

# OCKHAM'S *SCIENTIA* ARGUMENT FOR MENTAL LANGUAGE

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## Introduction<sup>1</sup>

William of Ockham famously held that, in addition to written and spoken language, there exists a *mental language*, a structured representational system common to all thinkers (human and angelic), containing both atomic representations (so-called “mental terms”) and molecular representations (including “mental sentences” and “mental syllogisms”). Ockham’s account of mental language has been much studied, but there has been very little discussion of Ockham’s reasons for positing mental language in the first place.<sup>2</sup> In what follows, I present a line of argument by which Ockham seeks to establish the existence of mental language, an argument which to this point has been uniformly overlooked by the secondary literature. In the first half of

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<sup>1</sup> Throughout, I use the following abbreviations when discussing Ockham’s works: *Ordinatio in librum primum Sententiarum* [*Ord.*], *Reportatio in libros II, III, IV Sententiarum* [*Rep.*], *Brevis summa libri Physicorum* [*BrevSumma*], *Expositio in libros Physicorum* [*ExpPhys*], *Expositio in libros Perihermenias* [*ExpPeri*], *Summa logicae* [*SL*], *Quodlibeta septem* [*Quod.*]. All references to Ockham’s works are to the standard critical editions, *Opera theologica* [*OTh*] and *Opera philosophica* [*OPh*].

<sup>2</sup> The secondary literature on Ockham’s mental language is quite large; to start with, see Calvin Normore, “Ockham on Mental Language,” in J.C. Smith (ed.), *Historical Foundations of Cognitive Science: Philosophical Studies Series 46* (Dordrecht: Kluwer Academic Publishers, 1990), 53-70; Claude Panaccio, *Ockham on Concepts* (Burlington, VT: Ashgate Publishing, 2004); and John Trentman, “Ockham on Mental,” *Mind* 79 (1970), 586-590.

the paper I briefly present Ockham's account of mental language and examine a set of texts which, when taken together, show Ockham arguing that positing a mental language is the only way a nominalist can meet certain ontological constraints imposed by Aristotle's account of scientific demonstration. In the second half of the paper, I discuss and evaluate Ockham's argument in greater detail.

### **An Unrecognized Argument for Ockham's Mental Language**

Ockham presents his theory of mental language in a number of seemingly unconnected passages, scattered throughout his corpus; but the main lines of his theory seem to be as follows.<sup>3</sup> In addition to conventional human languages such as English, Latin, and Mandarin, there exists a single mental language which is shared by all human beings (and also by non-human thinkers such as angels). Mental language, like other languages, is a representational system; in addition to sentential representations (so-called *mental sentences* or *mental propositions*), it also contains both subsentential representations (*mental terms* or *concepts*) and even supersentential representations (*mental syllogisms*). Mental language has its own grammar and syntax, according to which mental terms are combined into mental sentences and mental sentences are combined into mental syllogisms. The atomic elements of mental language essentially signify whatever they signify; the signification of any composite element of mental languages, by contrast, is a function of the signification of its components together with its syntax. The utterances of *conventional* languages, on Ockham's picture, have the significations they do in virtue of the relationships they bear to the elements of mental language. Furthermore, this

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<sup>3</sup> Ockham's longest sustained discussion of the central doctrines of his theory of mental language is *SL I.1-13 (OPh I, 7-47)*. Here I ignore a number of scholarly controversies regarding the precise details of Ockham's theory.

representational system serves as an underlying basis for our cognitive activity; thinking, according to Ockham, is just “speaking in mental language.”<sup>4</sup>

If one searches the secondary literature on Ockham’s mental language, seeking for an answer to the question of *why* Ockham posits this system of representations in the first place, one will discover a common refrain: Ockham’s acceptance of mental language largely rests on a few supposed proof-texts, largely taken from Aristotle, Augustine, and Boethius. Normore accurately represents the consensus of the scholarly literature when he states that Ockham simply does not argue for his view: “Early fourteenth century thinkers like Burley and Ockham do not argue for the [Mental Language] Hypothesis but suggest that it is the natural way to understand such writers as Aristotle and Augustine...”<sup>5</sup> Despite this silence among most scholars,<sup>6</sup> I take it that Ockham does take himself to have a reason for positing mental language, and, I believe, this reason is presented several times throughout his corpus. It makes perhaps its most explicit appearances in the prologues to Ockham’s various commentaries on Aristotle’s *Physics*. In the prologue to the *Brevis summa libri Physicorum*, for instance, Ockham gives the following account of the subject matter of Aristotelian science:

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<sup>4</sup> *Quod*. I.6 (*OTh* IX, 36).

<sup>5</sup> Calvin Normore, “The End of Mental Language,” in Joël Biard (ed.), *Le langage mental du Moyen Âge à l’Âge Classique* (Leuven: Peeters, 2009), 297.

<sup>6</sup> Claude Panaccio, by contrast, does claim that Ockham has an argument for mental language in “Mental Language and Tradition: Encounters in Medieval Philosophy: Anselm, Albert, and Ockham,” *Vivarium* 45 (2007). However, it’s a rather strange argument on its face. On Panaccio’s account, Ockham argues that one who already accepts the existence of mental *sentences* on the word of Boethius should thereby posit mental *terms* as well: “Ockham’s [argument], consequently, is the following: since there are three sorts of complex discursive units, as Boethius says, there must be, accordingly, the same three sorts of simple significant units.” (279) As an argument for mental language, this looks to be question-begging: I know of no thinker who accepts that there are (or even might be) sentential mental representations but who rejects the existence of subsentential representations.

But perhaps the argument is intended to convince those who accept the existence of both mental sentences and mental terms but do not believe that mental sentences are *composed* of mental terms. (Thanks to an anonymous referee for alerting me to this possibility.) The argument would then not be circular; yet it still appears highly inadequate, as the passage in question has nothing at all to say about compositionality or why one who admits the existence of mental sentences should conclude that they are composed of mental terms.

[P1] It must be noted that this science – just as with all others – is about universal [concepts] and noncomplex [cognitions], and not of real things. For if it were of real things, these would be either universal real things or particular real things: but it is not of universal real things, because there are no such things (as is proved in *Metaphysics* VII); nor is it of singular real things (as is also proved in *Metaphysics* VII, and is frequently proved elsewhere). Thus, this science is of concepts.<sup>7</sup>

In P1, Ockham briefly lays out an argument of the following form: Aristotelian science must be about either real (i.e, extra-mental) things or concepts. It can't be about extra-mental singulars, for reasons that would be familiar to Aristotelians: singulars are not necessarily existing entities and do not have the requisite intelligibility to be the subjects of scientific knowledge. Furthermore, Ockham argues, science also can't be about extra-mental universals, for (as Ockham takes himself to have shown repeatedly and at length in his corpus) there are no extra-mental universals. So, by process of elimination, Aristotelian science must be about concepts.

Ockham expands upon this consideration in the Prologue to his much longer *Expositio in Physicorum*, saying a bit more about the system of concepts he claims is required by Aristotelian science. There he states that the strictures of Aristotelian science also require that there be mental sentences containing subject and predicate terms, and that the terms of those sentences must possess the semantic property of suppositing for other entities:

[P2] It must be known that a real science is not of real things, but is of concepts suppositing for real things, because the terms of the mental sentences which are known

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<sup>7</sup> *BrevSumma*, Prologue, ch. 2 (*Oph* VI, 5).

supposit for real things. Hence, in the known mental sentence EVERY HEAT IS CALEFACTIVE, a concept common to every heat is made the subject and supposits for every heat...<sup>8</sup>

Taking both **P1** and **P2** together shows Ockham claiming that positing a mental language – a representational system of mental sentences with concepts as constituents, concepts which supposit for extra-mental things – is a way the nominalist about universals can fulfill the requirements of Aristotelian demonstrative science.

I will argue in what follows that Ockham doesn't merely take mental language to be *one* way the nominalist can meet the requirements of Aristotelian science; rather, I take it that throughout many of his discussions of mental language, Ockham asserts that mental language is the *only* way for the nominalist to meet certain ontological constraints laid down by Aristotelian science, such as the requirement that the subjects of such science be imperishable. Taken as a whole, then Ockham's scattered writings on mental language present the following argument for mental language:

#### The Scientia Argument for Mental Language

(ML1) To fulfill the strictures of Aristotelian science, one must posit either extra-mental universals or a representational system that meets certain constraints.<sup>9</sup>

(ML2) The only representational system that can meet these constraints is a mental language.

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<sup>8</sup> *ExpPhys*, Prologue, sec. 4 (*OPh* IV, 12). In this essay I follow a convention of using small capitals to name elements of mental language.

<sup>9</sup> The precise nature of these constraints will be explained below, in the section titled "The Ontology of Aristotelian Science."

(ML3) All theories of extra-mental universals are incoherent.

(ML4) Therefore, to fulfill the strictures of Aristotelian science, one must posit a mental language.

It is quite possible that Ockham is implicitly drawing on Aristotle when he argues in this fashion; though I'm not aware of any place where Ockham explicitly cites the following passage, in the *Posterior Analytics* Aristotle himself suggests that Aristotelian science merely requires positing the right kind of representational system, rather than a theory of universals:

[P3] There need not be any forms, or some one item apart from the many, in order for there to be demonstrations. It must, however, be true to say that one thing holds of many.<sup>10</sup>

Ockham's *Scientia* Argument doesn't just appear in his *Physics* commentaries, though; years before he prepared these commentaries, Ockham drew a similarly close connection between the requirements of Aristotelian science and the need for mental language in his *Ordinatio* on the first book of the *Sentences*. To provide further evidence that Ockham does in fact argue this way, it is to this passage I must now turn.

### **The *Scientia* Argument in Distinction 2 of the *Ordinatio***

In the second distinction of Ockham's *Ordinatio*, Ockham attempts to systematically examine every possible account of extra-mental universals that can be given and to show that

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<sup>10</sup> Aristotle, *Posterior Analytics* I.11 (77a5-7; in Barnes, 16).

each such account is ultimately false or incoherent.<sup>11</sup> He proceeds by moving from what he sees as the most full-fledged realism about universals – namely, that they are real extra-mental items which are really distinct from particulars and are identical to each of their instantiations<sup>12</sup> – to increasingly less realist positions: that universals are really distinct from particulars yet are multiplied according to their instantiations;<sup>13</sup> that universals are only formally distinct from and so exist in ordinary particulars;<sup>14</sup> and, lastly, that universals are in no way distinct from ordinary particulars, but nevertheless there is still "something in some way really universal and common in extra-mental reality."<sup>15</sup>

Near the beginning of this extended treatise on universals, Ockham considers an indispensability argument that seems to have had a certain amount of purchase for his contemporaries; call this *The Indispensability Argument for Universals*. The Indispensability Argument is meant to establish that there are real extra-mental universals; as presented by Ockham, the argument goes as follows:

[P4] Secondly, some argue that a real science is about true real [universal] things outside the soul, because this is what distinguishes a real science from a rational science. And since no science is primarily of real singular things (as is clear according to the

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<sup>11</sup> Ockham concludes his discussion by claiming that he has shown "that no real thing outside the soul – either in and of itself, or by means of something else added to it (whether real or merely conceptual), and no matter how it is considered or thought about – is a universal. Thus it is as impossible that some real thing outside the soul be in any way universal ... as it is impossible for a man to be an ass." (*Ord.*, d. 2, q. 7; *OTH* II, 248-249)

<sup>12</sup> Among medieval authors, such a view seems to have been rare, though Paul Vincent Spade attributes such a view to Walter Burley in *Five Texts on the Mediaeval Problem of Universals* (Indianapolis: Hackett Publishing, 1994), 115, n. 1.

<sup>13</sup> This is roughly the position of William of Alnwick, a student of Scotus and contemporary of Ockham. See Alnwick's *Sentences* II, distinction 3, question 1.

<sup>14</sup> This is the position of Scotus himself. See his *Ordinatio*, d. 3, p. 1, qq. 1-6, (Vatican VII, 391-494).

<sup>15</sup> *Ord.*, d. 2, q. 7 (*OTH* II, 225).

Philosopher in *Posterior Analytics* book I and *Metaphysics* book VII), thus there are some real [universal] things outside the soul in addition to the singular real things.<sup>16</sup>

The “real sciences” [*scientia realis*] are those that are about extra-mental reality, such as physics or theology; these are contrasted with “rational sciences” [*scientia rationalis*] such as logic and grammar, which concern themselves with words and other signs. Now, the indispensability argument given in **P4** alleges that the character of a real science straightforwardly entails the existence of extra-mental universals, since such a science must be about extra-mental universals.<sup>17</sup>

The word 'about' is ambiguous here, though. As the Scholastics understood Aristotle’s *Posterior Analytics*, a science is a collection of scientific demonstrations; as Ockham and his contemporaries recognize, such a science may be about a given item (or items) in the sense that the item is a *subject* of that science or in the sense that the item is an *object* of that science.<sup>18</sup> A *subject* of a given science is an item of which the demonstrations of that science predicate various attributes; in Aristotle’s words, the subject is that “whose attributes—i.e., the items incidental to it in itself—the demonstrations make plain.”<sup>19</sup> In other words, a subject is ultimately what the *predications* of the science are about. An *object* of a science, by contrast, is

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<sup>16</sup> *Ord.*, d. 2, q. 4 (*OTh* II, 103).

<sup>17</sup> See *ExpPhys*, Prologue, sec. 4 (*Oph* IV, 11-12).

<sup>18</sup> My terminology here follows Ockham: “There is a difference between the subject [*subjectum*] and the object [*objectum*] of a science, because a subject of a science is the subject of a conclusion, but the object of a science is that which is known and which terminates the act of knowing.” (*Ord.* I, Prologue, q. 9; *OTh* I, 266). This usage is not universal among Ockham’s contemporaries. For just one example, Aquinas, in his commentary on Boethius’s *De trinitate*, uses the terms ‘*objectum*’ and ‘*materia*’ when he is talking about the subject matter of the sciences (see *Super Boetium de trinitate*, part 3, q. 5, a. 1, *resp.*). Aquinas does, however, use ‘*subjectum*’ in the discussion in *Summa Theologiae* Ia, q. 1, a. 7, when he asks whether God is the *subjectum* of the science of sacred doctrine.

<sup>19</sup> Aristotle, *Posterior Analytics* I.7, 75b1-2 (in Barnes, 12).



an item which actually *comes to be known* via scientific demonstration; it is whatever item is the direct object of the act of knowledge that results from considering the demonstration. So while a subject of science is what the predications are about, an object of science is what the knowledge of the science is about.<sup>20</sup>

Given this, it is not hard to see why the objects of the sciences were commonly seen to be some kind of propositional item, while the subjects of sciences would be non-propositional. The objects of science are propositional because propositional entities are the direct objects of acts of knowing; the subjects are non-propositional, however, since the subject of an act of predication is typically some kind of non-propositional item.

Given this distinction between the subjects and objects of science, then, the Indispensability Argument quoted in **P4** is intended to show that the subjects of the real sciences must be extra-mental universals. This reasoning seems to have had a broad appeal with the Scholastics: Henry of Harclay attributes this very argument “to many,”<sup>21</sup> and the conclusion that the subjects of Aristotelian science are extra-mental universals was held in some fashion or other by many Scholastics, including Aquinas, Scotus, and Henry of Ghent. But, of course, as Ockham rejects the existence of any sort of extra-mental universal, he cannot accept the upshot of this argument. Nor is he satisfied with the response given by Harclay, who says that ordinary

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<sup>20</sup> The need for such a distinction arises in part from the fact that the question of what *scientia* is about is ambiguous, as the Latin word ‘*scientia*’ both can mean a scientific discipline and can also mean an instance of knowledge.

<sup>21</sup> The Indispensability Argument can be found in the *Ordinary Questions* of Henry of Harclay, written at most a handful of years before Ockham's *Ordinatio*; Harclay claims that the argument has been given “by many” (Question XIV, n. 18; in Henninger, 604-605). Though Ockham himself presents this argument as a consideration in favor of a very strong version of imminent realism about universals (namely, that universals are really distinct – and thus separable – from their instances), the fact that Harclay ascribes this argument to many indicates that it was seen as establishing a far weaker form of imminent realism, given how few of their contemporaries held such a strong position. Indeed, Harclay himself presents the argument as a consideration in favor of Scotus's more moderate view.

particulars are the subject of science, but only when considered confusedly and abstractly.<sup>22</sup>

Rather, Ockham responds to the Indispensibility Argument of **P4** as follows:

[P5] I say that real science is not always<sup>23</sup> of real things (speaking of the things which are immediately known), but is of other things that only supposit for the real things. In order to understand this, and because many things have been and will be said by some who are untrained in logic, it must be known that every science, whether real or rational, is only of sentences regarding those things which are known, because only sentences are known. A sentence, however (according to Boethius in Book I of his commentary on *De interpretatione*), has threefold being, namely, in the mind, in speech, and in writing. That is to say, some sentences are only conceived and understood, others are spoken, and others are written.<sup>24</sup>

Ignore for the present the discussion of which things are "immediately known" and examine the justification Ockham gives for introducing mental sentences here. It may seem that Ockham is just engaging in a bit of proof-texting: it's natural to read Ockham as saying here that "according to Boethius" there are sentences in the mind, and thus Ockham sees it as legitimate to utilize them in his philosophical speculations. But this, I contend, is not the force of this passage at all.

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<sup>22</sup> See Henninger, 661-663.

<sup>23</sup> Ockham's wording here suggests that real science is *sometimes* about real things and *sometimes* about concepts ("things which supposit for other things"). This seems to me contrary to everything else he has to say on the matter; one should thus not read too much into the 'always' here.

<sup>24</sup> *Ord.*, d. 2, q. 4 (*OTh* II, 134).

Part of the problem with understanding the argumentative force of passage **P5** is that the numerous parentheticals and rhetorical asides in the passage can distract from Ockham's main point; if we strip all that away, we are left with a much more straightforward claim:

**[P5\*]**... I say that real science is ... [of] things that only supposit for real things. In order to understand this ... it must be known that every science ... is only of sentences ...

[However], some sentences are only conceived and understood, others are spoken, and others are written.

Ockham's claim here is that all the subjects of science are "things that supposit" (namely, words and/or concepts), while all the objects of science are *sentences* (and as I will make clear later, mental sentences in particular). But how is this supposed to work? Ockham fills in the answer just a few paragraphs later:

**[P6]** Yet because the terms of some sentences stand and supposit personally, namely for the external real things themselves (as in the mental sentences 'EVERY MOBILE THING IS PARTLY IN THE TERMINUS A QUO [AND PARTLY IN THE TERMINUS AD QUEM]', 'EVERY HUMAN IS RISIBLE', 'EVERY TRIANGLE HAS THREE [SIDES]', and so on), there is said to be real science of such sentences. The terms of other mental sentences supposit simply, namely for the concepts themselves (as in 'EVERY DEMONSTRATION IS FROM TRUE FIRST [PRINCIPLES]', 'HUMAN IS A SPECIES', and so on); and so there is said to be rational science of such sentences. So then, it doesn't matter at all for real science whether the terms of the known mental sentence are real external things or are only in the soul, provided that

the terms stand and supposit for real external things; and so it is not necessary on account of real science to posit any such universal things really distinct from singular things.<sup>25</sup>

What distinguishes a real science like physics from a rational science like logic, on Ockham's view, is not that the real sciences have extra-mental universals for subjects while the rational sciences have concepts for subjects; rather, the difference between them rests upon the different modes of *supposition* had by their subjects: The subject (or subjects) of a real science supposit *personally* in the conclusions of that science, while the subject(s) of a rational science supposit *simply* in the conclusions of that science. To put it casually, the concepts which are the subjects of physics refer to extra-mental particulars, while the concepts which are the subjects of logic refer to intra-mental particulars; and this, Ockham thinks, is sufficient to distinguish the real sciences from the rational sciences.

I must now take a moment to quickly summarize and make explicit the outlines of the theory Ockham ultimately constructs concerning how mental language is supposed to be an ontology for Aristotelian science. After seeing this fuller description of the theory, we will be better equipped to assess Ockham's Scientia Argument for mental language.

According to Ockham, an Aristotelian science like geometry or physics is a collection of scientific demonstrations. A demonstration is a certain kind of syllogism – namely, a syllogism which has two necessary truths as premises and which brings about knowledge of a previously unknown necessary truth<sup>26</sup> – and syllogisms will themselves turn out to be elements of mental language that are composed of mental sentences.<sup>27</sup>

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<sup>25</sup> *Ord.*, d. 2., q. 4 (*OTh* II, 137).

<sup>26</sup> "In the beginning it must be known that, according to the teaching of Aristotle, a demonstration is a syllogism producing knowing. ... [Here] 'knowing' is taken for evident comprehension of a necessary truth brought about by evident comprehension of two necessary truths (placed in the proper mood and figure), so that those two

With this account of the nature of demonstration, Ockham turns his attention to the subjects and objects of *both* the scientific demonstrations *and* the scientific discipline as a whole. An object of scientific demonstration, Ockham decides, cannot be anything other than that which is proved by the demonstration, and what is proved is the sentence that serves as the argument's conclusion. So, the object of scientific demonstration must be a mental sentence.<sup>28</sup> Likewise, the subject of such a demonstration is, Ockham tells us, nothing other than the subject-term of the argument's conclusion, since the subject-term is that which is having attributes predicated of it.<sup>29</sup> For example, with respect to Aristotle's canonical example of scientific demonstration ("the planets are not far away, and what is far away does not twinkle, therefore the planets do not

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truths make the third truth (which otherwise would have been unknown) known evidently." (*SL* III-2, ch. 1; *Oph* I, 505-506). I ignore here for ease of presentation Ockham's parenthetical comment, which refers to his view that only syllogisms in the modes Barbara (a syllogism having two universal affirmative premises and a universal affirmative conclusion) and Celarent (a syllogism having one universal affirmative premise, one universal negative premise, and a universal negative conclusion) count as demonstrations.

<sup>27</sup> "...passions of the soul...as well as mental sentences, syllogisms, and all universals, are nothing other than certain *ficta* in the soul having only objective being (that is, being cognized), really existing nowhere." (*ExpPeri*, Prologue, sec. 10; *Oph* II, 370) Cf. *Ord.*, Prologue, q. 8 (*OTh* I, 218-219): "I say that there can be a single habit of both principles and a conclusion. This is proved, for of what there is apt to be a single act, there can be one habit. But there can be one act with respect to the premises and conclusions, because it is no more repugnant that a syllogism composed from many sentences be understood by one act than that a sentence composed from many terms [be understood by one act]; but a sentence is understood by a single act; therefore, etc."

<sup>28</sup> This is a subtle point that some of Ockham's interpreters have either missed or at least not made explicit, implying that Ockham's view is merely that *sentences* (of whatever kind) are the objects of knowledge. For instances of this, see Gordon Leff, *William of Ockham: The Metamorphosis of Scholastic Discourse* (Manchester, UK: Manchester University Press, 1975), 320-327: the objects of knowledge are "conclusions" or "propositions," 320-327; Armand Maurer, *The Philosophy of William of Ockham in the Light of Its Principles* (Toronto: Pontifical Institute of Mediaeval Studies, 1999), 142: "the object of a science [is] the whole proposition"; and even the writer of the Ockhamist *Tractatus de Principiis Theologiae* (*Oph* VII, 538): "the known conclusion is the object of a science". Ockham's colleague Walter Chatton has it right when he attributes to Ockham the view that the object of scientific knowledge is a "complex in the intellect" (*Prologus*, q. 1, art. 1; ed. Wey, 21); see also the discussion in Susan Brower-Toland, "Ockham on Judgment, Concepts, and the Problem of Intentionality," *Canadian Journal of Philosophy* 37 (2007), 67-110.

<sup>29</sup> "...the subject of scientific knowledge is the subject of the conclusion, while the object of a science is that which is known and terminates the act of knowing. This, however, is the conclusion which is known." (*Ord.*, Prologue, q. 9; *OTh* I, 266) See also *ExpPhys*, Prologue, sect. 3 (*Oph* IV, 9): "The object of scientific knowledge is the whole known mental sentence, and the subject is part of that sentence, namely, the subject term."

twinkle”) the object of the demonstration is the mental sentence THE PLANETS DO NOT TWINKLE, and the subject of the demonstration is just the mental term PLANETS.<sup>30</sup>

Finally, Ockham extends this line of reasoning to the science as a whole: since a science just is a collection of scientific demonstrations, an object of a science – that at which the science as a whole is directed – can’t be anything other than an object of one of those individual demonstrations. Thus, he concludes a science such as astronomy has many objects; the objects of astronomy are all the mental sentences demonstrated in that science, such as THE PLANETS DO NOT TWINKLE, THE MOON IS SPHERICAL, THE STARS ARE FAR AWAY, and so on. Similarly, to be a subject of a science is nothing other than to be the subject-term of the conclusion of one of demonstrations contained in the science; in stark contrast to his predecessors, then, Ockham denies that each science has but a single subject.<sup>31</sup> Rather, a science has as many subjects as there are distinct subject terms in the science’s conclusions. Thus the subjects of astronomy include (but are not limited to) mental terms such as PLANETS, MOON, and STARS; and where Aquinas might have insisted that the sole subject of geometry is magnitude, Ockham claims that geometry has as subjects the concepts TRIANGLE, SQUARE, POLYGON, ANGLE, HYPOTENUSE, LINE, POINT.<sup>32</sup>

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<sup>30</sup> Aristotle’s example comes from *Posterior Analytics* I.13 (78a30-78b4).

<sup>31</sup> "In the way in which the Philosopher takes ‘subject’ in the *Posterior Analytics*, the very same thing is the subject both of the conclusion and of the science; and it is called the subject [of the science] only because it is the subject of the conclusion." (*ExpPhys*, Prologue, sec. 3; *Oph* IV, 9)

<sup>32</sup> "So I say that the nature of a subject is nothing other than to be made the subject of some predicate in a sentence known by scientific knowledge properly speaking, so that universally the same thing and under the same *ratione* is the subject of a science and the subject of a scientifically known conclusion" (*Ord.*, Prologue, q. 9; *OTh* I, 247-248) See also *ExpPhys*, Prologue, sect. 3 (*Oph* IV, 9): "The same thing is the subject of a conclusion and of the science; for nothing is called a subject except because it is the subject of a conclusion. And so when there are many conclusions having many subjects, ... then of that science which is aggregated from all the instances of scientific knowledge of those conclusions, there is not some one subject, but there are many subjects of its many parts."

For Aquinas’s opinion on the subject of geometry, see his *Expositio Posteriorum*, book I, lectio 15.

With that summary of his theory in hand, recall that I claimed that these passages from the *Ordinatio* and from his *Physics* commentaries (namely, passages **P1**, **P2**, and **P5**) are a manifestation of what I named the Scientia Argument, whereby Ockham is arguing for the existence of mental language:

The Scientia Argument for Mental Language

(ML1) To fulfill the strictures of Aristotelian science, one must posit either extra-mental universals or a representational system that meets certain constraints.

(ML2) The only representational system that can meet these constraints is a mental language.

(ML3) All theories of extra-mental universals are incoherent.

(ML4) Therefore, to fulfill the strictures of Aristotelian science, one must posit a mental language.

But given that no other scholars have identified such an argument in Ockham's works, let alone in such well-known passages as the second distinction of the *Ordinatio*, why think that this is how Ockham is ultimately arguing here? For several reasons: The first is simply that Ockham seems to indicate that this is exactly what he is doing; he concludes his reply to the Indispensability Argument by stating that what he has done by positing mental language is to provide an alternative ontology for Aristotelian science, one that does not require positing extra-mental universals (thus Ockham in **P6**: "...so it is not necessary on account of real science to posit any such universal things really distinct from singular things").

Second, Ockham regularly links the theory of mental language to the demands of Aristotelian science, especially in his scientific works (as in passages **P1** and **P2**, for example). In those passages, Ockham reiterates that taking the objects of science to be mental sentences and the subjects of science to be concepts is intended to replace the positing of extra-mental universals in these roles.

Lastly, Ockham's philosophical methodology seems to commit him to provide *some* reason for positing mental language; his eponymous razor states that entities should not be posited unless they are vindicated by experience, religious authority, or demonstrative argument.<sup>33</sup> As such, it would appear to be a significant lacuna in his philosophical project were he to entirely refrain from providing an argument for mental language. Given that the discussion in the second distinction of the *Ordinatio* from which passages **P4**, **P5**, and **P6** have been taken is the first time in his corpus that he presents all the core elements of the theory of mental language, this would be a reasonable place to expect such an argument to make an appearance.<sup>34</sup>

I conclude that Ockham indeed does argue this way; the natural question to consider is then whether the Scientia Argument is sound. Assessing the truth of premise ML3 by determining whether or not there is some coherent realist theory of universals is far beyond the scope of this article.<sup>35</sup> Instead, I will focus my attention on ML1 and ML2; my project in what

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<sup>33</sup> See, among other places, *Ord.*, d. 30, q. 1 (*OTh* IV, p. 290).

<sup>34</sup> The only extant texts in Ockham's corpus that are earlier than the *Ordinatio* are his *Reportatio* on Books II-IV of the *Sentences*; but mental language is largely unmentioned in those texts, apart from a few remarks embedded in a discussion of angelic communication (see *Rep.* II.16; *OTh* V, 359-381). Mental language also makes a very brief appearance in the third question of the Prologue to the *Ordinatio*, alongside a promise that a fuller explanation of the theory will come later; this promissory note is presumably being redeemed in *Ordinatio* dist. 2 (see *Ord.*, Prologue, q. 3; *OTh* I, 134-135).

<sup>35</sup> Even determining the extent to which *Ockham* is successful at disproving the specific theories he considers to be incoherent would be a project in itself. For attempts to do just this, see Marilyn McCord Adams, *William Ockham*, 2 vols. (Notre Dame, IN: University of Notre Dame Press, 1993), chs. 1-2, and Martin Tweedale, *Scotus vs. Ockham: A Medieval Debate Over Universals*, vol. 2 (Lewiston, NY: Edwin Mellen Press, 1999).



remains will be to discuss the reasons Ockham gives for claiming that only mental language is the right kind of representational system to fulfill the requirements of Aristotelian science.

## The Ontology of Aristotelian Science

Aristotle's *Posterior Analytics* sets forth a laundry list of requirements for scientific demonstration. Here I focus on just three requirements that constitute the main constraints on the ontology required for science:<sup>36</sup>

- (C1) The subjects of scientific demonstration are imperishable.<sup>37</sup>
- (C2) In a scientific demonstration, it is demonstrated that some attribute necessarily belongs to the subject of the demonstration.<sup>38</sup>
- (C3) The objects of scientific demonstration are necessary truths.<sup>39</sup>

The first premise of the Scientia Argument, ML1, claims that these three constraints from the *Posterior Analytics* can be met only by either a theory of universals or an appropriate representational system. It's not all that difficult to see how these constraints might be satisfied by a theory of universals. On such a scheme, the subjects of science are imperishable universals

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<sup>36</sup> What Aristotle lays down as constraints for *scientific demonstration* in particular come to be widely seen as requirements for *science* in general. Thus Aristotle's stipulation that the subjects of scientific demonstration must be imperishable is taken to also be claiming that the *subjects of science* must be imperishable, and similarly it is thought that the *objects of science* must be necessary truths, just as the objects of scientific demonstrations are supposed to be. Although most Scholastic authors do not postulate any difference among the subjects/objects of a scientific demonstration, the subjects/objects of scientific knowledge, and the subjects/objects of the scientific discipline as a whole, there is at least the logical space to think that these could differ.

<sup>37</sup> "There is no demonstration of perishable things...because nothing holds of them universally but only at some time and in some way." (*Posterior Analytics* I.8, 74b24-26, in Barnes, 13)

<sup>38</sup> "Since in each kind whatever holds of something in itself and as such holds of it from necessity, it is clear that scientific demonstrations are concerned with what holds of things in themselves..." (*Posterior Analytics* I.6, 75a29-32, in Barnes, 12)

<sup>39</sup> "If there is understanding *simpliciter* of something, it is impossible for it to be otherwise." (*Posterior Analytics* I.2, 71b16-17, in Barnes, 2) Also: "What is understandable in virtue of demonstrative understanding will be necessary." (*Posterior Analytics* I.4, 73a21-23; in Barnes, 6)

and a scientific demonstration indicates necessary connections among these universals; for example, by proving that *risibility* necessarily belongs to *humanity*. Thus the object of demonstration – what becomes known – is this necessary connection between the attribute and the subject; the knowledge of this connection is thus knowledge of a necessary truth.<sup>40</sup> (The resulting theory is in some ways evocative of David Armstrong’s view that scientific laws express necessity relationships among properties.<sup>41</sup> On such a view, even the demonstration itself might be seen, not as a set of linguistic sentences, but rather as some real extra-mental collection of these ontological connections among universals.)

It’s a bit more difficult, though, to see how a representational system like a language is supposed to be able to satisfy these constraints; explaining this (and showing why Ockham thinks only *mental* language can ultimately succeed at doing so) will be the aim of the remaining sections of this essay. Before turning to that project, though, one thing must still be done to justify ML1: ML1 claims that either a theory of universals or an appropriate representational system are the *only* ways to meet the ontological constraints of Aristotelian science; some justification must be given for the exclusion of any other possibilities.

The main ontological opponent that Ockham sees as relevant here is a proposal held by his contemporary Walter Chatton, who held that the objects of science were non-sentential objects in the world, rather than linguistic items like sentences.<sup>42</sup> Ockham’s response to Chatton’s proposal is rather straightforward: Ockham simply notes that non-sentential objects

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<sup>40</sup> I do not assert that any Scholastic author held precisely this position on the ontology of science; but the basic idea that the subjects of science are some kind of universal entity (whether common natures, formal aspects of particulars, ideas in God’s mind, etc.) is one shared by Aquinas, Giles of Rome, Henry of Ghent, and Duns Scotus.

<sup>41</sup> See David Armstrong, *What is a Law of Nature?* (Cambridge: Cambridge University Press, 1983).

<sup>42</sup> Thus Chatton: “An act of believing, as well as an act of knowing and an act of opining . . . have an external real thing for their object, and not a sentence [*complexum*].” (*Prologus*, q. 1, art. 1; ed. Wey, 20-21)

lack a key property that the objects of science must have. For the objects of science to be necessary truths they must be the sort of thing that can be true or false, and no non-sentential object can have a truth value. Rather, Ockham insists, only sentences can be true or false.<sup>43</sup>

Of course, Ockham's response isn't the end of the story here. Many of his contemporaries *did*, in fact, think that ordinary particulars can be true or false; that's a core component of the slogan that being, truth, and goodness are convertible. Adjudicating this debate would require an essay all its own; but Ockham does have additional considerations to marshal here. Any attempt to provide an ontology for science which doesn't posit either extra-mental universals or some sort of representational system will have to say that the subjects of science are particulars, and that the predications made by scientific demonstrations indicate relations between substances and their properties, rather than merely being relationships between linguistic elements (as Ockham takes them to be). But in response, Ockham offers two reasons for thinking that the predications in scientific demonstrations must be merely linguistic. First, he claims that predications are sentences in which two terms are connected by the 'is' of predication. For predication to be a metaphysical relationship, then, it would have to be that non-linguistic items in the world could enter into the structure of a sentence; but this leads to absurd consequences.<sup>44</sup>

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<sup>43</sup> "[The act of knowing scientifically] is a complex act, having a complex for its object, because this act is one by which something true is known. ... Therefore, only what is true is an object of scientific knowledge." (*Quod.* III.8; *OTh IX*, 234-235)

<sup>44</sup> Ockham provides eight reasons for denying that non-linguistic items can enter into the structure of a sentence in *Quod.* III.12 (*OTh IX*, 246-250). These eight arguments vary widely in quality; the most interesting among them are the second and the eighth. Ockham's second argument claims that if ordinary objects could enter into the structure of a sentence, then a sentence could be a human person, since it could contain a body and soul, and anything composed of a body and a soul is a human being. The eighth argument argues that if ordinary objects could enter into the structure of a sentence, then a sentence could contain God as a part; but necessarily God is not a part of any further object.

It should be noted that, in his earliest works, Ockham *did* believe that ordinary particulars could enter into the structure of a mental sentence, a position he seems to have taken from Walter Burley. Ockham came to reject

Second, Ockham points out that at least some of the predications his contemporaries agree with *must* be merely linguistic, for there are predications which are true of God, but since God is simple, there are no accidents which inhere in God. Thus a predication such as "God is wise" must be merely a linguistic relationship, rather than a metaphysical one relating God and wisdom. And so, Ockham appears to argue, if theology requires us to state that *some* of our predications are linguistic, parsimony considerations should lead us to think that *all* predications are linguistic.<sup>45</sup>

So then, if an ontology of ordinary particulars can't meet the ontological constraints of science for the reasons just given, what remains is the disjunction given in ML1: a theory of universals is needed unless an appropriate representational system can be supplied. In what remains, I'll at last turn my attention to premise ML2 of the Scientia Argument, explaining why Ockham thinks that conventional spoken and written languages fail to meet the ontological constraints and a mental language must instead be posited to serve as the ontology of Aristotelian science.

### **Mental Sentences as the Objects of Scientific Demonstration**

Ockham has two main lines of argument for his claim that mental language is the only kind of representational system that can meet the ontological constraints for Aristotelian science. The first of Ockham's reasons against conventional representational systems argues for the claim

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this view by the time he begins revising his lectures on the *Sentences* into his *Ordinatio* on book 1. For a study of Ockham's about-face here, see Elizabeth Karger, "Mental Sentences According to Burley and to the Early Ockham," *Vivarium* 34 (1996), 192-230.

<sup>45</sup> So far as I know, Ockham never gives this argument in full. But in several places he seems to provide an enthymeme of this argument; see, for instance, *SL* I.37 (*OPh* I, 104-106): "Of God there are predicated attributes proper to him; but there are no other real things inhering in him; and so an attribute is not some real thing inhering in its subject."

that mental sentences must be posited to be the objects of scientific demonstration because mental sentences are the only kind of sentences that could be, strictly speaking, necessarily true; the latter argues for the claim that mental terms must be posited to be the subject-terms of such demonstrations because mental-terms are the only kinds of signs that could ever justifiably be called imperishable. I will begin by considering his case that the objects of science must be mental sentences.

First, though, one might well wonder why I keep speaking of *sentences* rather than *propositions*. Why does Ockham think that the only representations that can be true or false are sentences, rather than, say, propositions (where propositions are taken to be necessarily existing abstract objects that are the fundamental bearers of truth and falsity)? He thinks this in part due to his thorough-going nominalism: he straightforwardly rejects the existence of any such abstracta.<sup>46</sup> Given that his nominalism is already a central presupposition of the Scientia Argument – those who are not nominalists are surely going to balk at premise ML3 – perhaps we can just grant Ockham the non-existence of propositions for the sake of argument.

With that worry set aside, at last we reach the centerpiece of Ockham's case for mental language: even if we accept that the objects of science must be sentences, we may still wonder why they must be *mental* sentences, rather than spoken or written ones. If Ockham cannot show that the constraints of Aristotelian science cannot be met by conventional languages alone, then the argument we've been considering falls apart. So here it is especially important to proceed

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<sup>46</sup> In this respect Ockham differs from some of his later followers such as Adam Wodeham and Gregory of Rimini, both of whom take the object of knowledge to be some sort of abstracta which provides the content for mental sentences. But Ockham seems not to be aware of the arguments that the thinkers of the next generation will provide for thinking that some additional entity over and above sentences is needed to be a fundamental truth-bearer. Following Gregory, this abstractum has come to be known as a *complexe significabile* (literally, "something that can be signified complexly"). For more on Wodeham and Gregory's views, see Wodeham's *Lectura secunda*, d. 1, q. 1 (ed. Gál and Wood, vol. 1, 180-208) and Gregory's *Lectura super primum et secundum Sententiarum*, Prologue (ed. Trapp et al., vol. 1).

slowly and carefully. As I mentioned above, Ockham's reason for thinking that mental sentences are the only kind of sentences that can be the objects of science is that he thinks mental sentences are the only kind of sentences that can be necessary in a primary sense.

Why, according to Ockham, are only mental sentences necessary? This is a view he doesn't, to the best of my knowledge, ever explicitly defend at length, but I take the following to be an accurate synthesis of some scattered remarks he makes on the topic.<sup>47</sup> Let's begin by considering a common contemporary line of thought, one that Ockham explicitly rejects.

Typically, we think that a necessary truth is something that is true in all possible circumstances; but this can be only if (some of) the fundamental truth-bearers are objects that exist necessarily. For if it is necessary that every prime number greater than two is odd, then it must be that the truth-bearer with this content exists in all possible worlds; otherwise, there would be a possible world in which it is the case both that every prime number greater than two is odd and that the truth-bearer "Every prime number greater than two is odd" fails to be true (because it doesn't exist). But this would be a possible situation in which a necessary truth is possibly not true – which seems absurd. This is the line of argument often presented for thinking that propositions must be necessarily existing entities.<sup>48</sup>

Since Ockham believes that the only necessarily existent object is God – and thus that truth-bearers must be contingent entities – he rejects this argument for the claim that any truth

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<sup>47</sup> For the sources of the reasons I give below, see *Quod. II.19 (OTh IX, 193-197)*, *Quod. III.13 (OTh IX, 251-253)*, *Quod. V.9 (OTh IX, 513-518)*, and *Quod. V.24 (OTh IX, 479-485)*. The question for Ockham whether a spoken or written sentence can be necessary in a primary sense is closely connected to the question whether spoken or written sentences are true in any primary sense; and in these passages he offers a number of reasons for thinking that spoken sentences can't be the primary truth-bearers: among them, that the semantic contents of any spoken sentence is a contingent matter and that there is never a moment of time in which a spoken sentence exists in its entirety since it is a successive entity, rather than a permanent one.

<sup>48</sup> For further discussion on this argument and its place in both historical and contemporary discussions, see Marian David, "Defending Existentialism?" in M. Reicher (ed.), *States of Affairs* (Frankfurt: Ontos Verlag, 2009), 167-209.

bearers exist necessarily.<sup>49</sup> He evades the argument by rejecting the initial claim that necessary truths are truths that are true in all possible circumstances; in place of this criteria, he proposes that a necessary truth is "[a sentence] that is true and can never be false."<sup>50</sup> That is, a necessary truth is a sentence which correctly represents the world whenever it exists. Alternatively, a sentence fails to be necessary only if there is a possible circumstance in which the sentence exists and is false.

(It should be noted that Ockham's criterion here is faulty; this can't be the correct criterion for being a necessary truth. Consider the following mental sentence: AT LEAST ONE MENTAL SENTENCE EXISTS. This is a sentence which is true whenever it exists; furthermore, there is no possible circumstance in which this sentence exists and is false. According to Ockham's criterion then, it would be necessary that at least one mental sentence exists. But this cannot be correct; all mental sentences are contingent entities for Ockham, and God could have refrained from creating any of them at all. Thus it is false that this mental sentence is a necessary truth, contrary to Ockham's proposed criterion.<sup>51</sup>)

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<sup>49</sup> "'Necessary' or 'cannot be otherwise' can be taken in two ways; in one way, it means what cannot not-be, and this kind of necessity is not required for scientific knowledge, because nothing is necessary in this way other than God alone." (*BrevSumma*, Prologue, ch. 2; *Oph* VI, 6)

<sup>50</sup> "In what way then is a conclusion necessary? It must not be thought that it is necessary because it is always actually true in the way in which it is apt to exist in actuality (except perhaps in the divine intellect); rather, it is necessary because it is true, and it can never be false." (*Ord.*, Prologue, q. 8; *OTh* I, 222) Compare *SL* II.9: "...a sentence is called necessary not because it is always true, but because it is true if it exists and cannot be false." (*Oph* I, 275). Also, *BrevSumma*, Prologue, ch. 2: "What is called 'necessary' is that which cannot be false, although it could not exist." (*Oph* VI, 6)

<sup>51</sup> This argument only succeeds if there are not mental sentences in God's mind. I find no reason to think Ockham posits that God has mental sentences, but Paul Vincent Spade disagrees (on a philosophical, if not textual, basis); see his *Thoughts, Words, and Things: An Introduction to Late Mediaeval Logic and Semantic Theory* (self-published at [http://pvspade.com/Logic/docs/Thoughts, Words and Things1\\_2.pdf](http://pvspade.com/Logic/docs/Thoughts, Words and Things1_2.pdf), last modified December 27, 2007), 124. I take it that Buridan is aware of this kind of problem with Ockham's criterion, and this is at least part of Buridan's basis for distinguishing between *being possible* and *being possibly true*. See Buridan, *Sophismata*, ch. 8, Third Conclusion (trans. Klima, 954-955).

But let's ignore this problem for now and assume that Ockham is correct in his definition of necessary truth. Why think that this definition can only correctly attach to mental sentences? Why can't spoken and written sentences be necessarily true? Well, Ockham thinks, there is no spoken or written sentence which possesses the property of correctly representing the world in any possible circumstance in which it exists; and this is because both spoken and written sentences have their content by convention, while mental sentences have their content essentially.<sup>52</sup> Thus even a spoken sentence such as "Every prime number greater than two is odd," which we typically take to be a necessary truth, is *not*, strictly speaking, necessary. Since the sentence has its content merely by convention, there are possible circumstances in which that sentence exists and misrepresents the world, circumstances such as that in which the word 'odd' is subordinated to the concept EVEN.

If mental sentences are then the only possible bearers of necessary truth, then they must be the objects of scientific demonstration. But does Ockham's argument work? It seems to me that anyone acquainted with contemporary philosophy of language would point out here that Ockham simply needs to distinguish between the context of utterance and the circumstance of evaluation; "Every prime number greater than two is odd" is necessary, such a philosopher would say, because, *according to the meanings those words have in our context*, they represent correctly in any possible world.

This may seem to be as a powerful objection to Ockham's claim that only mental sentences can be necessary. Even if Ockham were correct on the definition of what it is for a sentence to be necessary (which he isn't), he would still be on shaky ground regarding what the

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<sup>52</sup> Ockham expresses this point by stressing that "the same mental sentence cannot be both true and false at the same time," and that this is not the case for spoken propositions, since any given spoken word may have a multiplicity of meanings which varies the truth value of the corresponding sentence. See *Quod. V.9 (OTh IX, 517)*.



bearers of necessary truth must be. But perhaps Ockham's line of thought is more potent than it seems; after all, the distinction between context of utterance and circumstance of evaluation relies on the notion of *the meaning of a word in our context* – that is, the distinction demands that we have an account of word meanings, where meanings are entities which can be fixed even when discussing other possible worlds. But Ockham's point here just is that the only entities which can be necessary in a primary sense must have their content essentially across worlds – and mental sentences (and their component mental terms) just are supposed to be those meanings which are fixed from world to world. So then, he does not actually seem to be disagreeing with the contemporary philosopher of language.

His claim that mental sentences are the only representations that could be the primary bearers of necessary truth is one part of Ockham's case that only mental language meets the ontological constraints C1-C3. But he also has another reason to think that mental language can satisfy the demands of Aristotelian science and that conventional language cannot; namely, that the subjects of science cannot be spoken or written terms because such terms are not imperishable. It is to this final consideration I now turn.

### **Mental Terms as the Subjects of Scientific Demonstration**

We've seen why Ockham takes the objects of scientific demonstrations and the sciences themselves to be mental sentences. If we were to accept this view, it would not be unnatural to then conclude that the subjects of scientific demonstrations and scientific disciplines will be the subject terms of those mental sentences. But Ockham offers additional evidence as well: Ockham's central claim regarding the subjects of the sciences is that they must be mental terms because such terms are the relata of the kinds of predication involved in scientific demonstrations.

In a demonstration, Aristotle teaches, an attribute (a *passio*, in Ockham's Latin) is predicated of a subject.<sup>53</sup> As we've already seen, Ockham argues that predication is a relation that occurs between linguistic terms (whether spoken, written, or mental); thus, the conclusion of a demonstration must predicate one term (the attribute) of another term (its subject).<sup>54</sup> But even if we accept Ockham's reasoning that predication is a relation among terms, why should we accept that the predications involved in scientific demonstrations are predications among mental terms? This move is based on Ockham's contention that attributes (taking 'attribute' for "what is predicated in a scientific demonstration") have to be mental terms:

... 'attribute' can be taken in multiple ways. In one way, it can be taken for some real thing which is said to coincide with another real thing. In a second way, 'attribute' is taken for that which is predicated of something in the second way of per se predication. ... 'Attribute' is not typically taken [in the first way] in the sciences. ... An attribute [in the second way of taking 'attribute'] is but a concept predicabile of another [concept] which stands for a real thing (and does not stand for itself).<sup>55</sup>

But this looks to be merely a stipulation on Ockham's part; he states that 'attribute' in the sense of scientific predications should be taken to refer to concepts which are only (truly) predicabile of other concepts which supposit personally.<sup>56</sup> Why though should we accept this

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<sup>53</sup> Ockham appeals to this, noting that "It is commonly said that a subject is that of which properties and attributes are demonstrated." (*Summulae*, Preamble; *OPh* VI, 141)

<sup>54</sup> See *SL* I.32 (*OPh* I, 94-95).

<sup>55</sup> *Ord.*, Prologue, q. 3 (*OTh* I, 133-134)

<sup>56</sup> This is the meaning of the clause that an attribute is "a concept predicabile of another [concept] which stands for a real thing (and does not stand for itself)."

usage of the term, rather than taking 'attribute' also for spoken and written words which are predicable in this way?

Here Ockham seems to offer no specific argument. The section on attributes in the *Summa logicae* offers no help, beyond telling us that even though logicians common apply the term 'attribute' to written or spoken terms, this way of speaking is not wholly precise:

...According to the way 'attribute' is used by the logician ... an attribute is some mental or spoken or written predicable, predicable per se in the second way of that subject of which it is called the attribute. However, properly and strictly speaking, an attribute is nothing other than a mental predicable (and not a spoken or written one); yet secondarily and improperly a spoken or written word can be called an attribute.<sup>57</sup>

Though Ockham doesn't state his reasoning here, perhaps we can try to infer what his reasoning must be. For Ockham, as for his Scholastic contemporaries, predication is primarily a function of the judicative faculty; it is a judgment which is made by a rational being. But judgments can be made even when one doesn't have the language to express it in; when I walk into an exotic pet store, I can form a judgment in which I predicate a certain color of the exotic bird before me, even if I don't know the English word for that color (and even if English has no word for that precise color).<sup>58</sup> In such a predication, since I don't know the appropriate English terms (or no such term exists), it must be that the terms being predicated are mental terms. This line of reasoning may indicate to Ockham that predication is primarily a relationship among

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<sup>57</sup> *SL* I.37 (*OPh* I, 104-105)

<sup>58</sup> Thus Ockham: "Mental sentences belong to no language in such a way that many people frequently internally form sentences that they nevertheless do not know how to express because of a lack of language." (*SL* I.12; *OPh* I, 42)

mental terms; as such, mental terms would seem to be the appropriate items for the predications involved in scientific demonstrations.

But even if mental terms are the most suitable choice for the attributes and subjects of the predication in scientific demonstrations, it is not at all clear that mental terms satisfy the first of Aristotle's three ontological constraints, namely, that the subjects of science must be imperishable. If we accept Ockham's reasoning up to this point that the subjects of demonstrations are mental terms and that mental terms are contingent things, it seems he cannot accommodate Aristotle's claim that the subjects of the sciences are imperishable things. Ockham even admits as much:

[P7] From this it is clear that – although it contradicts the sayings of Aristotle – according to the truth no sentence made from terms which convey only contingent things, and which is affirmative, categorical, and about the present, can be the principle or conclusion of a demonstration, because such a sentence is contingent.<sup>59</sup>

Ockham's precise point in passage **P7** is that – strictly speaking – there can't be scientific knowledge concerning certain terms which *supposit* for contingent things, but the point transfers to the terms themselves; there are no imperishable things other than God in Ockham's universe, and so Aristotle's dictum cannot be preserved according to its literal truth.

Yet even though the literal truth of Aristotle's first constraint cannot be saved, Ockham nevertheless believes that mental language comes close enough to preserving Aristotle's vision, since the subjects of science will be concepts such as the concept HORSE, which would represent

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<sup>59</sup> *SL III-2*, ch. 5 (*Oph I*, 512-513).

horses even if there weren't any horses. Thus, Ockham continues on after passage **P7** to affirm that concepts *can* be the subjects of scientific demonstrations after all:

...even though genera, species, and every universal distinct from the cognition of God are simply contingent in such a way that they could be nothing, yet of them there can be demonstrations and scientific knowledge, because even though they could be simply destroyed, yet necessary sentences can be formed of them, which can be known by scientific knowledge strictly speaking.<sup>60</sup>

Thus, Ockham claims, mental terms come close enough to fulfilling Aristotle's dictum to suffice for science. Unlike spoken and written terms, whose semantic value is fixed by arbitrary convention, mental terms essentially signify whatever they signify. Whenever HORSE is tokened in a mind, it always and everywhere signifies horses; even if no horses exist. Furthermore, unlike spoken terms, which exist only for a moment when uttered, and unlike written terms, which can be blotted out or erased, mental terms exist so long as there are created minds tokening them. In a world full of humans and angels, then, mental terms are about as imperishable as anything in Ockham's world could ever be. Thus there can be scientific demonstrations even when the subject terms of those demonstrations are, strictly speaking, perishable; mental terms are near enough to imperishable that, Ockham claims, they are sufficient to meet the ontological constraints of scientific demonstration.

## **Conclusion**

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<sup>60</sup> *SL III-2*, ch. 5 (*Oph I*, 513).

To close, I take it that Ockham's Scientia Argument indicates one of his central purposes in putting forth his theory of mental language: he believes that positing this sort of representational system is the only way to harmonize his nominalism with his commitment to the basic outlines of Aristotle's account of scientific demonstration and scientific knowledge. In giving this argument, he concurs with what Aristotle said above in passage **P3**:

[P3] There need not be any forms, or some one item apart from the many, in order for there to be demonstrations. It must, however, be true to say that one thing holds of many.<sup>61</sup>

Ockham agrees with this observation by Aristotle – but only in part. In order for there to be scientific demonstration, it indeed must be true to say that one thing holds of many. But though this is necessary for there to be scientific demonstration, it is not yet sufficient for there to be scientific demonstration. The representational system with which one says “that one thing holds of many” must also be able to accommodate imperishable subject terms and necessarily true objects of scientific demonstration; and this, Ockham thinks, can only be accommodated by a mental language.

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<sup>61</sup> Aristotle, *PA* I.11 (77a5-7; in Barnes, 16)

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