a switchboard can also power another pair of wires lighting up a light bulb in the next room. In fact, this idea of a linear arrangement of *per se* efficient causes in a possibly "downward branching tree structure" is the rationale for Aquinas's remaining two distinctions between the different modes of causes mentioned earlier.

Thus, the *third distinction* mentioned above, namely, that between *proximate* and *remote* causes should be pretty obvious, once we realize that the relation of *per se* efficient causality, on account of its necessary transitivity and irreflexivity, and on account of the fact that everything is either a cause or the effect of something else in the universe (for whatever is causally disconnected is not in this universe) provides a total ordering of all things in this universe, such that in every *per se* causal relationship everything is either an effect and not a cause (i.e., an *ultimate effect*) or both an effect and a cause (i.e., it is in *intermediary cause*), or, possibly, a cause of some further effect, but not an effect of anything (i.e., a *first cause*) in that particular *per se* causal relationship. That is to say, if its power to bring about or sustain its *per se* effect is insufficient on its own account, then an agent producing its *per se* effect must receive the energy it is missing from another cause, acting as an intermediary cause, channeling, as it were, that is, receiving, transforming and transmitting the power it receives from its cause, which therefore will be the *proximate* cause of this intermediary cause and the *remote* cause of the intermediary cause's effect. For example, if the illumination of the screen in a classroom at Fordham is the *proximate* effect of its *proximate* cause, namely, the overhead projector (to be properly denominated as "the illuminator", insofar as it is the *per se* cause of this particular effect, namely, of the screen being illuminated), then the transformer house on campus powering the illuminator is its *remote* cause. In fact, it is its *actual* remote cause, which is shown by the fact that if the transformer house stopped operating, that is to say, if the projector stopped being powered, then it would cease to operate as well, and its effect, the illumination of the screen, would go out of existence as well, that is, the screen would immediately go dark. And, of course, the transformer house is a *per se* actual cause only insofar as it is denominated from its causally relevant feature, namely, supplying electric power for the working of the projector, i.e., a power supply. But these considerations concerning the ordering of actual *per se* causes immediately give rise to the idea of a vertical hierarchy of causes, in which the more remote cause is somehow more powerful, and whose causality therefore extends to more than one intermediary cause in more than one chain of simultaneously co-acting causes, just as the transformer house powers not just the projector, but also the light and the computers, and the power plant in Niagara Falls powers not just this

transformer house on Fordham's campus, but many others all over New York City, which would apparently be a nice modern illustration of Aquinas' lastly mentioned distinction.

And that would be the *fourth distinction*, namely, that between more or less *universal* and *particular* causes. However, I believe one should be careful in the interpretation of this distinction. In the first place, a universal cause as Aquinas thinks about it, is certainly not a universal in its being (given that Aquinas rejects Platonic universals), but in its causality: a particular cause is the cause of only *this* particular effect, whereas a universal cause is a cause of several particulars of a given kind. However, an immediate consequence of this interpretation and the above-demonstrated irreflexivity of *per se* efficient causality is that a universal cause of a given kind of particulars itself cannot be of the same kind; for otherwise, being the cause of *all* particulars of the same kind, it would have to be a cause of itself, which is impossible. Therefore, the universal cause of a species cannot be a member of the same species: it has to be a *non-univocal* cause, that is to say, the form by virtue of which it acts and produces and/or sustains its effects is not the same form that it brings about in its effects. This is the reason that talking about more or less universal causes, which Aquinas also explicitly identifies with more or less remote causes, he means not only that the causality of a more universal cause extends to more kinds, but also that the reason why its causality covers more kinds of effects is that it is causing them in a more universal respect: it has a power and a corresponding activity that can be received in so many different ways by different kinds of recipients, as the radiation of the sun received as heat in water powers the water cycle around the globe, while received in the chloroplasts of plants, it powers (most of) the biosphere. In fact, *this* is the rationale (and not ancient superstition) for one of Aquinas' favorite quotes from Aristotle's *Physics*: *homo generat hominem et sol – man is generated by man and the sun*,[3] which without the insights of modern thermodynamics and ecology would sound like something coming from totally unscientific, superstitious, astrological speculations about the mysterious influence of celestial bodies on our lives.

But this remark should also give us an opportunity to reflect on the contrast I drew early on between the in themselves rather indistinctly treated "modern" and "scholastic-Aristotelian" notions. In referring to modern thermodynamics and ecology, I certainly departed from the mechanistic notion of causality that formed the basis for the contrast. And this should be a clear indication that whatever happened to the notion of efficient causality on the way from Aquinas' time to Hume's, some other things also happened from Hume's time to ours, which allow us a new perspective on the old idea. For in *contemporary natural science* it is actually no longer the idea of diachronic event-patterns that is the prevailing idea of causation, although it still is in many *philosophical* speculations (see "how mental events can cause physical events and *vice versa*"), but rather it is the idea of *the flow of energy and information* among systems of various scales and their subsystems. However, that idea is *precisely* the scholastic idea. Consider Aquinas' general description of the notion of a cause: "a cause is from the being of which there follows [the being of] something else".[4] Now, if we add to this that the notion of *being* for Aquinas is not just the static modern idea of "being an element of

[3] SCG, lib. 3 cap. 69 n. 24; ST I, q. 115 a. 3 ad 2; QDP, q. 3 a. 7 s.c. 3, etc.

[4] "Causa est ex cuius esse sequitur aliud." DPN c. 3.

the universe of discourse", but the dynamic notion of *being the actuality of all forms*, where the notion of actuality is that of being in act, being active, being at work, which in Aristotle's Greek would be the idea of being in *energeia*, i.e., in a state of energy, then we should not be surprised at the idea that our modern notions of *energy* and *information* will bear some striking resemblances to Aquinas' dynamic notions of *being as act*, and of *form as that which informs*, as that which determines the various ways in which things are, can be, and can be active or receptive, informing others and receiving information from others. But then, looking at the being or actual existence of things in this way, and noticing that the things we are familiar with in our experience tend to go out of existence unless they receive the sustaining energy input of others, and looking into some details of how the being or so-being of things is the result of various chains of co-active, *per se*, actual causes that are necessarily arranged in a hierarchy of increasing universality, then we can appreciate Aquinas' idea that even if it may seem a *logical possibility* that such a chain of causes should go to infinity without there being an absolute first, uncaused cause, it is not a *physical* possibility, for two reasons: *first*, if all causes are intermediary causes, then they all are just a series of receivers, transformers and transmitters of energy and information, without any ultimate *source* for that energy and information, i.e., they have nothing to receive, transform and transmit; and *second*, in the series of *per se* causes those higher up are more universal than those lower down; however, since there is a most universal form of energy or actuality, namely, the very being of anything, there must be a most universal cause of the causality and being of all others,[5] which itself is not in any need of a further source of energy for its own being, because it is just *esse ipsum subsistens*. To be sure, with this idea we leave the realm of physics; however, and *that* is Aquinas' point, it is our *ordinary physics*, if understood well, that demands it.

[5] For this idea, check QDP q. 7, a. 2.

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Michael Rota: "On Klima's "Whatever happened to efficient causes?"", pp. 31-32.

## Michael Rota:

# On Klima's "Whatever happened to efficient causes?"

I'm grateful for the opportunity to discuss Professor Klima's paper on efficient causality. While there is much in the paper with which I wholeheartedly concur, in my response I'll focus on critical comments. I turn first to the section on modern notion(s) of causality.

(1) At several places, Klima refers to "the modern notion of causality," which seems to be this: according to the modern notion of causality, (i) causal relata are events, (ii) the causal relation is diachronic – it connects events occurring at different times, and (iii) the causal relation is necessary, which is to say that if all the factors leading up to an effect are held fixed, then the effect must occur. One of the goals of Professor Klima's paper is to discuss differences between modern and Aristotelian-scholastic notions of efficient causality. I agree that there are indeed significant differences, but think that Klima overstates the difference. For example, on p. 22, he notes that on the standard pre-modern notion, finite causes are taken themselves to require a cause of being. (See Aquinas, *Summa theologiae* I.104.1 on this point.) Klima next infers that those who would claim that Aristotelian efficient causes are preserved in modern scientific thought "are wrong even in the claim that the Aristotelian-scholastic notion [of an efficient cause] is *preserved at all in the modern notion*" (p. 23). But this seems to be an invalid inference. From the fact that many or most moderns don't accept the need for divine conservation, it doesn't follow that their notion of cause is completely different. Between the scholastic notion of efficient causes and the modern notion of cause (which Hume criticizes), there is this much in common: a cause is that which brings about, produces, or generates an effect. An efficient cause makes an effect happen.

(2) An aside: in this same section of the paper, Professor Klima makes this claim about cosmological arguments: "In fact, if we think about it, any of the so-called cosmological arguments can possibly "work" for proving the *present* existence of a First Efficient Cause, only if the present existence of its effects is taken to be in need of its present activity (conditioned on its present existence), for otherwise a series of causes reaching back into the past would at best lead to the Big Bang, which may perhaps have needed some powerful player to kick off the workings of the universe, but that player, for all we know, may well have retired or even died in the meantime". The thought here is that if the causal chains we examine in a given cosmological argument are chains extending back through time, then, even if we prove that there was once a First Cause, we haven't proved that it still exists. In my view, it's worth noting that there is a way to get around this problem. A version of the cosmological argument which proceeds from contingent beings to a metaphysically necessary being does not suffer from the defect Klima alludes to. If you prove that a metaphysically necessary being once existed, then you can be sure this being still exists, because its non-existence is impossible in the strictest sense. So a necessary being couldn't fall from existence into non-existence. (When I teach the cosmological argument to undergraduates, I find this approach best, because it

does not require discussion of essentially ordered series of causes, or discussion of simultaneous causation.)

(3) Moving on, it seems to me that some of Professor Klima's criticisms of the modern notion of a cause are a little hasty. For example, he suggests that "the idea of a necessary (and for that matter, even probable) connection between cause and effect is under serious threat, given 'the modern notion'" of causality. But the argument for this conclusion contains the false premise that if something is imaginable, then it is possible. So we don't have a good argument against the modern notion of causation here. Klima also argues in this section that unintended consequences, as in the butterfly effect, are "*inevitable* on [the modern] conception, which would simply arbitrarily pick out any earlier event as *the cause*, without which an equally arbitrarily identified later event, *the effect*, would not have occurred, *other things being equal*. (p. 24)" The word "the" in "*the* cause" here is a mistake. The right thing for the modern to say is that any physical event has a myriad of causes (although for non-arbitrary epistemic reasons we sometimes pick one out and call it 'the' cause). Similarly, in his example about the death of the mailman, Klima says that on the modern view, when the mailman gets killed, "the chief cause…is the one that started it, namely, the little bird" (p. 25). But that is not what the modern need say. On the modern view, there are many causes leading up to the mailman's death: there's the singing of the bird, the mailman's decision to walk where he's walking that day, the truck's position and velocity at the time of the bird's singing, etc. These are all causes on a par, metaphysically. Later, Klima writes "For it would seem that on this deterministic picture just any event in the past can be singled out as a cause of any event in the present *caeteris paribus*, so, in the end it was not the murderer's action that caused the victim's death, but rather the murderer's being molested in his childhood by his drunk father, whose drinking in turn…" (p. 25). The inference here is too quick. The modern can hold that all the events in the sequence are causes. So the modern can hold that the murderer's action is a cause. (It's just not a free cause or an uncaused cause.)

(4) Finally, I turn to Professor Klima's section on Aquinas, which I found helpful and illuminating. Here I have only one point to add to the discussion: Aquinas distinguishes several (possibly four) different senses of the phrase "per accidens" cause, while Klima mentions only one. (See In Met V.3.789.) For example, Aquinas says that if a pillar is holding up a stone, and someone removes the pillar, than the remover of the pillar is a per accidens cause of the downward movement of the stone (In Met V.3.789). This is a sense of 'per accidens cause' distinct from that which Klima discusses.[1]

[1] Primary texts where Aquinas discusses the *per se*/*per accidens* distinction include: In Sent 2.1.1.1 ad 2; QDP 3.6 ad 6; QDM 1.3 ad 14-17, 2.11c, 3.6c; In Phys II.6, II.8, VIII.8.1035; In Met V.3.789; ST I.114.3c, I.115.4c, I.115.5c, I-II.75.4, I-II.85.5c, I-II.88.3c, II-II.3.1 ad 2, II-II.4.7c, II-II.43.1 ad 3, 4. For an interesting treatment of some issues surrounding Aquinas's views on *per accidens* causation, see Stephen Brock, *Action and Conduct: Thomas Aquinas and the Theory of Action* (Edinburgh, Scotland: T&T Clark, 1998), pp. 106-108 and 127-132.

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Gyula Klima: "Whatever Happened to Efficient Causes?", pp. 33-34.

## Gyula Klima:

## Reply to Michael Rota

I am grateful to Mike for his intriguing comments, giving me the much needed opportunity to clarify some points that I could only briefly touch on in the talk itself. To facilitate following the dialogue, while wanting to avoid needless repetition, I answer his objections "by the numbers".

(1) *Stat rosa sub nomine pristina, nomina nuda tenemus.*—It would indeed be a common part of Hume's and Aquinas' notions of efficient causality that such a cause "brings about, produces, or generates an effect", if they meant the same by "bringing about, producing, or generating". But as far as Hume's notion is concerned, night could produce day, which Aquinas' notion excludes, by distinguishing between privation as a mere principle but not a cause, and the agent, which is a cause, because it is that which by its own power or energy provides the energy needed for the coming to be or the being of its effect. But 'power', 'energy' and the like are words corresponding to which Hume literally has no idea, as he confesses, consistently with his very restrictive empiricist notion of experience. Of course, not every modern thinker shares Hume's empiricist assumptions, so the words survived, but certainly without the network of concepts in which they had their meaning for Aquinas.

(2) Of course, if you have a separate proof that whatever kicked off the Big Bang must be a necessary being, then you have the proof of the present existence of that Being, by virtue of its necessity, and not by virtue of its having been "the First Kicker". Perhaps, pedagogically it's easier to get away with this type of strategy. But it has several drawbacks. Here are just a few. First, proving of anything known to have existed that it is a necessary being, should not be any easier than proving that something is a necessary being, so why trouble yourself with proving its past existence first? Second, proving the past existence of the First Kicker from the Big Bang, presumes knowing that the world had a beginning in time, which Aquinas proves to be an indemonstrable article of faith. Therefore, Aquinas obviously did not mean to talk about a diachronic chain of agents, let alone events. Finally, pedagogically, this strategy will never give students the idea of *creatio continua*, which leaves them with the wrong idea of creation from Aquinas' perspective.

(3) My reasoning here, as I explicitly stated, is not meant to be some sort of devastating criticism of the modern notion of causation, it merely points to a number of well-known difficulties, which all have their own more or less successful "fixes" in the modern literature, as I also indicated. The role of listing these problems was merely to make the contrast with the pre-modern notion. Nevertheless, the reasoning concerning singling out *the* cause, of course, goes with the assumption that sometimes we need to single out *the* cause, as is the case with assigning moral responsibility, which leads to the absurdities that the little bird killed the postman, or the solar flare is responsible for the murderer's action, because the cause is what, *caeteris paribus*, is responsible for the occurrence of the subsequent effect. But on this model, as Mike agrees, just any prior event can be singled out, *caeteris paribus*, the others being treated as "pre-conditions" or "circumstances". Therefore, on this account the solar flare could just as much be blamed for the murder as

the murderer, which is in fact a strategy often followed by the defense in today's courtrooms, as any diligent viewer of "Law and Order" can readily testify.

(4) Indeed, I did not deal with *all* of Aquinas' distinctions, only with the ones that were relevant to his 'cosmological arguments'. The case of the *removens prohibens* was not. In any case, it is easy to show how this case is reduced to the principal distinction as described in the lecture, which is precisely the reason why Aquinas classifies this case also under the heading of *per accidens* causation. A pusher pushing the column is the *per se* cause of the column being pushed, and the coincidental cause of whatever follows upon the column's being pushed by natural necessity, such as the falling of the rock off its top, which is just the actualization of the rock's potential energy in its kinetic energy while falling, which in turn was just *prevented* (*prohibitum*) from this actualization by the contrary force of the solidity of the column. So, from the point of view of the pusher's action, the falling of the rock is merely coincidental (and in fact could have been prevented by some other contrary force, say, exerted by a rope around the rock, suspending it from a strong branch of a tree above the column).

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Antoine Côté: "Aquinas, the Kalām, and Skepticism about Sense Perception", pp. 35-46.

## Antoine Côté

# Aquinas, the Kalām, and Skepticism about Sense Perception

I here consider two passages in which Thomas Aquinas examines scenarios which amount to "undetectable perfect deception[1]," that is, scenarios in which perceivers are systematically deceived in all their sense perceptions because their perceptions are not caused by the really existing objects that appear to cause them—and not, as in the case of so-called 'Demon-skepticism,' because their perceptions are perceptions of a world that doesn't really exist. The first case occurs in the *Sentences* commentary (*Sup. Sent.* IV, d. 44, q. 2 a. 1 qc. 3), in the context of a discussion pertaining to the mode of perception of the Glorified. The second case occurs in the context of Thomas' critique of the Muslim Kalām's denial of the reality of secondary causes, in *De potentia*, q. 3, a. 7. Thomas argues in both cases that total deception is impossible, but does so for different reasons. In *Sup. Sent.* IV, d. 44, q. 2 a. 1 qc. 3, he argues that the Kalām's thesis is incompatible with certain general metaphysical propositions. In *De potentia*, q. 3, a. 7, by contrast, he appears to want to show that systematic sense delusion is demonstrably wrong for reasons that are manifest to the perceiver, not merely because it conflicts with objective, metaphysical truths. I start in sections I and II by presenting the first approach, to better set off the second approach, delineated in *De potentia*, q. 3, a. 7, where Thomas, after initially endorsing some of the claims of the Sentences text, appears to hint at something quite different. Just what this may be, and how successful Thomas' attempt ultimately is, I try to determine in sections III and IV.

## I

In *Sup. Sent.* IV, d. 44, q. 2 a. 1 qc. 3, Thomas addresses the question of whether the Blessed after resurrection will continue to enjoy sense perception in spite of their impassibility. Thomas believes that the Elect's impassibility does not alter their human nature. Accordingly, he rejects two solutions that require the resurrected bodies to cognize in a way that is entirely different from the way in which human beings cognize in this life. According to the first solution, the bodies of the Glorified in the afterlife will sense by an "outward projection." Thomas agrees with many theologians in rejecting this suggestion. He takes Aristotle as having shown that the nature of the sense is to be a passive power. If it were true that the bodies of the Glorified sensed by means of an outward projection, that would mean that the nature of man's sense powers would

[1] I take this expression from G. Klima, "The Anti-Skepticism of John Buridan and Thomas Aquinas: Putting Skeptics in Their Place vs. Stopping Them in Their Tracks," in *Rethinking the History of Skepticism. The Missing Medieval Background*. H. Lagerlund (ed.) (Leiden: E.J. Brill, 2010), 162.

have been changed into its opposite, like matter being changed into form—a view Aquinas dismisses as untenable[2].

The second solution is as follows. Some theologians agree that the bodies of the Elect do not change in the way just indicated, that is they agree that the sense power remains a passive power. However, while these authors believe that it is contrary to the Glorified body's impassibility that the sense derives its information from *material objects*, they contend that it is quite consistent both with Glorified man's impassibility and the senses' nature as passive powers that they undergo change on the part of something that is not a material object, but is rather a superior power, for instance an immaterial Intelligence. On this scenario, the Elect would continue to sense all right, but their sense information would not originate in the material objects. Here is Thomas' reply:

> But that mode of reception does not make one really sense (vere sentire). For every passive power, according to the character of its species, is determined to some particular active thing. That is because a power as such is ordered to that of which it is said. Now, given that what is properly active in [the case of] the exterior sense is the thing existing outside the soul as opposed to the intention of the object (intentio eius [sc. rei]) existing in the imagination or reason, (it follows that) if the organ of sensation is not moved by the external thing or by the imagination, but by superior powers, then there will be no true sensing (non erit vere sentire). Hence, we do not say that the delirious truly sense but only that they think they are sensing. And thus one must say with others that the sensing of the glorified bodies will occur through the reception from things that are outside of the soul[3].

Notice here that the distinction drawn by Thomas between really (*vere*) sensing and thinking one senses, between the veridical and non-veridical, depends on a general metaphysical principle that is stated and elucidated in the next sentences of the text. The principle states that "every passive power, according to the character of its species, is determined to some particular active thing." It is a principle Aquinas appeals to throughout his work[4]. Sense perception involving as it does a

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[2] "Quidam enim dicunt, quod quia gloriosa corpora erunt impassibilia, et propter hoc non receptibilia peregrinae impressionis, et multo minus quam corpora caelestia; non erit ibi sensus in actu per receptionem alicujus speciei a sensibilibus, sed magis extra mittendo. Sed hoc non potest esse: quia in resurrectione natura speciei manebit eadem in homine et in omnibus partibus ejus. Hujusmodi autem est natura sensus, ut sit potentia passiva, ut in 2 de anima probat philosophus; unde si in resurrectione sancti sentirent extra mittendo, et non recipiendo, non esset sensus in eis virtus passiva; et sic non esset ejusdem speciei cum sensu qui nunc est, sed esset aliqua alia virtus eis data: sicut enim materia nunquam fit forma, ita potentia passiva nunquam fit activa." *Sup. Sent*. IV, d. 44, q. 2 a. 1 qc. 3, co. All quotations by Aquinas are taken from the online edition of his *Opera Omnia*, published under the direction of Enrique Alarcón, at

http://www.corpusthomisticum.org.

[3] "Sed ille motus receptionis non facit vere sentire: quia omnis potentia passiva secundum suae speciei rationem determinatur ad aliquod speciale activum: quia potentia, inquantum hujusmodi, habet ordinem ad illud respectu cujus dicitur; unde cum proprium activum in sensu exteriori sit res existens extra animam, et non intentio ejus existens in imaginatione vel ratione; si organum sentiendi non moveatur a rebus extra, sed ex imaginatione, vel aliis superioribus viribus, non erit vere sentire. Unde non dicimus quod phrenetici et alii mente capti, in quibus propter victoriam imaginativae virtutis fit hujusmodi fluxus specierum ad organa sentiendi, vere sentiant, sed quod videtur eis quod sentiant. Et ideo dicendum est cum aliis, quod sensus corporum gloriosorum erit per susceptionem a rebus quae sunt extra animam." *Sup. Sent.* IV, d. 44, q.2 a. 1 qc. 3, co.

[4] See, for instance, *Sup. Sent*. II, d. 12, q. 1, a. 1, co. ; *Sup. Sent*. III, d. 26, q. 1, a. 2, co ; *Contra Gentiles* III, cap. 45, n. 6.

passive power—i.e., the sense power itself—and an active object, namely the sensible object, is but an instance of this general principle. Because it is the case that perception must be caused by an actual object, any perception not so caused will not count as a bona fide instance of perception. There is no suggestion on Thomas' part here that in order to say that a person was a victim of a delusion that that person would have to know about it. The conclusion that they do not really sense follows from the general metaphysical principle that the senses are powers that are moved by certain kinds of objects, namely objects external to the soul. Because they are not so moved in the case under consideration, the person does not really sense.

## II

With *Summa contra Gentiles* III, 69, *De potentia*, q. 3, a. 7 is the other major text in which Aquinas expounds and critiques the view of the Mutakallimūn, the speculative theologians of Islam, who held that God is the only real cause of natural phenomena, and who denied, consequently, that there were any secondary causes[5]. Aquinas, following Maimonides, considers that the position is absurd, but he discusses it at considerable length, all the better to contrast it with his own doctrine of the concurrence of divine and created causes in the production of created effects. As Aquinas understands their position, the Mutakallimūn believed 1) that all natural forms, that is, the substantial, qualitative characteristics of things, were accidents. They also believed, following Aristotle, 2) that accidents necessarily inhere in substances and cannot therefore "migrate" from one substance to another. Finally, they assumed 3) that natural causation must necessarily involve the transference of a numerically identical accident from the cause to the effect. Given that such a transference was held to be impossible (by (2)), they concluded that natural causation was impossible as well. Hence, no created substance could bring about a change in another created substance. Only God brings about such change.

The doctrine is wrong according to Thomas, but it is a more powerful objection to traditional accounts of causation than one might initially suppose. Thus, Thomas observes, it would not do to think that one had refuted the Mutakallimūn by pointing out, say, that a given object gets warmer if it is exposed to heat not just once but *every time* it is so exposed, as if their theory could only account for extraordinary or miraculous occurrences. This will not do, for the Mutakallimūn would simply respond that the reason why objects exposed to heat always become hot is that God has decreed that all applications of heat to a certain body would be followed by the heating of that body[6]. In a word: God could have brought it about that a particular perceptual

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[5] Many works have been devoted to the theories of causation of the Kalām. I have found the following book most useful for its historical sweep and the quality of its philosophical analyses: D. Perler & U. Rudolph, *Occasionalismus. Theorien der Kausalität im arabisch-islamischen und im europäischen Denken*, (Vandenhoek & Ruprecht: Göttingen, 2000). Also noteworthy are W. Courtenay, "The Critique on Natural Causality in the Mutakallimun and Nominalism," *Harvard Theological Review* 66 (1973): 77-94; M. Fakhry, *A History of Islamic Occasionalism and its Critique by Averroës and Aquinas* (London: Methuen, 1978); A. Freddoso, "Medieval Aristotelianism and the Case against Secondary Causation in Nature," in *Divine and Human Action. Essays in the Metaphysics of Theism*, ed. Th. V. Morris, (Ithaca, London: Cornell University Press, 1988), 74-118.

[6] "Sed si obiiceretur contra eos, quod ex applicatione ignis ad calefactibile, semper sequatur calefactio, nisi per accidens esset aliquid impedimentum igni, quod ostendit ignem esse causam caloris per se; dicebant, quod Deus ita statuit ut iste cursus servaretur in rebus." *De pot*., q. 3, a. 4, co.

effect is never brought about by its apparent physical cause, not just once but always.

Now, it seems pretty clear that such a scenario, if we suppose it to obtain across the board, that is, for all the perceptions of all perceivers, does constitute a case of undetectable total deception. It would be *deception*, because although substances and qualities would really exist, they would not really cause anything; in particular they would not be the cause of my knowledge of their existence and nature; it would be *total* deception, because *none* of the objects that appear to cause my perceptions would in fact cause them; and hence, it would also be *undetectable*. Dominik Perler, in an illuminating discussion he has devoted to skepticism in Aquinas, has pointed out that the existence of occasional, *per accidens* errors in perception in no way represents a danger for Aquinas, for Aquinas believes that sense deliverances may be checked against other perceptions and those of other people, with the result that sense judgments are all in principle corrigible, which rules out the "danger of radical deception[7]." But of course, on the Kalām's scenario, there is no way in which such checking could lead to uncovering the deception, the deception involved in the apparent causes' not being the real causes, for every sense deliverance of every sense would be caused by God, not by the object that appears to cause it or the appropriate sensible qualities of those objects.

## III

In *De potentia*, q. 3 a. 7, Thomas cites three different reasons for believing that the Mutakallimūn's position is wrong. The first is that the doctrine is contrary to the senses; the second is that it is contrary to reason; the third, that it is contrary to God's goodness. I will need to briefly discuss the second and third reasons before turning to the first, in part IV.

According to Thomas, the Kalām's position is repugnant to reason because it is at odds with what Thomas takes to be an evidently true principle, namely that "nature does nothing in vain." Unless this principle were true, there would be no apparent reason why natural substances would have the qualities they have, and no reason why those qualities should be brought into contact with other substances—say, no reason for the substance "fire" and its quality "heat" to be brought into contact with the substance "pot"—if the substance and quality were causally sterile[8].

Thus stated, of course, the argument is ineffective, for it assumes what the Mutakallimūn deny, namely that nature does nothing in vain (because they deny that nature does *anything*), and that God's motives are assessable by reason. But Aquinas' point is surely that if nature does something in vain, then nature would have been *created* in vain, if there were no real created

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[7] *Zweifel und Gewissheit. Skeptische Debatten im Mittelalter* (Klostermann: Munich, 2006), 132. We may note however that the idea of comparing senses in terms of their dignity/reliability, and the thesis that the deliverances of a sense are to be accepted unless they are contradicted by one whose dignity is superior, a thesis whose source is Aristotle's *De insomniis* 461b3 ("quod ab unoquoque sensu dicit principium, nisi alius dignior contradicat" trans. noua), is not explicitly invoked by Aquinas, although it is found in many other authors of the same period and is a thesis Aquinas would presumably have agreed with.

[8] "Repugnat etiam rationi, per quam ostenditur in rebus naturalibus nihil esse frustra. Nisi autem res naturales aliquid agerent, frustra essent eis formae et virtutes naturales collatae: sicut si cultellus non incideret, frustra haberet acumen. Frustra etiam requireretur appositio ignis ad ligna, si Deus absque igne ligna combureret."

causes. For why would a wise, benevolent God go through the trouble, so to speak, of creating the world with its intricate network of apparent causal powers and liabilities if created substances were all, in fact, causally sterile? This is exactly the point Thomas makes in *Contra Gentiles* III, 69:

> If created things in no way operated in producing effects, but rather God did all things directly, it would be in vain that other things would be created in order to produce effects. The aforementioned position is therefore repugnant to God's wisdom[9].

Now, amongst the things that seem suited to produce a certain class of effects are sensible objects, which appear to cause sensation by acting on our senses. Applying Aquinas' reasoning in the above text to the case of sensation, it is an easy step to conclude that it is contrary to God's wisdom to have created sensible substances if those substances do not, in fact, act on our senses to produce sensations; therefore they must so act, and skepticism over secondary causes must be false[10].

The soundness of this argument, from Thomas's point of view, follows from the thesis that God is wise. Although there is no question entitled "utrum Deus sit sapiens?" where Thomas demonstrates God's wisdom, Thomas does link divine wisdom with divine providence[11] and more or less equates it with his goodness[12]. "God is wise" is therefore a demonstrably true proposition for Aquinas and so too, by implication, must be the thesis that sensation is caused by the objects that appear to cause it, that is, by sensible objects. Thus, from Thomas' second reason against the Mutakallimūn in *De Potentia* q. 3 a. 7, one can extract the elements of a "refutation of skepticism," but this refutation would be very much rooted in what some scholars have called Thomas' "theological externalism[13]," a position that has come to be viewed as quintessentially Thomistic. The question is: does Thomas offer *another* argument that does not rely on such assumptions, an argument that would be based, perhaps, on introspectively accessible features of sense perception itself? As we will now see, Thomas' first argument against the Mutakallimūn, the thesis that their position is repugnant to the senses, suggests that he might.

## IV

I will quote the passage in which this argument occurs in full, numbering the key propositions, which I shall examine one by one.

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[9] "Item. Contra rationem sapientiae est ut sit aliquid frustra in operibus sapientis. Si autem res creatae nullo modo operarentur ad effectus producendos, sed solus Deus operaretur omnia immediate, frustra essent adhibitae ab ipso aliae res ad producendos effectus. Repugnat igitur praedicta positio divinae sapientiae." *Contra Gentiles*, III, 69.

[10] See N. Kretzmann, "Infallibility, Error, and Ignorance," in *Aristotle and his Medieval Interpreters*, R. Bosley & M. Tweedale (eds.), (Calgary: University of Calgary Press, 1982), 162.

[11] *Quod*. XII, q. 3 co.

[12] *Super Sent*. I, d. 2, q. 1, a. 2 co., or *De pot*., q. 10 a. 4 co.

[13] E. Stump, "Aquinas on the Foundations of Knowledge," in *Aristotle and his Medieval Interpreters*, 158. See, for similar remarks, N. Kretzmann, "Infallibility, Error, and Ignorance," 161-2, and S. MacDonald, "Theory of Knowledge", in *The Cambridge Companion to Aquinas* (Cambridge: Cambridge University Press, 1993), 187.

> [1] This position is manifestly repugnant to the senses. [2] For given [2a] that the senses sense only if they undergo change from the sensible object – [2b] a fact that is manifest in touch and other senses although it may be doubted on account of those who claim that sight results from an emission from the eyes – it follows [2c] that a man does not sense the heat of a fire if there isn't a resemblance of the fire's heat in the organ of sense. [3] For suppose the species of heat in the organ came about through some other agent. [4] Even if touch senses the heat, it would not sense the heat of the fire nor would it sense that the fire is hot, [4a] even though the sense, [4b] whose judgment is never in error regarding its proper sensible, [4a'] judged this to be the case.
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> Haec autem positio est manifeste repugnans sensui: nam cum sensus non sentiat nisi per hoc quod a sensibili patitur (quod etsi in visu sit dubium, propter eos qui visum extra mittendo fieri dicunt, in tactu et in aliis sensibus est manifestum), sequitur quod homo non sentiat calorem ignis si per ignem agentem non sit similitudo caloris ignis in organo sentiendi. Si enim illa species caloris in organo ab alio agente fieret, tactus etsi sentiret calorem, non tamen sentiret calorem ignis nec sentiret ignem esse calidum, cum tamen hoc iudicet sensus, cuius iudicium in proprio sensibili non errat.

Let us first look at the structure of the paragraph. What is at issue is the status of [2c]. Thomas thinks [2c] is true. The skeptical hypothesis corresponds to the *denial*[14] of [2c], to wit, "a man senses the heat of a particular fire; there is a resemblance of the fire in the organ of sense that is not of the fire." Thomas thinks that [2c] is true, because it follows from [2a], which appears to be supported by [2b]. He then argues that the denial of [2c] leads to absurd consequences, namely [4]. So [2c] must be true. The kernel of the argument is in [3] and [4]. Before turning to these, we need to look at [2a], [2b] and [2c].

**[2a] & [2b]**

Thomas first asserts that the senses sense only if they undergo change from the "sensible object" and then tells us in [2b] that it is a "manifest" fact known by the senses that the senses are moved by sensible objects. We first need to determine what he means by "sensible object"; we then need to know what he means by saying that the perception's being caused by the sensible object is a fact that is "manifest"?

What does Thomas mean by "sensible object"? I have been using the expression freely, but it is ambiguous. It can be understood in a broad sense and in a narrow sense. In the broad sense, it refers to individual material substances. It is sensible objects so understood that are taken to cause sensation in *Sup. Sent.* IV, d. 44, q.2 a. 1 qc. 3. It makes sense to suppose that "sensible" in *De potentia,* q. 3, a. 7 also refers to individual substances, since the thesis Thomas is attempting to rebut here is precisely one that states that "*res* penitus *naturalis* nihil ageret per virtutem propriam." In the narrow sense, "sensible object" refers to what Thomas calls the *exterior* sensible, to the exclusion of the substances in which they inhere. The exterior sensibles are the qualities in the thing that are apt to act on the senses by generating a resemblance in them[15].

[14] Or rather to one of the two ways of denying [2c].

[15] See *Summa theologiae* I, q. 78, a. 3 co ; also ad 1 and ad 2; *Sentencia de anima*, II, l. 10, n. 5: "sensus non sentiunt actu, (...), id est sine exterioribus sensibus."; *Q. d. de anima*, a. 12 ad 5: "Ad quintum dicendum quod accidens non

Thomas tells us that it is as impossible for something to be moved without a mover as it is for something to be sensed without an exterior sensible[16]. Now, any exterior sensible does not act on just any sensitive power. Aquinas, following Aristotle, calls the proper sensible of a sensitive power the exterior sensible that is able to act on just that power: colors in the case of sight, cold, heat, humidity and dryness in the case of the sense of touch. It is the color in the coloured object that acts on the sense of sight; the sweetness in the honey that acts on the sense of taste[17]. According to Thomas, there are no subjectless qualities—at least in the realm of nature—hence, qualities cannot act without subjects in which they inhere[18]. It is therefore acceptable, *sensu lato*, for Thomas to refer to 'things' as being the causes of our perceptions of them, even though, strictly speaking, it is the real qualities inhering in extra-mental substances that bring about the changes that result in perception[19].

Thomas says [2b] that it is manifest that sensation is caused by the sensible object. How is it manifest? This is trickier. Does he mean that the perception's being caused by the object is *intuitively* obvious to the perceiver in the act of perception, or does he mean that its truth can be inferred from our experience of perception in some other way? There are many things Thomas claims are evident or manifest to the senses: the existence of natural beings is evident (In Physic., lib. 2 l. 1 n. 8.); the existence of motion (*Contra Gentiles* I, c. 13; *In Physic*., lib. 8 l. 6 n. 5); the fact that earth and water are bodies (*De potentia*, q. 4 a. 1 ad 2); the motion of the sun (*Contra Gentiles* I, c. 13, n.3); the turning of the heavens in a finite time (*In De caelo*, lib. 1 l. 10 n. 2.). It is doubtful that one sense of "manifestness" underlies all these different cases. Sometimes Thomas talks about the evidence as something immediate. Thus one sighting of a physical body is enough to make it known at once (*statim*) that a whole is greater than any of its parts[20]; and presumably, one sighting is sufficient to understand that nature exists. But clearly understanding that the heavens turn in a finite time is a complex process, involving reasoning, inference, and observation; yet Thomas considers this as an instance in which something is manifest to the senses as well. We must suppose that in the latter case he is alluding to the senses in their role as

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excedit subiectum in essendo, excedit tamen in agendo. Calor enim ignis exteriora calefacit; et secundum hoc potentiae animae excedunt ipsam, in quantum anima intelligit et diligit non solum se, sed etiam alia."

[16] *Contra Gentiles* II, c. 57.

[17] "Et similiter sensus patitur a sensibili habente colorem aut humorem, idest saporem aut sonum, *sed non inquantum unumquodque illorum dicitur*, idest non patitur a lapide colorato inquantum lapis, neque a melle dulci inquantum mel." *Sentencia de anima*, lib. 2 l. 24 n. 4; also *Quodlibet* VII, q. 5 a. 1 co.

[18] *Sentencia de anima*, lib. 3 l. 1 n. 14. [...] Et hoc est quod dicit, quod haec omnia sentimus *motu*, idest quadam immutatione. Manifestum est enim quod magnitudo immutat sensum, cum sit subiectum qualitatis sensibilis puta coloris aut saporis, et qualitates non agunt sine suis subiectis. Ex quo apparet, quod figuram etiam cognoscimus cum quadam immutatione, quia figura est aliquid magnitudinis, quia consistit in conterminatione magnitudinis (…).

[19] See *De veritate*, q. 12, a. 3, ad 2; *Summa theologiae* I, q. 78, a. 3, ad 2.

[20] *Super Sent*. I, d. 3, q. 1, a. 2 co.: "Aut secundum suppositum, idest considerando ipsum Deum, secundum quod est in natura sua quid incorporeum; et hoc modo non est per se notum; immo multi inveniuntur negasse Deum esse, sicut omnes philosophi qui non posuerunt causam agentem, ut Democritus et quidam alii. Et hujus ratio est, quia ea quae per se nobis nota sunt, efficiuntur nota statim per sensum; sicut visis toto et parte, statim cognoscimus quod omne totum est majus sua parte sine aliqua inquisitione. Unde philosophus: principia cognoscimus dum terminos cognoscimus."

"principles of knowledge," the bedrock of all certitude[21]. In that case, "manifest to the senses" means something like "ultimately reducible to the senses[22]." I will be assuming that when Thomas says, in [2b], "manifest in touch and other senses," he does not mean "ultimately reducible to the senses," but rather that he means something like "immediately evident in the act of perception."

Clearly, though, [2a], namely that "the senses sense only if they undergo change from the sensible object," is an entirely different kettle of fish from the cases considered in the previous paragraph. For what is claimed to be evident here is the perceptions' originating from, i.e., being *caused* by, the sense object. How can that be? Thomas tells us in [2b] that the fact that a sense only senses if it undergoes change from the sensible object is manifest in the case of "touch and other senses."

It is significant that Aquinas mentions touch (*tactus*) explicitly. He does, of course, say "other senses," but touch appears to enjoy a special status amongst the senses. Although Aquinas calls it the "crassest" of the senses[23], he also refers to it elsewhere as the fundament of all the senses[24]. Like sight, but unlike the other senses, it extends to things themselves[25]. Unlike sight, however, which requires a species to carry out its function, touch alone is *really conjoined* to the object[26]. Its fundamental nature is particularly apparent in Thomas's discussions of the proofs of Christ's resurrection, where he introduces the notion of '*palpatio.*' Palpation is a species of touch, but unlike touch proper, its function is not to discriminate between hot and cold, but rather to discern

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[21] *Summa Theologiae* III, q. 30, a. 3 ad 2.

[22] *Super Sent*., IV d. 49, q. 2, a. 7 ad 12: "Sed hanc positionem improbat Commentator in 3 de anima, ex hoc quod adhuc non sunt inventa aliqua principia quibus ad hoc perveniri possit; quod non videtur esse probabile, si ad hoc per principia scientiarum speculativarum perveniri posset; et praecipue cum omnis humana cognitio ad illam ordinetur; non enim esset probabile quod species humana deficeret a perfectione naturali totaliter. Et ideo dicendum, quod praedicta positio impossibilis est; cujus ratio est, quia scientiae speculativae procedunt ex principiis per se notis, quae a sensu accipiuntur, ut dicitur in 2 posteriorum; et ideo per illa non possumus devenire in essentias illarum rerum quae omnes formas sensibiles excedunt; unde per nullam scientiam speculativam quam nunc acquirimus, scimus quid est Deus, vel quid est Angelus, nisi sub quibusdam similitudinibus, magis cognoscentes de eis quid non sunt quam quid sunt; et propter hoc dicit philosophus in principio Metaph. quod scientia de Deo non est humana possessio, quia scilicet eam ad plenum habere non possumus." *Contra Gentiles* III, cap. 41 n. 11: "Si autem dicatur quod est possibile esse aliquam talem speculativam scientiam quamvis adhuc non sit inventa, hoc nihil est: quia non est possibile per aliqua principia nobis nota ad intelligendas substantias praedictas devenire. Omnia enim propria principia cuiuscumque scientiae dependent ex principiis primis indemonstrabilibus per se notis, quorum cognitionem a sensibilibus accipimus, ut patet in fine posteriorum. Sensibilia autem non sufficienter ducunt in cognitionem rerum immaterialium, ut per superiores rationes est probatum."

[23] *In de generatione*, lib. 1 l. 10 n. 4.

[24] *Sentencia de anima*, lib. 2, l. 19, n. 6.

[25] *Sententia Metaphysicae*, lib. 1, l. 1, n. 8; see also *Super Sent*. IV, d. 49, q. 3, a. 5, qc. 2 ad 2

[26] *Super Sent*. IV, d. 8, q. 1, a. 3 qc. 1 co. "quia inter alios sensus solus tactus est cui suum sensibile realiter conjungitur, similitudinibus tantum sensibilium ad alios sensus per medium pervenientibus." See *Sentencia de anima*, lib. 2, l. 21, n. 2. Cf. Nicholas of Autrecourt *Exigit ordo*, ed. J. O'Donnell, in "Nicholas of Autrecourt," *Mediaeval Studies* 1(1939): 232, 14-15: "In tactu vero non sic videtur esse causa dubitandi; nam non videtur esse aliquando ad imaginem, sed semper ad rem fixam."

a thing's "natural power to resist division[27]." This makes it uniquely suited to allow the perception of the corporeity of the resurrected body, more so, Thomas explains, than sight, which is subject to sundry deceptions and illusions[28]. Using the language of [2b], we may therefore say that if the senses sense only if they undergo a change on the part of the sensible object, and if this fact is manifest—i.e. immediately evident to the perceiver—then, in touch, I perceive that my perception is brought about by some external object[29]. At any rate, one thing Thomas' rejection of the extramissive theory makes clear is that the manifestness involved in the case of sensation, in particular, but not only in touch, is more than merely the manifestness of the sensible's *presence*—as one reader of this paper has suggested—for otherwise Thomas' reference to the extramissive theory would make little sense. The disagreement with extramissive theorists is not about whether or not we experience the presence of the quality in sensation; rather, it is about the directionality, so to speak, of the experience: for Thomas, what we experience in external perception is manifestly "from the outside in," not "from the inside out."

But there might be a problem. Aquinas mentions in [2b] that some philosophers have disagreed with the thesis that all sensations are caused by external objects in the case of vision. This is an allusion to the extra-missive theory that Aristotle mentions and quickly disposes of in the *De sensu et sensato* and which Aquinas examines at greater length in his commentary on the same[30]. The theory states that vision occurs as a result of an emission of rays by the eyes, and not as a result of the reception (or intromission) of rays (or species) from the outside. Yet both Aristotle and Aquinas resort to *scientific arguments* in order to show the untenability of the emission theory, or point to the fact that the extramissive theory has implications that are inconsistent with

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[27] *Sup. Sent*. III, d. 21, q. 2, a. 4, qc. 2, ad 2: "Ad secundum dicendum, quod palpatio non pertinet ad sensum tactus inquantum est discretivus calidi et frigidi, et hujusmodi contrariorum; sed inquantum est discretivus corporum solidorum quae habent potentiam naturalem resistendi dividenti."

[28] *Sup. Sent*. III, d. 21, q. 2, a. 4, qc. 2, co: "Ad secundam quaestionem dicendum, quod propter vehementiam imaginationis contingit aliquando quod illud quod imaginatio apprehendit, videtur esse praesens in visu, non solum in dormiendo, sed etiam in vigilando. Similiter etiam contingit quod ex oppositione aliquorum corporum videtur aliqua effigies, ac si esset hominum, vel aliorum animalium. Iterum etiam apparitiones visibiles daemonum et etiam Angelorum consueverunt fieri per corpora aerea inspissata; unde statim cum volunt, dissolvuntur. Et ideo dominus ad ostendendum veritatem resurrectionis, palpationem visui adjunxit, ut excluderetur visio per immutationem visus ab imaginatione, et visio umbrarum, et visio spirituum apparentium." The suggestion is, of course, that no such deception is possible in the case palpatio. See also the texts in *Super Sent*. IV, d. 44, q. 2, a. 2 qc. 6 co and *Summa theologiae* III, q. 54, a. 2, ad 2. The raison d'être for this entire discussion is to provide an exegesis of Luke 24:39.

[29] The anti-Humean idea that we actually perceive causation, although a minority view in contemporary metaphysics, has enjoyed some important support. It was first defended by the Belgian experimental psychologist Albert Michotte in his book, *The Perception of Causality* (London: Methuen, 1963)—But see Susannah Siegel, "The visual experience of causation," *Philosophical Quarterly* 59 (2009): 519-540, for a very critical appraisal. More recently, Evans Fales has offered an intriguing defense of the thesis that we perceive causation by analyzing our experience of tactile pressure. Fales argues that in the case of a tactually perceived force, e.g., someone exerting a force on my forehead with their hand, one may distinguish two sorts of components : a "vectorial" component, consisting of motion, direction, and magnitude, and a component, which Fales calls 'production', which is the asymmetry in the direction of the perceived force, the perception of which enables us "to identify causes as causes, effects from effects." Thus the argument is that "we are able to distinguish in perception between active agency on our part and the passive reception of force, between an impressed force and the resistance of our bodies."

[30] See *Sentencia de sensu*, tr. I, l. 3, nn. 9-14.

observation, not to the putatively manifest or evident features of our perception. The problem, of course, is that if the manifestness were a simple matter of immediate observation or intuition, then no one could doubt it, even in the case of sight; if it were a matter of brute evidence, there could be no controversy, unless it was claimed that the evidence obtained in the case of every sense *except* sight, but Aquinas clearly does not believe that.

But is this really a problem? Thinking that sight's being passive is evident to the senses does not preclude one's proving that it is passive by other means. Thomas resorts to argument in the case of sight, not because scientific arguments trump experience, or because the testimony of the sense itself is not reliable, but because some people refuse to acknowledge evidence when they see it, and so must be won over by other methods[31].

[2c] that a man does not sense the heat of a fire if there isn't a resemblance of the fire's heat in the organ of sense [2c] is the conclusion of [2a] and [2b]. What follows from the fact, asserted in [2a], that perceptions are caused by external sensibles? Because Thomas believes that any form of cognition involves the presence of a resemblance in the knowing subject, it follows that for someone to have a sensation, that person must have a certain resemblance of the quality in the sensible object, and that resemblance must be caused by that quality. This is the "strong externalist position" examined in the *Sup. Sent*. text. In order to say that one has really or truly sensed something, it neither suffices for the sense to be acted upon if no resemblance is produced, nor for the appropriate resemblance to present itself if it is not produced by the quality in the sensible object—which rules out, e.g., that God or cosmic intelligences could instill the information in me. As Dominik Perler has pointed out in his discussion of Aquinas' critique of the Mutakallimūn's occasionalism in *De potentia*, q. 3, a. 7, for Aquinas, having a perceptual image is not sufficient for having a perception; the image must also have been caused by the very thing of which it is the image. To be so caused is for a perception to have, in Perler's words, the appropriate "intentional structure[32]." This is indeed what Thomas contends in [2c]. Just as a brain in a vat—an example Perler is fond of using—does not really (*tatsächlich*) perceive the external world, but "merely *think(s)... (it)* perceive(s) the external world because of the perfect mental images[33]," so too, we may say, the "phreneticus" Aquinas discusses in *Sup. Sent.* IV, d. 44, q. 2 a. 1 qc. 3 does not truly (*vere*) sense, because his mental images are not caused by the real qualities of the external objects that appear to cause them; and a person whose sensation is not caused by the quality of heat in the hot object would not truly be said to perceive heat. However, as we will now see, Thomas seems to want to offer [3] & [4] as an additional proof of why this must be the case.

[3] For suppose the species of heat in the organ came about through some other agent. [4] Even if touch senses the heat, it would not sense the heat of the fire nor would it sense that the fire is hot, even though the sense, whose judgment is never in error regarding its proper sensible,

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[31] It is worth noting that there is some disagreement on the phenomenology: Peter John Olivi assures us that we "clearly feel that our acts of seeing and thinking *go out*…": "Secundo, quia nos expresse sentimus nostros actus videndi vel cognoscendi exire seu produci a nostris intimis et hoc intime." *In II Sent.*, q. LXXII, ed. B. Jansen (Ad Claras Aquas (Quaracchi): ex Typographia Collegii S. Bonaventurae, 1926), 24.

[32] Perler, *Occasionalimus*, 141.

[33] Perler, *Occasionalismus*, 142.

judged this to be the case.

What does Thomas mean here? On the face of it, there is only one possible thing he *can* mean, and that is that the reason my sense cannot be wrong about the fire's heat being the cause of my sensation of heat is that the heat's *being the fire's heat* counts as part of the sense of touch's proper sensible. If this is what Thomas means, he would certainly have an argument against the Mutakallimūn, because if the fire's being a cause of the heat is part of the sense's proper sensible and the proper sense is never wrong about its proper sensible, then it cannot be wrong about the fire's being the cause of my sensation of heat, and so the Mutakallimūn's argument can't even get off the ground: we sense its falsity! The problem, however, is that the thesis is clearly at odds with Aquinas' own theory of sensation. For Aquinas is very clear whenever he discusses the case of proper sensibles that only the *quality* can count as the sense's proper sensible[34], not the underlying substrate, the sensible *per accidens*[35]. For instance, sight, if it is working properly, is not deceived about perceiving whiteness, though it may err in regard to the nature of the thing that is white, mistaking it for something else, snow instead of flour, for instance. Furthermore, just as Thomas nowhere asserts that substrates are part of a sense's proper object, nor does he anywhere assert or suggest that judging a proper sensible to belong to a substance is part of what the sense infallibly does. So we are left with a puzzle.

So surprising is Thomas's claim here that one might wonder if it isn't a mistake, if not on Aquinas's part, then perhaps on the part of careless scribes or editors. Could this in fact be the case? Alas, there is nothing in the manuscript tradition to suggest that this could be so. There is remarkable agreement between the various manuscript families for this particular passage of the *De potentia*, and none of the very few individual variants omits the controversial words "cuius iudicium in proprio sensibili non errat[36]." We have no choice, therefore, but to consider that the sentence as it stands corresponds to what Aquinas wrote. But then it is inconsistent with what we know to be Thomas's considered position on the issue. Given that there does not seem to be anything in the text that would help us to resolve the inconsistency, we had best simply ask ourselves whether, minus the litigious assertion, there is anything in Thomas' argument that can qualify as a rebuttal of the Mutakallimūn.

I submit that the answer is a tentative 'yes,' provided we keep in mind the remarks made above in relation to [2b], namely that Thomas's phenomenology of perception, at least in some texts, includes two things: the 'resemblance' in the soul, *and* the extramental quality that, Thomas thinks, *manifestly* brings it about. Thus, the resistance a body offers to the contact of my hand produces a resemblance *and* the 'manifest' knowledge' that an external body is its cause.

What appears to emerge from our passage of *De potentia*, 3, a. 7, then, is the suggestion that a global deceptive scenario about the origin of our perceptions such as the one envisaged by the Mutakallimūn must be wrong, not merely because it is inconsistent with a general metaphysical

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[34] See *Super Sent*. IV, d. 49, q. 2, a. 3 co; *Summa theologiae* I, q. 78, a. 3, ad 2.

[35] See, amongst many other texts, *Summa theologiae* I, q. 85, a. 6, co; *De veritate* q. 15, a. 3, ad 1; *De spiritualibus creaturis*, a. 10, ad 8.

[36] There are three variants: alio] aliquo Ab O4 ; calorem ignis nec sentiret ignem esse calidum] ignem calidum Ab ; sentiret ignem calidum cum tamen hoc iudicet sensus] om. N2. I am indebted to Adriano Oliva of the Leonine Commission for providing this information to me.

principle—as was the case in *Sup. Sent.* IV, d. 44, q. 2 a. 1 qc. 3, and in [2a], where the impossibility of my perceptions' being caused by immaterial causes follows from the truth of the proposition that to every passive power corresponds a proper active one—but because it is inconsistent with information that is accessible to the perceiving individual. Of course, such knowledge remains "sub-propositional[37]"; it does not qualify as knowledge in the full-fledged sense of the word, which requires the intervention of the intellect[38]; still, it *is* knowledge to the extent that perception is knowledge. In that sense, the proof of the falsity of the Kalām's theory of perception lies in perception itself, because perception encompasses the resemblance in the soul and the knowledge that that resemblance is caused by an exterior quality. To be sure, this is an odd view for a modern reader; indeed it is one that Aquinas himself does little more than hint at. It is not, however, inconsistent with Thomas's general understanding of perception. What *is* inconsistent with that understanding is the claim in [4a], [4b], and [4a'] that sensing includes the resemblance *and* the knowledge of the nature of the *substance* that underlies the exterior quality, not just the quality itself. This claim is an inexplicable *hapax legomenon* in Thomas's works. But Thomas need not be thought of as subscribing to this odd position for the reader to see why he might have thought he had good reasons to think the Kalām's views untenable.

[37] See Kretzmann, "Infallibility, Error, and Ignorance," 171-177.

[38] *De veritate*, q. 1, a. 9, co; *Summa theologiae* I, q. 16, a. 2, co.; *Expositio Peryermeneias*, lib. 1, l. 3, n. 9.

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Henrik Lagerlund: "The Turn to Epistemology in The Fourteenth Century: Two Underlying Motives", pp. 47-55.

## Henrik Lagerlund

# THE TURN TO EPISTEMOLOGY IN THE FOURTEENTH CENTURY: TWO UNDERLYING MOTIVES

### I.

It is well known by now that the late 13th and early 14th century saw philosophy take a turn towards epistemology and that there was a renewed concern about skepticism. A major reason for this was the implications of John Duns Scotus' new conception of necessity and possibility, which implied a greatly expanded view of God's omnipotence. Very soon a new question was being discussed, namely, whether God is so powerful, that he would be able to deceive us and we would not in principle be able even to know it. Hence, this introduced what we now call external world skepticism.[1] But this was not the only reason epistemology took the center stage at this time in the history of philosophy. There were other reasons as well.

In this paper, I would like to outline two aspects of late 13th-century philosophy that contributed to the epistemological turn of philosophy in the early 14th century. It is the criticism and rejection of the species theory of cognition and the introduction of mental contents. I have written about this before, but here I would like to spell out the arguments a little more clearly.[2]

### II.

The species theory was the dominant theory of cognition in the 13th century and was associated especially with thinkers influenced by Aristotle. It is generally thought to come in at least two versions, namely a version defended by the so-called Perspectivists and represented foremost by Roger Bacon and another version associated with commentators of Aristotle's *De anima* and represented foremost by Thomas Aquinas. The differences between these two views have a lot to do with the nature of the species itself.[3]

The species theory of cognition gives accounts of both sensory and intellectual cognition. I will here foremost be concerned with sense cognition. The general idea is that the sensible species bring the sensible qualities of external objects to the sense organs or, on some interpretations, they are the sense quality itself in the sense organs. Roughly this is the difference between the two main views about sensible species mentioned above. Bacon holds that the species are

[1] See Lagerlund 2010a.

[2] See Lagerlund 2010b and 2011. See also De Rijk 2005, Chapter 3.

[3] See Lindberg 1976.

representations of sensible qualities, while for Aquinas they are theoretical postulates by which the sensible quality is sensed.

Another, historically more accurate, way to draw out this difference between these two views is through the distinction between sensible species existing in the medium or the organ with real or natural being (*esse reale* or *esse naturale*) and spiritual or intentional being (*esse spirituale* or *esse intentionale*). If they have real being, then they are real, extended things existing between the object and the senses, but if they have spiritual being then they are spiritual and non-extended.

The first philosopher to attack the species theory was Peter Olivi (1248-98). He objected to both of the above-mentioned versions of the theory. He developed several arguments against Bacon's version that take species to be representations and real in the medium. One of these objections was that if species multiply through the medium, then we are sensing the last species before the sense organ, not the object itself. The main problem he points to is that the species are representations and as such they are a third kind of entity between the object and the sense organ. It is the representation we sense and not the object.[4] The epistemological problem he points to is the well-known veil of perception problem from 17th century philosophy. We have epistemic access to the representation but not to the object.[5]

He also rejected the version of the species theory defended by Aquinas, who held that the species have spiritual being in the medium. If this is the case, he noted, then they cannot "truly and naturally flow from a natural, corporeal form, not really and truly inform a natural body, that is, the air or the eye" (II Sent. q. 73, III, 87). He added to this that the Perspectivist analysis of light radiation in point form is incompatible with the species having spiritual being, since the point form analysis requires the species to be extended. The whole theory of optics seems then to fall apart.

Hence, in Olivi's eyes, the species theory either leads to representationalism and ultimately to skepticism, or it lacks causal efficacy since a spiritual being cannot efficiently cause anything in a material being. Hence we have no account of how an object causes a cognition of itself in the sense organ. Olivi obviously makes a sharp distinction between the material and extended and the spiritual and non-extended. It is a distinction very similar to Descartes' distinction between *res extensa* and *res cogitans*, a distinction that is less clear in Aquinas' or Aristotle's thinking.

Besides the skeptical implications of Bacon's version of the species theory, one could argue that at least it provides a scientific explanation for the connection between the object and the sense organ. Olivi, however, as Ockham did after him, defended action at a distance. Given such a view there is no need to explain the connection between object and organ, and hence no real need for species either. Olivi instead posited what he called the soul's vital attention. He stressed that since spiritual powers are not corporeal they hence do not require spatial immediacy to act upon their objects. Instead of arguing for an intromission-theory of sense cognition as the species theory, Olivi defended an extramission-theory. He writes:

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[4] See Toivonen 2009, Chapter 4.

[5] See further the discussion below about Ockham.

> Cognitive acts are effected by the [cognitive] power – not, however, through its nude essence. Rather, in all [cognitive acts] an actual attention, actually terminating upon the object, is required […] And therefore, when the exterior thing in-and-of-itself (*per se*) is not placed before the attention, there must be a memorative species placed before it in lieu of the object, which [species] is not the origin of the cognitive act, except insofar as it serves as a term for or representation of the object. (II Sent. Q. 74, III:113.)

Note that Olivi was happy to talk about species in relation to memory, since what we cognize when we remember something is a representation of a past experience.

Another philosopher that followed Olivi in rejecting the species theory was William Ockham (1288-1348). He presented four arguments against both sensible and intelligible species. The arguments he developed were:

(1) The argument from representation,

(2) The argument from spiritual being,

(3) The argument from simplicity,

(4) The argument from parsimony.

Arguments (1), (2), and (4) are in Olivi as we have seen. Argument (4) is based on Ockham's razor and amounts to the argument we have seen in Olivi that species are not needed for sense perception. Ockham also defends action at a distance so he thinks the object cognized can act on the sense organ directly at a distance. He did not share Olivi's view that it is the mind that acts on the object, though.

Argument (2) is also similar to one of Olivi's arguments: Ockham argued that it is a contradiction to claim that any extra mental thing has only 'intentional and spiritual' existence "because every entity outside the soul is a true substance or accident" (III Rep. q. 2 [OTh VI, p. 60, line 3-22]).[6] He held on to Olivi's view that there is a sharp distinction between material and immaterial things and nothing but intellectual souls, angels and God are immaterial. On his view then, the species in the medium cannot have spiritual being as Aquinas had argued.

Argument (1) is again very similar to Olivi's main epistemological argument. Ockham argued that:

> [t]he thing represented needs to be cognized in advance; otherwise the representative would never lead to a cognition of the thing represented as to something similar. For example, a statue of Hercules would never lead me to a cognition of Hercules, unless I had seen Hercules in advance. Nor can I know otherwise whether the statue is similar to him or not. But according to those positing species, the species is something prior to every act of intellectively cognizing the object. Therefore, it cannot be posited on account of the representation of the object.[7]

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[6] Ockham is here obviously excluding other intellective souls, angels and God from his discussion, since they are also substances and exist outside the human soul, but are immaterial or spiritual.

[7] "Item, repraesentatum debet esse prius cognitum; aliter repraesentans nunquam duceret in cognitionem repraesentati tanquam in simile. Exemplum: statua Herculis nunquam duceret me in cognitionem Herculis nisi prius vidissem Herculem; nec aliter possum scire utrum statua sit sibi similis aut non. Sed secundum ponentes speciem, species est aliquid praevium omni actui intelligendi obiectum, igitur non potest poni propter repraesentationem obiecti." (William Ockham, *Rep.*, II, 12-3: Oth V, 274.)

Species are claimed to be like or similar to the objects they represent, but how do we know that the representation is similar to the object it represents? In order for us to know this we must already have cognized the object in advance to have something to compare with. The intelligible species is, however, prior to every act of intellectual cognition, and, hence, we will never be certain that our representations are correct, that is, we will only have knowledge of the representation and not of the object represented in itself.[8]

Argument (3) is not in Olivi and it focuses on the notion of similitude. On one interpretation of the later Ockham's view of cognition, he rejected all talk of similarity between the object and the cognition of the object and in his later writings tried to account for cognition without a notion of similarity altogether.[9] A reason for thinking he should be interpreted as rejecting this view is because a similitude or likeness is a general property that will not uniquely link a cognition to a specific object. Ockham brings up this problem in relation to the species theory. In the passages in the *Reportatio*, which includes his rejection of the species theory, he lists some arguments for the species theory and against his own theory. He for example writes that:

> it is proved that a singular is not understood by an intuitive or an abstractive [cognition], because when some things are similar, then whatever is similar to one is similar to the other; for example, if we take several whitenesses of the same degree, then whatever is similar to one is similar to another of them. But an intellection (an act of understanding) is a similitude of the object, and the intellect understands by that by which it is assimilated to the object.[10]

Later on in the same question he answers that:

> to the other argument I reply that it concludes as much against those who posit species whether in the intellect or in phantasy as it does against me, …, because by this similitude the intellect is no more assimilated to one most similar singular than to another … And therefore similitude is not the precise cause on account of which one thing is understood and not another.[11]

The argument against Ockham's view above is that he cannot properly account for how we grasp singulars since there is nothing on his view to explain why some particular whiteness is similar to some other particular whiteness. On the species view of cognition there is something that explains this, namely the species itself, which is a likeness of the object. In his reply, Ockham does not directly address the problem at hand, but instead he notes that the objection can also be seen as an objection against the species theory of cognition, since a similarity gives us no

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[8] Ockham's epistemological argument against the species theory is in fact an argument against representational realism and his view of the species theory comes very close to Barry Stroud's and Richard Rorty's views of René Descartes' epistemological position (see Stroud 1984, and Rorty 1979).

[9] Claude Panaccio has in his recent book on Ockham argued that one must take the passages where Ockham uses the terminology of concepts as similitudes very seriously. He gives a detailed account how he thinks this should be spelled out in Panaccio 2004, Chapter 7. My own view can be found in Lagerlund 2006 and it is very close to the accounts given in King 2007 and Normore 2007.

[10] "Item, quod singulare non intelligitur intuitive nec abstractive probatur, quia quando aliqua sunt simillia, quidquid est similitudo unius et alterius. Exemplum: si accipiantur multae albedines in eodem gradu, quidquid est simile uni et alteri. Sed intellectio est similitudo obiecti, et per hoc intellectus intelligit per quod assimilatur obiecto." (Rep., II, q. 13, OTh V, 281-2.)

[11] "Ad aliud dico quod illud concludit aequaliter contra ponentes speciem sive in intellectu sive in phantasia sicut contra me, …, quia per illam non magis assimilatur intellectus uni singulari simillimo quam alteri. … Et ideo similitudo non est causa praecisa quare intelligit unum et aliud." (*Rep*., II, q. 13, OTh V, 287.)

account of the singularity of the whitenesses cognized. It might give us an account of the similarity between the whitenesses, but it only does this by not distinguishing between the different whitenesses.

## III.

Around the same time as Olivi criticized the species theory, Henry of Ghent introduced a new understanding of divine ideas. According to Aquinas and many others before him, the divine ideas were identical to the divine nature. In order to give a more credible explanation for how God remains immutable in creation, Henry drew a distinction between the ideas in God's mind and their content, which according to him were *possibilia* or that which could be created. These *possibilia* have an independent existence from the divine ideas, but they do not have real being only a diminished kind of being.[12] Henry hence introduced the notion of mental content in the context of his discussion of divine ideas. The context of this distinction is important since it gives the debate a distinct Platonic flair.[13]

John Duns Scotus was instrumental in adapting this view to human cognition. Scotus implemented Henry's distinction and treated the thing that does the representing as a mental act or concept, which ontologically speaking is an accident of the mind, and the thing represented as the object thought about. Scotus claimed that the accident or mental act is subjectively in the soul, whereas the object being represented is present objectively, or has objective being in the mind. To express the content side of the mental representation, he also said that the object exists in the mind *sub ratione cognoscibilis seu repraesentati* or "insofar as it is something cognizable or represented" (Ord. I, d. 3, pars 3, q. 1, n. 382).[14]

The new distinction introduced by Henry was able to explain a problem with Aquinas' view of intellectual cognition, which had to do with the status of the intelligible species. Aquinas seems to have held that the intelligible species is supposed to play a dual role both as a universal common to all of us thinking it and as my own individual thought. One and the same entity seems not to be able to fulfill both these roles. However, utilizing the distinction introduced by Henry, one can argue that the concept or mental act is an individual part of the mind and the content is common to all with the same thought. This is particularly suitable given the Platonic background of Henry's distinction.

It was exactly in this way that the distinction was taken up by early 14th century philosophers. A good example of how the distinction was used can be found in the Dominican follower of Aquinas, Hervaeus Natalis (d. 1323). He was the first to write an independent treatise on second intentions, *De secundis intentionibus*,[15] which gives us a clear insight into how this distinction

[12] See de Rijk 2005, 80-84. Already Augustine himself pointed out the problem of how God can remain unchanged while creating changeable things. For him the divine ideas are the creative forms of things while at the same time being unchangeable and eternal in the mind of God. By separating the ideas from their content, Henry seems to think that he can explain how the ideas can be eternal and unchangeable at the same time as they are the forms for the created world.

[13] Henry himself makes reference to Plato in this context. See de Rijk 2005, 84, f. 7.

[14] See Normore 1986, Pasnau 2003, and King 2007.

[15] See Dijs 2012 for a critical edition of the text.

was used in the context of human intellectual cognition.

Hervaeus begins his treatise with the question whether the first intention is the intelligible species itself. Before he moves on to an answer, Hervaeus presents three fundamental distinctions. The first one is introduced in the following way:

> On the part of the intellect, 'intentio' is used in two ways. In one way 'intentio' is said of something on the part of the one who understands, namely, of that which in the way of a representation leads the intellect to the cognition of something, whether that [which leads the intellect into this cognition] is the intelligible species, or the act of the intellect, or the mental concept, when the understanding forms a complete concept of a thing. […] In another way 'intentio' is said of that which holds on the part of the thing understood, and in this way the intention is said to be the thing understood itself, insofar as the intellect tends to it as something cognized by the act of the intellect.[16]

This distinction is basically Henry's distinction and can be construed as a distinction between the vehicle of representation (that is, the concept) and the content of the vehicle. Note that the intelligible species is identical with the vehicle of representation and not the content.

The second distinction introduced by Hervaeus is about the use of 'esse intentionale' or intentional being, which he claims can be used essentially and denominatively. He uses an analogy to explain his point. Whiteness is said to be a quality essentially, but the thing that is white is said to be of some quality only denominatively. Hence, in the same way given the above-mentioned distinction, a thing in the intellect is intentional essentially as the content represented, whereas the vehicle of representation is intentional denominatively.[17] On this terminology then the intelligible species (being identical with the concept or vehicle) is only intentional denominatively. By stressing that it is the content that is intentional, Hervaeus very clearly expresses the same view of intentionality that Franz Brentano argues for in the late 19th century. The thing cognized is intentionally in the mind.

The third distinction here introduced by Hervaeus is the one between subjective and objective being in the intellect.

> Something is said to be in the intellect in two ways, namely subjectively and objectively. Something is said to be subjectively in the intellect when it is in it as in a subject, and in this way species, acts of the intellect, or the habit of knowledge are said to be in the intellect. In another way something is said to be in the intellect objectively. This is said in one way about that which is the direct object cognized by the intellect, and in this way everything which is cognized by the

[16] "Ex parte autem intellectus dicitur intentio dupliciter. Uno modo dicitur intentio ex parte ipsius intelligentis esse scilicet illud quod per modum alicuius repraesentationis ducit intellectum in cognitionem alicuius rei, sive sit species intelligibilis sive actus intelligendi, sive conceptus mentis quando format perfectum conceptum de re. […] Alio modo dicitur intentio illud quod se tenet ex parte rei intellectae; et hoc modo dicitur intentio res ipsa quae intelligitur inquantum in ipsam tenditur intellectus sicut in quoddam cognitum per actum intelligendi" (Dijs 2012, 116).

[17] "Secunda distinctio est de hoc quod dico 'intentionale', quod descendit ad hoc nomine 'intentio'. Nam esse intentionale potest accipi essentialiter et denominative. Unde sicut albedo dicit esse quale essentialiter, sed corpus album dicitur habere esse quale denominative, ita etiam illud quod est intentio per essentiam, dicitur habere esse intentionale essentialiter. Sed illud cuius est intentio dicitur habere esse intentionale denominative. Et sic accipiendo intentiones quae sunt ex parte intelligentis (species et actus intelligendi et forma exemplaris), habent essentialiter esse intentionale, quia sunt intentiones rerum; illa autem quorum sunt illae intentiones, dicuntur habere esse intentionale denominative" (Dijs 2012, 118).

> intellect, no matter how much it is outside the intellect, subjectively speaking, is objectively in the intellect. And so when the intellect understands an ox or a horse or whatever else, it is said that the ox, the horse or whatever else is understood is objectively in the intellect. […] In another way something is said to be objectively in the intellect because it is something following upon a thing that is objectively in the intellect, such as being abstracted from Socrates or Plato follows upon *man* [the object we think of when we think of any and every man *qua* man] as it is objectively in the intellect.[18]

This distinction is famous, of course, having been used by Descartes in the *Third Meditation*, and it became standard terminology after Henry of Ghent introduced it.[19] Again notice that the intelligible species is subjectively in the intellect whereas the content or object cognized is objectively in the intellect. The thing objectively in the intellect can, as is clear from the quote, be both an individual and a universal.

These distinctions bring out some of the richness and sophistication of the early 14th century discussions of mental content. Ockham will later in the same century go on to reject the notion of mental content having first himself defended a similar view. It was the Platonic undertones and the strange half-way being of the contents that he found objectionable.[20]

## IV.

The Aristotelian theory of species at least in the hands of Aquinas seems before Olivi to have given rise to very few epistemological problems. From a contemporary perspective this is quite odd, but it seems that Aquinas never worried about skepticism. The two elements of late 13th century philosophy I have discussed in this paper seem to have contributed to changing all this.

The criticism of the species theory undermined the dominant and most well worked out theory of cognition of this time and opened the door for new theories to enter. As one can imagine a whole range of new theories developed in the early 14th century. The criticism as we saw brings up several epistemological problems for theories like the species theory that rely on representations. These were concerns not visible in Aquinas and not seen earlier in the Aristotelian tradition. It also opened a door for skepticism to enter and it became anew a problem that needed to be addressed. In fact one of the motivating factors for any new theory of cognition was that they could handle skepticism.[21]

The introduction of mental content also brought with it new questions. The first kinds of

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[18] "Sciendum ergo quod aliquid dicitur dupliciter esse in intellectu, scilicet subiective et obiective. Subiective dicitur esse in intellectu illud quod est in eo sicut in subiecto; et isto modo species, actus intelligendi et habitus scientiae dicuntur esse in intellectu. Alio modo dicitur aliquid esse in intellectu obiective. Et hoc dicitur uno modo sicut illud quod directe est obiectum cognitum ab intellectu; et isto modo omne illud quod est cognitum ab intellectu quantumcumque sit extra intellectum subiective loquendo, est in intellectu obiective. Et sic quando intellectus intelligit bovem vel equum vel quodcumque aliud, dicitur bos vel equus esse obiective in intellectu vel quodcumque aliud quod intelligitur;… […] Alio modo dicitur aliquid esse obiective in intellectu quia scilicet consequitur rem prout est obiective in intellectu, sicut esse abstractum a Sorte et Platone consequitur hominem prout est obiective in intellectu" (Dijs 2012, 119).

[19] See De Rijk 2005, 85.

[20] See Read 1977 and Panaccio 2004.

[21] See the discussion in Lagerlund (2010b).

questions, which emerge clearly from Hervaeus Natalis' discussions, were about what status the content has. These questions are, however, metaphysical in nature. They were: Does it exist independently of the cognized object? What does it mean to say that the object is in the mind? In what way is the content in the mind? What kind of object is it – a mental, divine or Platonic idea? Other, more epistemologically motivated questions emerged when combining the rejection of the species theory with the idea of mental content. Questions then being asked were: how do we acquire the content? Are there separate causes of the vehicle of the content and of the content itself? What is the cause of the content? Is it the object, the mind or God? These were all new questions in the early 14th century, which forced epistemology to the forefront of philosophy.

It also becomes clear in this discussion how the problem of intentionality is related to the problem of skepticism. The problem of intentionality at this time was especially a problem about how the mental content is acquired and not how a mental state (or brain state) can have content. It acquires the content through a cognitive process, but this, of course, is exactly what connects the two problems. The problem of intentionality, therefore, is an epistemological problem in the early 14th century.[22]

[22] Showing exactly how these questions are related is the topic of a new book I am writing, which has the working title: *Intentionality and Skepticism in the Aristotelian Tradition*. I would like to thank both of the editors, Alex Hall and Gyula Klima, for their comments and suggestions for changes. I also had insightful and challenging questions from my colleague, Benjamin Hill, all of which I could not address in this paper. Thank you!

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