Maritain's Dianoetic/Perinoetic Distinction Is in Aquinas; and Some Other Thomistic Disputes

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This paper discusses some intra-Aristotelian disputes about the relations between the philosophy of nature and empirical science. Section A shows that Maritain's Dianoetic/Perinoetic distinction is already in Aquinas. Section B defends Maritain against the Laval (DeKonick, Mcinerny) and River Forest (Ashley, Wallace, Weisheipl, Vincent Smith) schools. The Laval and River Forest positions are sometimes identified, but I discuss an important difference between them. Section B also offers a more precise way of distinguishing Material from Formal Logic than Yves Simon did in *The Material Logic of John of St. Thomas* (now more aptly known as John Poinsot, thanks to John Deely).

**A.** The texts of Aquinas relevant to dianoetic/perinoetic

**Text 1. De Pot. Q. 9, a. 2, ad 5**

> *Reply 5.* Whereas the essential differences of things are often unknown and unnamed, we are sometimes under the necessity of employing accidental differences to denote (*designandas*) substantial distinctions, as the Philosopher teaches. (*Metaph.* viii)

Comment: Text 1 says that essential differences are *often* unknown to us**,** and so it implies that they are not always unknown to us. Then, it contrasts the implied cases where the essential differences are *not* unknown to those where we *sometimes* employ accidental differences to "denote" substantial differences. Clearly, this text implies the existence of two distinct cognitive ways of relating to essential differences: ( A ) Those cases where they are not unknown to us, and so where we do not need to employ accidental differences to denote substantial distinction, and ( B ) those cases where we need to employ accidental differences to denote substantial distinctions because essential distinctions are unknown to us.

**Text 2. In metaphysica, VII, lect. 12**

> For sometimes necessity compels us to use accidental differences inasmuch as accidental differences are the signs of certain essential differences unknown to us.

Comment: Text 2 again says "sometimes" and contrasts those cases ( B ), where we sometimes use accidental differences because essential differences are unknown to us, to implied cases (A), where essential differences are known are to us. Clearly, the same two distinct cognitive ways of relating to essential differences are implied in this text.

**Text 3. De Veritate Q. 10, a. 1, ad 6**

> *Obj. 6*. An accident cannot be the source of a substantial distinction. But, by his possession of mind, man is substantially distinguished from brute animals. So, mind is not an accident. But a power of the soul is a property of the soul, according to Avicenna and so it belongs to the class of accident. Therefore, mind is not a power, but the very essence of the soul.
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> *Reply 6*. Since, according to the Philosopher, we do not know the substantial differences of things, those who make definitions sometimes use accidental differences because they indicate or afford knowledge of the essence as the proper effects afford knowledge of a cause. Therefore, when *sensible* is given as the constitutive difference of animal, it is not derived from the sense power, but the essence of the soul from which that power comes. The same is true of rational, or of that which has mind.

Comment: Text 3 does not even make internal sense unless we read it to be consistent with the first two texts. Aquinas' reply seems to begin with the flat assertion, contrary to the first two texts, that we never know substantial differences, but then it says that "*sometimes*," not always, accidents of things "afford knowledge of the essence." So Text 3 cannot mean to contradict the first two by saying that we never know substantial differences in any way. But neither can it mean that any accidental differences "afford knowledge of the essence as the proper effects afford knowledge of the cause," for it says that only sometimes do accidents afford that knowledge.

So when Aquinas cites "sensible" and "rational" as not describing the soul's accidents but the soul itself which causes these accidents, he is not classifying sensibility and reason

as the kind of accidents ( B ), referred to in the first two texts, that we know instead of knowing essential differences. In Texts 1 and 2, therefore, "sometimes" refers to cases ( B ) where we do not actually succeed in knowing essential differences via accidental differences, cases where accidental differences leave essential differences unknown. But in Text 3, "sometimes" refers to the opposite cases, cases ( A ) where "those who make definitions use accidental differences because they indicate or afford knowledge of the essence as the proper effects afford knowledge of the cause." Case ( A ) is Maritain's dianoetic knowledge; case ( B ) is Maritain's perinoetic knowledge.

When Text 3 starts by appearing to flatly deny that we ever know any substantial differences, which not only contradicts the first two texts but contradict what Text 3 itself says later, Aquinas must mean either that we can never know essential differences to begin with and/or that at the end of our inquiries there is still an important sense in which we do not know substantial differences. At the end of inquiry, we can in fact "*sometimes*" know essential differences, but we then know them ( A ) through those accidents that are proper effects of the substantial form, rather than in an implied third sense that is only a logical, not real, possibility for us, ( C ): directly knowing substantial forms "in themselves," to use a phrase from Texts 4 and 6, rather than knowing substantial forms by accidental forms.

So Text 3 mentions two alternative cognitive "possibilities" regarding substantial differences, first ( C ), which it rejects, then ( A ), which it accepts as real. And by implication Text 3 alludes to a third possibility, ( B ). For Texts 1 and 2 do not have to be read, as the opening of Text 3 might be read, as even appearing to make the flat assertion that we can never know substantial differences. Text 3 adds a third possibility, ( C ), to those mentioned and/or implied in Texts 1 and 2, and describes in more detail one possibility, ( A ), for knowing essential differences that is implied but not mentioned in the first two texts.

For Aquinas' reply in Text 3 to be true, the statement "when *sensible* is given as the constitutive difference of animal, it is not derived from the sense power, but the essence of the soul from which that power comes," need mean and be verified by nothing more than

that "sensible" as an adjective describes the soul, not the soul's power of sense, while "sense" as a noun describes the power not the soul that has it. The same comment holds for the references to "sensitive," "sensible, " and "rational" in Texts 4 and 6. No stronger interpretation is required, logically, by these texts.

So if Texts 1-3 are not only internally consistent but consistent with one another, this is what we must conclude:

- We never have ( C ) substantial forms (or essential differences, or substantial distinctions) being known "*in themselves*" (Text 4), But *sometimes* we have "knowledge" of them in one of two other ways.
- We can have case ( A ). Sometimes accidents give knowledge of the essence as proper effects give knowledge of the cause (Text 3 and, by their implication, Texts 1 and 2), and then descriptions are "taken from the soul itself" not from its powers (Text 4). This is Maritain's dianoetic knowledge.
- And we can have case ( B ). Some other times accidents only "denote" or are "signs" of essential differences rather than giving knowledge of them as proper effects give knowledge of their causes (Texts 1 and 2 and by implication Text 3), and then accidents such as powers "substitute for substantial differences" (Text 4). This is Maritain's perinoetic knowledge.

Despite any appearance to the contrary, the following Texts, 4, 5 and 6, can and should be read as consistent with this tripartite division. Nothing in them logically necessitates our interpreting these texts in a way that calls for revising this scheme. But interpreting them will illustrate a point that is very much more important than whether Maritain's dia/perinoetic distinction is in Aquinas: **We can't expect students to acquire the philosophical habitus if we teach Thomism by the textual/historical method.** If we first have to be distracted by learning to reconcile texts like these, we will have to spend too much intellectual effort, energy and time for our limited human intellects to have sufficient resources left to acquire the habitus that history itself shows to be by far the most

difficult habitus of all (as measured by philosophy's near impossibility of producing long-lasting and widespread consensus among sociologically defined "experts," that is, experts defined the way experts in all other fields are defined).

And the problem with the textual method goes beyond having to cope with such vocabulary shifts as from "essential differences," to "substantial distinctions," to "substantial differences," to "constitutive differences"; from knowledge of "essence," to "essence of the soul," to "substantial forms *in themselves*" as opposed to knowing them in some other way(s); from "employing" accidents to "denote" any or all of the above to "knowing" any or all of them by accidents, to a difference being "taken from" accidents rather than from them, to "substituting" accidents for them. Some of these vocabulary shifts might not seem very significant on their own but become significant when used in combination with other issues.

In particular, interpreting these texts requires distinguishing cases of proper accidents giving knowledge of a substance as proper effects give knowledge of a cause from cases where accidents do not give us knowledge of substance in that way. The former is what Maritain means by dianoetic knowledge of substance, and Aquinas' texts acknowledge the existence of such knowledge both explicitly (Texts 3, 5 and 6) and implicitly (Texts 1, 2 and 4). But Aquinas' texts cannot be interpreted as saying that this is the only way that accidents can make the substance known. In Texts 1 and 2 this way is only implicit in contrast to cases where accidents are signs of substantial differences.

But more importantly, it is impossible for knowledge of any accident not to give us some knowledge of substantial essence. If accident X exists, we know some substance or combination of substance has the potential for having X. For example, "rational" means, not the power of reason, but having the power of reason, and it is a substance, not an accident, that has the power of (accident of) reason. If Aquinas didn't know that, he didn't know what the substance/accident distinction means. But in most cases, knowing that a substance has accident X does not tell us anything specific to that substance's nature as opposed to the nature of other substances that can have that kind of accident. Minerals, vegetables and

animals can be red (have a disposition to reflect light of a certain wave length). So in most cases, the knowledge of a substance that accidents give us is not dianoetic knowledge; for the accident is not a proper effect of any substance. Such knowledge is perinoetic only. See pp. 61-2 of my "Thomism's Conceptual Structure and Modern Science" in *Facts are Stubborn Things*, ed. Matthew Minerd. So perinoetic knowledge has always existed and certainly long before we developed the methods of modern science, as Maritain knew (*Degrees*, ed. Phelan, p. 204).

Text 4. **ST I, q. 77, a. 1, ad 7**

> *Obj. 7*: Further, an accident is not the principle of a substantial difference. But sensitive and rational are substantial differences; and they are taken from sense and reason, which are powers of the soul. Therefore the powers of the soul are not accidents; and so it would seem that the power of the soul is its own essence.
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> *Reply 7*: Rational and sensitive, as differences, are not taken from the powers of sense and reason, but from the sensitive and rational soul itself. But because substantial forms, which *in themselves* are unknown to us, are known by their accidents; nothing prevents us from sometimes substituting accidents for substantial differences. (My emphasis)

Comment: Text 4 includes a flat denial that ( C ) we can know substantial forms "*in themselves*," but then could be interpreted as describing the two other situations. The reply's first sentence seems to make rational and sensitive (since they are *not taken from* powers and so from accidents but from the soul "itself') the kind of differences the objection calls "substantial." But the last sentence speaks of our being able to substitute accidents for substantial differences. If these readings are correct, there is the case ( A ) where we know differences, like "sensitive" and "rational" (the descriptions used in the objection) that are *not* "taken from the powers of sense and reason, but from the sensitive and rational soul *itself*." And there is the case ( B ) where we "substitute accidents," i.e., powers of the soul, for substantial differences taken from the soul itself. If so, "sometimes" is again used, as in

Texts 1 and 2, for ( B ), times when essential differences are "unknown" to us and so we must "use accidents" instead. That would make case ( B ) Maritain's perinoetic knowledge, since in ( B ) knowledge of accidents substitutes for knowing soul by its accidents as proper effects can give knowledge of the cause, case ( A ), the latter being the only thing that "knowing substantial differences," but not "in themselves," the impossible case ( C ), can amount to.

If we don't read Text 4 as requiring these three distinct cognitive situations regarding substantial forms, Text 4 cannot be consistent with Texts 1, 2, and 3, and Text 4 would even appear to be internally consistent. For the case of "taken from the powers (which are accidents) rather than "from the soul *itself,*" which is what does *not* happen in the first sentence, would be the same as "substantial forms being known by accidents" instead of "in themselves," which is what *does* happen in the second sentence. So the case of "taking differences from the soul itself, rather than from its powers" cannot be the same as "knowing substantial forms *in themselves*." For even when differences are "not taken from the powers of sense and reason, but from the sensitive and rational soul *itself*," "substantial forms are *in themselves unknown to us."*

**Text 5. ST I, Q. 29, a1, ad 3**

> *Obj. 3*: Further, an intentional term must not be included in the definition of a thing. For to define a man as "a species of animal" would not be a correct definition; since man is the name of a thing, and "species" is a name of an intention. Therefore, since person is the name of a thing (for it signifies a substance of a rational nature), the word "individual" which is an intentional name comes improperly into the definition.
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> *Reply 3*: Substantial differences being unknown to us, or at least unnamed by us, it is sometimes necessary to use accidental differences in the place of substantial; as, for instance, we may say that fire is a simple, hot, and dry body: for proper accidents are the effects of substantial forms, and make them known. Likewise, terms expressive of intention can be used in defining realities if used to signify things which are unnamed.

And so the term "individual" is placed in the definition of person to signify the mode of subsistence which belongs to particular substances.

Comment: Where Text 4 seems to say unqualifiedly that substantial differences are unknown, Text 5 seems to qualify that statement by adding "or at least unnamed," as in Text 1. And Text 5 also says that only "sometimes" do we need to substitute accidental differences for substantial (use them "in place of" substantial). Does that mean that at other times we know substantial differences, though they are unnamed? If so, are the "accidental differences substituted at times for substantial" different from the "proper accidents that make substantial forms known," because "they are effects of substantial forms"? In fact, it would be irrelevant, both to the specific objection Aquinas is addressing and to our question about whether accidents can make substances known both dianoetically as in case ( A ) or perinoetically as in case ( B ), if the reply were interpreted as beginning with the unqualified claim that substantial differences are unknown to us and not just unknown "in themselves," case ( C ). And so it would be irrelevant whether Text 5's "accidental differences substituted for substantial" are or are not the same as its "proper accidents that make substantial forms known."

For the objection concerns whether a logical term like "individual" should be used in the definition of a metalogical value like person, not whether and how accidents can make substance known. Aquinas only mentions the use of terms for metalogical accidents, like "simple, hot, and dry," to make an argument by "analogy," in the ordinary, not any technical philosophic, sense of that word, with the use of a term for a logical value, "individual." In introducing the fire example, Aquinas could be interpreted as making a comparison merely with case ( B), "it is sometimes necessary to use accidental differences in case of substantial." A little later, the comparison seems to be with the stronger case ( A ), "for proper accidents are effects of substantial forms and make them known." But the analogy with using "individual" in the definition of "person would be acceptable whether Aquinas was thinking of our knowledge of fire as illustrating either case ( A ) or case ( B ). So however we

interpret its opening, the reply need not and should not be interpreted as intended to contradict anything the other texts say about the possibility of cases ( A ) and/or ( B ).

**N.B.** The examples of "simple," "hot" and "dry" in Text 5, and of "biped," and "able to walk" in Text 6, as opposed to "sensible" and "rational" in Texts 3 and 4, raise an issue to which Maritain said "some modern works should be devoted," namely, "the theory of the proper accident and of . . . . clusters of common accidents." (*Degrees* of Knowledge, Phelan edition, p. 206; McInerny edition, p. 219.) Clusters of common accidents, for example, featherless and biped, can give perinoetic definitions that are coextensive with ("circumscribe" in Maritain's terminology) dianoetic definitions using proper accidents, for example, reason as a proper accident of human beings and the ability to sense as a proper accident of animals. (The ancients thought of "featherless biped" as being coextensive with "rational animal.") I know of no such modern works, even though that which accidents common to distinct natures can reveal about the natures is what Maxwell called our attention to in noting that the same mathematical formulas and graphs can be common to physical phenomena of very different natures. (For not doing things like making use of Maxwell, shame on the historical/textual, as opposed to philosophical, approach of modern Thomists, or, to use Maritain's repeated description, shame on "the laziness of Thomists"! For the historical/textual approach reduces Thomism to commenting on philosophical *work* someone else has already done, rather than advancing that work.)

And it would make no difference to the efficacy of Aquinas' reply to the objection about logical words if he is thinking of simple, hot, and dry as each *separately* being proper accidents of fire, and so giving dianoetic intellection, or as accidents common to fire and other things but whose *combination* gives a perinoetic concept coextensive with fire while its intension can only substitute for fire's substantial difference(s).

**Text 6. In spir. creat., a. 11, ad 3**

*Reply 3*. Because substantial forms in themselves are unknown but become known to

us by their proper accidents, substantial differences are frequently taken from accidents instead of from the substantial forms which become known through such accidents; as, for instance, "biped" and "able to walk" and the like; and so also "sensible" and "rational" are put down as substantial differences. Or it may be said that "sensible" and "rational", insofar as they are differences, are not derived from reason and sense according as these are names of powers, but from the rational soul and from the sentient soul.

Comment: The topic of the article from which Text 6 comes is not whether or how we know the essence of the soul, but rather "Are the powers of the soul the same as the essence of the soul?" The question of how we know substantial differences is addressed only because of the mistaken objection that the powers of the soul must be its essence since sensible and rational are substantial differences. As Aquinas does in some other cases, Text 6 offers *two possible* replies to this objection which claims to show that the powers of the soul are its essence.

The second possible reply is the same as a statement that is unequivocally asserted in the actual, not merely possible, the reply of Text 3, and strongly appears to asserted in Text 4. So no matter how we interpret the first possible reply in Text 6, we are not forced to read Text 6 as contradicting anything in the preceding texts. We simply have to interpret the second reply as the one Aquinas would choose if his back were to the wall.

Neither, therefore, are we forced to interpret the first possible reply as definitively making it Aquinas' view that "biped" and "able to walk" are derived from accidents that make known substantial differences in the same way that sense and reason do. Nor does anything in either reply require being interpreted as eliminating case ( B ). *Contradictiones non sunt multiplicanda sine necessitate*. And again, all accidents do make their substances known to some degree even when not making substantial differences known the way proper accidents do. See the Comment on Text 3.

What follows is a summary defense, from a letter to Prof. Matthew Minerd, of Maritain

on other intra-Aristotelian philosophy of nature/empirical science issues.

**B.** Other Intra-Aristotelian Disputes About the Philosophy of Nature and Empirical Science

I did not intend this reply to be so long. But I realized after starting that this was a chance to summarize these things in one place, and that you might even have occasion to give it to some young Thomists like those you so insightfully discuss. If you do, please mention that I deal with many of these things further in *Causal Realism*, chs. 8, 9 and *passim* (see the "Index of Terminology"), and in "Maritain's Views on the Philosophy of Nature," downloadable at **https://maritain.nd.edu/ama/jm-dok/JM-DOK-8.pdf**. That's a paper I read at a very early AMA meeting whose proceedings are probably out of print. I will post a version of this email on **www.foraristotelians.info** under *Secondary Sources*.

In addition to the DeK school there is the River Forest Dominican school that was led by Ashley, Wallace and Weisheipl. Vincent Edward Smith also agreed with the RF school. People sometimes identify the DeK and RF positions, but there is this one huge difference. By "dialectical," DeK meant there are no demonstrations, in Aristotle's *Posterior Analytics* sense, in modern science. RF's claim to fame is believing that there are sometimes strict, and important, demonstrations in modern science.

The last chapters of Wallace's *The Modeling of Nature* have their biggest defense of the strict demo view. I have only scanned most of that book, but have very closely read about 75 pages looking, with the help of the Index, for an understanding of arguing from truths that are *per se nota* in the sense that their opposites are impossible, contradictory, as known simply from an understanding of their terms. I found no adequate understanding of that in Wallace or in other RF people. (When Weisheipl once said he saw no difference between an example of a truth that was *per se nota* and one that was not, I pointed out that we know the former is true in all *possible* created universes, while empirical science only knows that the latter is true in our actual universe.)

But the first step in responding to them is NOT to get into a textual dispute about the *Posterior* Analytics. Rather, we should explain the concept of self-evident necessity (as in *Causal Realism,* pp. 67-87) with a couple of simple examples from philosophy, math, logic and/or common sense (e.g., no two colors can occupy the same space at the same time). If we can get them to understand that concept and recognize some examples, we can just point out that there are no examples embodying that concept among the *discoveries* that we need the experiments of modern science to know the truth of, e.g., the constancy of the speed of light or the boiling point of water. If we don't convince them that way, then at some point it's not worth the time and effort to continue the debate, as a practical matter.

Concerning the onto-/empiriological analysis distinction, I would first get them to see that it is a *different* question from whether the phil of nature and modern science are distinct according to the strict criterion, abstraction from sensible matter, that Aquinas *chose* to use to distinguish sciences. There are an infinite number of ways to distinguish sciences: sciences first practiced by someone with or without blue eyes, sciences first practiced in ancient Egypt or not, sciences that were mentioned in today's *New York Times* or not, etc. Aquinas offered a very good, and *sufficient*, reason for choosing his criterion for distinguishing sciences in commenting on Boethius's *de Trinitate* and elsewhere. But in arguing whether one criterion is better than another, all you can do is appeal to a further *chosen* criterion for deciding which of the former criteria is better and which is not. And you can argue about that further criterion only by choosing a still further criterion.

The way to avoid the infinite regress is to concede, for the sake of argument and only for that sake, that the phil of nature and modern science are not specifically distinct by the abstraction-from-matter criterion. Then we can point out (1) there is a still a distinction to be drawn between onto- and empirio- concept formation and (2) that there are reasons that distinction can be important, even if it does not cause a specific distinction between sciences on the traditional grounds. (In other words, the onto/empirio distinction is a *different* question from the traditional distinction. Methodologically, dialectically and pedagogically,

*status quaestionae* is still the ~~mother~~, or better, the midwife of all other questions.)

The best way to do those things is to ask them to read the great 4 or 5 pages on onto/empirio in the middle of Simon's "Jacques Maritain's Philosophy of the Sciences." Then make sure they have understood those pages before proceeding. Then we can simply point out factually that for many, and maybe most, philosophical problems about modern science, the onto/empirio distinction is more relevant to solving the epistemic concerns of our contemporaries than is the abstraction-from-sensible-matter distinction. Again, if we can't get someone to see that, it's time to move on.

I just remembered, however, that "Maritain's Views on the Philosophy of Nature," pp. 207-215, has an argument that the phil of nature and empirical science are indeed distinct by the traditional criterion of different ways sensible matter is included or not included in their definitions. That argument looks at the components used, by actual definitions taken from each, to *distinguish* objects (all objects have a *common* element that can exist apart from matter, *being*). There are phil of nature definitions using components that can exist apart from matter, e.g., change, subject of change, substance, act, potency, cause, etc., *although the defined combined object cannot*, e.g., subject of substantial change, actualization specifically of a potency that remains a potency while that actualization exists, etc. But definitions taken from a dictionary of science do not use features that can exist apart from matter to distinguish objects from one another.

If someone disagrees that the mode of defining is how abstraction from matter distinguishes sciences, the burden of proof is on her, since Poinsot and other Thomists, probably including Cajetan, have argued that, while no one that I know of has argued the opposite. And even if the immateriality of the components of their definitions were not how abstraction from matter distinguishes the sciences, that difference and other differences between the phil of nature and empirical sciences are still significant on other grounds.

"Maritain's Views . . . ," pp. 196-207, also has a direct philosophical argument for the dia-/perinoetic distinction. But the simplest way to deal with disputes about that is to take

the opposite tack. Just refer people to the texts from Aquinas that I analyze in "Maritain's Dianoetic/Perinoetic Distinction Is in Aquinas," which I will post in the *Secondary Sources* section of **www.foraristotelians.info**.

DeK and RF, however, agree on their most disastrous view, that you have to prove the existence of an immaterial being, God or the soul, in the phil of nature before you can do metaphysics. Ashley and McInerny (DeK's disciple) have written books defending that fallacy. I believe I have sufficiently refuted them simply by out flanking their arguments with a concrete example of a metaphysical proof, a proof clearly about being as being not as sensible or mobile, from Aquinas that does not assume immaterial existence. See my "Metaphysics and Immateriality," in *The New Scholasticism* (now the ACPQ), 1983, pp. 528-533.

That article then goes on to criticize their arguments directly. They misread texts from Aquinas that are about how we *distinguish* sciences from each other as being about how we *do* various sciences. When we do metaphysics or the phil of nature, we are answering questions about *reality*. When we distinguish sciences from one another, we are answering questions about our *knowledge* of reality. When we ask the latter questions, we are doing what is traditionally called Material Logic, not doing metaphysics or the phil of nature (or psychology, which studies knowledge as itself one kind real being with features and relations that really exist and are not logical beings of reason, i.e., not just *objects* of cognition—see Simon, *The Great Dialogue of Nature and Space, pp. 94-110*).

We don't need to be able to produce a definition of Material Logic in order to see the difference between questions about things as things and questions about things as objects of cognition. Even Simon struggled to define Material Logic because, despite his keen awareness that logic in general concerns objects of cognition as objects, not as things, he did not start by using that principle as the base for distinguishing formal and material logic.

The source of this DeK/RF confusion is twofold. First, the statement that thing X can exist apart from matter is a statement about X as a thing, not as a cognitional object. Then,

why can that statement be the factor determining which science of things has X for its object? Because (1) when we achieve truth, the goal of science, thing and object are identical by hypothesis. The difference between them can only consist of beings of reason. And (2) though logic concerns objects as objects, the primary objects the knowledge of which gives rise to the relations logic studies and to other beings of reason are of necessity real beings that are not cognition-constituted objects. ("Being is what is first known and is that to which all other objective concepts are reduced.")

So it is of the "essence" of logical relations that their first *relata*, the relative *terms*-to-which, of truth and other logical relations, must be cognition-independent existents. By definition, "formal" logic's concepts of cognition-constituted relations abstract from all content belonging to the relata of those relations as extramental existents.[1] But a concept like *certitude of truth caused by awareness of necessary causal relations between features of things as things* (a definition of "science") is a concept that includes features of things as things even though it is a concept of a cognitional relation. So the latter concept does not belong to formal logic, and we need to recognize the distinct kind of logic called material logic.

But can there be any scientific study of cognitional relations defined the latter way (a science of *science* and of other such objects)? Since there are examples of knowably necessary truths about objects that are cognitional relations defined by extramental features of their *relata*, there is scientific logical knowledge that is not "formal" logic in the above sense. For example, a truth like "Demonstrations of God's existence must argue from knowledge about the existence of effects to conclusions about the existence of their cause, not vice versa" is a necessary truth about a logical object, demonstrations, based on characteristics of things as things that are employed in the demonstrations.

The reason there can be scientific knowledge of objects that mix logical and real characteristics is this. The inclusion or non-inclusion of extracognitional feature of things as things, like matter, in different cognitional objects, is *causally* pertinent to, since it is a

causal condition for, the *cognitional* relations to goals that we call "sciences." Science is knowledge of truth whose evidence is necessary causal connections. Necessary causal connections are, first, features of things as things. But when extramental causal connections become objects of knowledge, the knowledge of some truths about them can also cause knowledge of other truths. We call knowledge of truth that is so caused "science." In other words, when our cognitional acts achieve the goal that certain truths about things as things cause knowledge of certain other truths about things as things, those truths have become objects of the kind of cognitional relation to objects that is called science.

So the *relata* of the relation, science-of, are extracognitional causal connections that are causes of *cognitional* effects, effects pertaining to objects as objects, as well as causes of extramental effects, effects pertaining to things as things. For example, extramental causal connections can cause the cognitional effect, certitude, and they can cause different kinds of certitude, e.g., certitude where the cause of knowledge of the conclusion is also cause of the state of affairs expressed by the conclusion (certitude by reasoning from extramental cause to extramental effect) and certitude where the cause of knowledge of the conclusion is an *effect* of the state of affairs expressed by the conclusion (certitude by reasoning from extramental effect to extramental cause).

But a certain kind of non-inclusion of extramental causal connections is essential to our achievement of any knowledge of truth: the non-inclusion in our objects of the individuating effects caused by prime matter. In itself, prime matter is the opposite of intelligibility; for it is pure potency with no intelligible features of its own. Since PM matter cannot diversify things by adding intelligible features of its own to them, it can only diversify by individuating instances of intelligible features that are otherwise the same. (Of course, PM never exists "in itself"; to exist, it has to be caused to be a thing of some intelligible nature by its union with an SF.)

When we have knowledge of that nature by its intelligible features, we have knowledge of that nature insofar as it is caused to be what it is by a SF. But insofar as that

nature is also caused to exist by the principle of unintelligibility, that nature exists in one individual of that nature, not in another individual. So making the intellig-*ability* of an existing nature actually, not just potentially, intell-*ected* requires the non-inclusion of the individuating effects of PM in the object of intellection. What is left included in such objects, however, are features that are still effects of PM to the extent that those features are caused to exist by the union of SF and PM; they are not features belonging to pure spirits. For example, continuous motion as defined by Aristotle, the actualization of what is in potency precisely with respect to a way a thing is still in potency (despite the actualization), can only exist in matter. But instantaneous change, an actualization of a thing with respect to a previous state of potency that never co-exists with that actualization, can exist outside of matter.

So there are different ways or levels of cognitional objects including or not including features and causal relations of things as things that depend of the causality of PM. Among those features are some that are themselves active and passive causal relations that depend on the causality of PM, and so can themselves be objects of truths evidenced by extracognitional causal relations, physical scientific knowledge. But such causal relations can also be nonincluded in objects about which we have scientific knowledge, mathematical scientific knowledge. (Mathematics objectifies abstracted numbers as effects of imaginary abstract causal operations—adding and subtracting—which are initially derived from sensory experience of the physical but which function in mathematics as beings-of-reason in the broad sense, i.e., imaginary operations, used as means of objectifying abstract numbers and numerical relations. For example, we can objectify 4 as the effect of adding 2 and 2 or of subtracting 2 from 6. See *Causal Realism*, pp. 123-128.)

So an intellected object can abstract from the individuating effects of the causality of matter but still include active and passive properties that require the causality of matter. Or it can leave out active and passive causal features but include "formal" features, like size and shape, that could only exist in creatures caused to exist by PM. Or I can abstract from all

features of a thing that require the causality of matter. For the primary thing/objects of our intellection also have features that do not depend on the causality of matter, but only on the causality of the SF. If there were a being that could exist apart from matter, that is, a being that was pure form without matter, the being would still have features which would be features caused by a form alone. Such features would not only be intellect, will and intellectual memory, but metaphysical properties like unity, truth, goodness, beauty, causal efficacy, etc., which are derived from a SF in a such a way that, if forms could exist apart from matter, they would still necessarily have those features.

Since non-inclusion of effects of matter is in some way is essential to all objects of the intellect as objects of the intellect, different ways in which objects include or do not include the effects of matter can distinguish different kinds of causal knowledge, i.e., science. In contrast, consider such differences between sciences as a science first practiced by someone left-handed or one most often practiced on Tuesdays. There is no essential causal connection, at most a *per accidens* or incidental causal connection, between someone's being left-handed or a day's being Tuesday and any feature of any science, or of any other cognitive relation, that is specifically, that is, formally, a *cognitive* feature, like certitude or evidence.

How do we know that being left-handed does not cause any formally *cognitive* feature of any cognitive relation? In fact, what does it even mean to say that? It means that there is no self-evidently necessary *causal* connection between A, which *for whatever reason*, we are agreeing to call a cognitive relation, and what we are agreeing to call being left-handed. (Again, disputes about criteria can only be settled by agreeing on further criteria.) If an opponent wishes to convince us that there is more than a *per accidens* causal connection between someone's being left-handed and some set of cognitive relations being what we call a science, he must show evidence of a necessary causal connection between them, where "necessary" means the opposite is impossible because it contradicts the meanings of the terms we have agreed on.

Historically, distinguishing the sciences is the original locus of the thing/object

distinction. For Aquinas says sciences are distinguished by properties of their objects as objects. A reader could ask "properties of objects as objects in contrast to what?" Cajetan saw that in the context Aquinas meant "as opposed to properties of the objects of the sciences as things." For if we distinguished sciences by properties of their objects as things, there could be a different science for every different kind of thing.

(Thing/object's necessary combining of strict identity and diversity is a source of philosophical disagreement and paradox on a par with Simon's analogical diminish-ment/enhancement! The failure to avoid projecting logic into metaphysics has been the bane of philosophy from Plato to the *Tractatus Logico-Philosophicus*, and beyond. That's why Maritain said nominalism, not skepticism, is the greatest vice of modern philosophy. And that's why later editions of *An Introduction to Philosophy* add a thing/object footnote, between "Conclusion XIII" and "Conclusion XIV," to the discussion of essences as universal, individual and absolutely considered; because the problem of universal is a subcase of the thing/object distinction.)

The second source is the widespread misunderstanding about "*separatio*" in Aquinas' commentary on Boethius' *de Trinitate*. Again, the simplest way to disabuse anyone is to send them to my "A Negative Judgment on the Negative Judgment of *Separatio*" in the "Unfinished Manuscripts" section of foraristotelians.info. Aquinas NEVER brought up *separatio* when discussing metaphysics, only when answering one objection about whether *mathematics* uses it. There, he says math does NOT use it, but that metaphysics does. But Aquinas gives us absolutely no reason, there or anywhere else, to interpret him as saying any more than that metaphysics SOMETIMES uses it, and absolutely no reason to interpret that as meaning any more than that metaphysics sometimes uses the *via negativa*. Reading any more into that statement violates Ockham's razor and contradicts one way Aquinas actually does his own metaphysics, as "Metaphysics and Immateriality" shows.

Notes

1. Since cognition-constituted objects can themselves become objects secondarily,

cognition-constituted relations of the kind that first terminate in cognition-independent things are used in objectifying those secondary objects also. (There can be sentences about sentences, "middle term" can be a middle term, etc.) So one such secondary object can be identical with another (e.g., the middle-term-of-this-syllogism, like "man," and the middle-term-of-that-syllogism) even though neither is a more than secondary object. For neither secondary object is merely what is described (objectified secondarily) in this particular way (e.g., "the middle term of syllogism 1) or that way (e.g., the middle term of syllogism 2). In other words, the fact that to be a middle term is merely to be a secondary object does not mean that a middle term must be only the term of one particular relation of making it a secondary object (e.g., described-as-"middle term of syllogism 1") and not also the term of another relation of making it a secondary object (e.g., described-as-"middle term syllogism 2"). So one secondary object can be identical with a diverse secondary object because, though it is a mere object, it is not confined to being merely what is objectified in this particular way or that. See *Causal Realism*, pp. 147-154.