

The Nominalist Semantics of Ockham and Buridan: A “rational reconstruction”

Some historical-philosophical preliminaries

This paper is going to outline the innovative semantic theories of the two great 14th-century nominalist thinkers whose work eventually gave rise to the quasi-institutional separation of the nominalist *via moderna*, the “modern way”, from the realist *via antiqua*, “the old way” of doing logic, science, philosophy, and theology in the late Middle Ages.¹ The person who initiated these changes was the English Franciscan theologian, William Ockham. However, the person who was primarily responsible for establishing Ockham’s nominalism as a genuinely viable theoretical alternative was the French secular Master of Arts, John Buridan.

The historical significance of Ockham’s innovations is that they were the first to introduce a radically new type of theoretical disagreement into scholastic discourse, a type of disagreement with which we, as heirs to these historical developments, are all too familiar, namely, the conflict between proponents of paradigmatically different conceptual schemes. In the case of conflicts of this type, the disagreement is not merely over different possible answers to the same questions answerable within the same conceptual framework. For in a conflict of this type there is no uniformly shared conceptual framework that would fix the commonly recognized rules of the “language games” to be played by the disputants in discussing their disagreements. Therefore, what becomes at stake in these conflicts is rather the very legitimacy of some of the questions and rules of the opposing camp. For example, after Ockham, the old *metaphysical* question “What are the common natures signified by our common terms and how are they related to the singulars?” has to yield to the new *semantic* question “Do our common terms signify some common natures in the first place?” Ockham’s and Buridan’s resounding ‘no’ to this new question and their relentless pursuit of the implications of this answer radically transformed late-medieval theoretical discourse.

The importance of Ockham’s and especially Buridan’s work consists in their presenting a consistent, alternative way of construing the fundamental semantic relations between language, thought and reality. Indeed, the real strength of their nominalism is not so much their criticism of the older, realist way of construing these relationships as their detailed, systematic account of how a philosophy of language based on a strictly nominalist ontology (denying any form of extramental universals and keeping the number of distinct ontological categories at a “bare minimum” of two or three)² is possible.

¹ For a detailed historical discussion of the late-medieval separation of the *via antiqua* and the *via moderna* see: Moore, W. L. 1989 “Via Moderna”, in: J. R. Strayer: *Dictionary of Middle Ages*, New York: Scribner, 1989, vol.12. pp. 406-409.

² The denial of the existence of real universals is one of the fundamental theses of nominalism. However, we should keep in mind that medieval *moderate realists*, which means practically *everybody* after Abelard or maybe even after Boethius, also denied separate Platonic Forms, just as they would deny most modern analytic metaphysicians’ abstract properties. Medieval nominalists after Ockham would therefore distinguish themselves from moderate realists by denying the existence of inherent common natures distinct from their particulars posited by moderate realists (such as Aquinas or especially Scotus), as well as by

Some methodological provisos

Since this paper is going to focus exclusively on Ockham's and Buridan's *semantic* ideas, it will *not* provide a comprehensive discussion of their logic. Logic in the Middle Ages was a much more comprehensive subject than we conceive of it nowadays, for both theoretical and historical reasons. The primary *theoretical* reason why medieval logic comprised subjects that we would recognize as falling under such varied subjects as metaphysics, cognitive psychology, linguistics, the philosophy of science, and epistemology is the medieval conception of logic as a universal theoretical tool (*organon*) of reason in its pursuit of truth and avoidance of error. The main *historical* reason is the development of medieval logic as a largely conservative enhancement and systematization of Aristotelian logic, in combination with available elements of Stoic logic.

Accordingly, even if the medieval logical output is recognizably about *logic* even to the modern reader, it would appear to be mingled with considerations pertaining to various, sometimes from our perspective somewhat loosely related subjects. But even *within* what we would recognize as strictly pertaining to logical theory itself, we would find an interesting mixture of what we would regard as syntactic and semantic considerations, forming only partial theories of various types of natural language reasonings. The theory of syllogistic, for instance, is a syntactical "validity-checker" for a certain limited type of two-premise inferences, whereas the theory of supposition (together with the theories of *ampliation* and *appellation* and other *properties of terms*)³ is a philosophical-semantic theory of reference, occasionally used to justify certain rules of inference and falsify some apparent, fallacious rules of inference, as part of the theory of fallacies.

Therefore, when we are discussing characteristic semantic ideas of our medieval colleagues as part of their logical theory, we should be constantly aware of the rather different theoretical context in which these semantic ideas functioned. Thus, for example, even if the idea of semantic compositionality was definitely present in medieval authors in some form,⁴ we should not expect them to provide recursive definitions allowing the

reducing the number of distinct ontological categories to two, namely, substance and quality (Ockham and his followers) or three, namely, substance, quantity and quality (Buridan and his followers). However, quite interestingly, the same sort of ontology was also accessible in the older framework, and was in fact proposed by later moderate realists, such as the 15th-century Dominican, Domingo Soto. So the fundamental difference between medieval nominalists and moderate realists lies not so much in their respective ontologies, but rather in their different semantics, in the different ways in which they explain the relationships between language, thought, and reality. For further details of this sort of comparison, see Klima, G. (1999) "Ockham's Semantics and Ontology of the Categories", Spade, P. V. (ed.), *The Cambridge Companion to Ockham*, Cambridge: Cambridge University Press, pp. 118-142; Klima, G. (1999) "Buridan's Logic and the Ontology of Modes", in: Ebbesen, S. – Friedman, R. L. (eds.), *Medieval Analyses in Language and Cognition*, Copenhagen: The Royal Danish Academy of Sciences and Letters, 1999, pp. 473-495.

³ Cf. Read, Stephen, "Medieval Theories: Properties of Terms", *The Stanford Encyclopedia of Philosophy (Spring 2006 Edition)*, Edward N. Zalta (ed.), URL = <<http://plato.stanford.edu/archives/spr2006/entries/medieval-terms/>>.

⁴ See the following interesting remark by G. Nuchelmans: "... the signification of the whole complex was commonly held to be of a compositional nature and to be determined by the signification of its parts. As Pardo put it, only incomplex expressions have been given conventional meanings in a primary and

effective computation of semantic values of complex expressions as functions of the semantic values of their components in the way *we* would construct a semantic theory. Nevertheless, this fact does not exclude the possibility of a *rational reconstruction* of their ideas in the sense that following *their* intuitive clues, *we* may still provide such definitions that could constitute what *we* would recognize as a full-fledged semantic theory for a certain class of expressions, culminating in a semantic definition of logical validity. At any rate, the subsequent discussion will provide the outlines of a rational reconstruction of this sort, in the hopes that this approach will not only shed some light on certain intriguing features of medieval semantics, but that it will also facilitate comparisons between medieval and modern ideas, pointing to such features of the medieval ideas that we also can (and *should*) take seriously in our own thinking about the semantics of natural languages.

But apart from the potential fruitfulness of this approach from a contemporary perspective, there is another consideration that necessitates it in this discussion, namely, the immense variety of the relevant semantic ideas in the medieval output. In order to understand the importance and character of Ockham's semantic innovations and their further development by Buridan, we have to contrast their ideas with "the former paradigm". But in order to do so, we have to *reconstruct* that "paradigm" as such, i.e., we have to provide a certain schematic summation of those common features of the semantic ideas of earlier authors that Ockham and Buridan abandoned in their paradigmatically different semantic construction.

The rational reconstructions sketched in this paper, therefore, ought not to be regarded as attempted answers to the *factual, historical* question: what was the logical semantic theory of this or that medieval author like? Rather, they should be regarded as attempted answers to the *counter-factual, theoretical* question: what would a semantic theory be like *if* we constructed it on the basis of the semantic intuitions of such and such medieval authors (rather than on the basis of our own post-Fregean/Tarskian intuitions)?

Thus, the discussion will begin with a *rational reconstruction* of what, for want of a better phrase, I will somewhat anachronistically call *via antiqua semantics*, to provide the theoretical contrast for the reconstruction of Ockham's and Buridan's semantic ideas, as they were responsible for the emergence of what might be termed *via moderna semantics*. Next, I will proceed to a brief discussion of what appear to be the main motives and reasons for Ockham's abandonment of the *via antiqua semantics*, and an outline of his alternative semantics, devised to achieve his program of "ontological reduction", to remedy what he perceived as the unjustifiable ontological "excesses" of the older theory. The discussion will then move on to a reconstruction of Buridan's ideas, consciously framed by Buridan in a token-based, nominalist semantics, under the conditions of

immediate way; a propositional complex, such as *Homo est animal*, on the other hand, has been destined to signify its meaning only in a mediate, consequential and secondary manner, since its signification can be derived from the significations of the incomplex parts." *Late-Scholastic and Humanist Theories of the Proposition*, North Holland Publishing Company, Amsterdam-Oxford-New York, 1980. p.45. Cf. Hieronymus Pardus: *Medulla Dialectices*, Parisiis 1500 (1505), fol.1.V.

semantic closure characteristic of natural languages.⁵ The concluding section will consider in some detail what sort of modifications the standard semantic construction of modern quantification theory would have to undergo in order to faithfully reflect the two competing medieval conceptions.

***Via Antiqua* semantics**

Signification

The common starting point for all medieval semantics is the Aristotelian “semantic triangle”, the idea based on Aristotle’s remarks in his *On Interpretation* to the effect that words signify things not immediately, but with the mediation of the concepts of the mind. There was some disagreement among authors as to whether words signified *primarily* concepts and only *secondarily* the things conceived by means of these concepts or *vice versa*,⁶ but since words in themselves were regarded as mere articulate utterances or strings of letters corresponding to such utterances, it was generally agreed that these utterances and strings are significative only in virtue of being subordinated to some acts of understanding. Clearly, if I utter the articulate sound ‘biltrix’ or write down the corresponding string of letters as I just did, anyone who hears or reads it literally has *no idea* what it means. By contrast, if I utter the sound ‘man’ in English or the corresponding term ‘homo’ in Latin, anybody who understands these languages will have an understanding of human beings in general, i.e., the word will activate a concept in his or her mind whereby they conceive of human beings in a universal fashion. At any rate, after Boethius, this is the common medieval idea behind any explanation of why Aristotle said that words signify things with the mediation of concepts.

But among “*via antiqua* authors” there was also a further important consideration to motivate the same point concerning common categorematic terms in particular. Commenting on Aristotle’s relevant remarks, Thomas Aquinas wrote the following:

... names, verbs and speech signify [...] conceptions of the intellect immediately according to the teaching of Aristotle. They cannot immediately signify things, as is clear from their mode of signifying, for the name ‘man’ signifies human nature in abstraction from singulars; hence it is impossible that it immediately signify a singular man. The Platonists for this reason held that it signified the separated idea of man. But because in Aristotle’s teaching man in the abstract does not really subsist, but is only in the mind, it

⁵ A token-, as opposed to type-, based semantics is a semantic system in which each symbol is regarded as a single, individual occurrence to be evaluated as such, as opposed to standing in for any similar token of the same type. To a consistent nominalist, only a token-based semantics is ontologically acceptable. Semantic closure according to Tarski is the condition of a language that contains its own semantic predicates and means of referring to its own items. For further discussion, see Klima, G. (2004) “Consequences of a Closed, Token-Based Semantics: The Case of John Buridan”, *History and Philosophy of Logic*, 25(2004), pp. 95-110; Priest, G. “Semantic Closure”, *Studia Logica* 43(1984), pp. 117-129.

⁶ On what Scotus calls a “magna altercatio” over this issue, see Pini, G. “Signification of Names in Duns Scotus and Some of His Contemporaries.” *Vivarium* 39 (2001), pp. 20-51, Pini, G. “Species, Concept, and Thing: Theories of Signification in the Second Half of the Thirteenth Century”, *Medieval Philosophy and Theology* 8, 2 (1999), pp. 21-52, and Perler, D. “Duns Scotus on Signification”, *Medieval Philosophy and Theology*, 3 (1993), 97-120.

was necessary for Aristotle to say that 'vocal sounds signify the conceptions of the intellect immediately and things by means of them.'⁷

According to this explanation, one can find a proof for Aristotle's claim in the mode of signification of common terms. These terms cannot function in the same way as singular terms naming a certain thing, for there is no such a thing that they could plausibly be taken to name. In accordance with the abstractionist cognitive psychology of medieval Aristotelians, a common concept is formed by abstracting the natures of individual things from their individualizing conditions, by thinking of the natures informing these individuals *not insofar as* they inform *these* individuals.⁸ Thus, what a common concept obtained by abstraction directly represents is the nature of *any* thing informed by this nature, whereas the things themselves, the bearers of this nature, each having an individualized instance of it, are represented only indirectly. Therefore, what the corresponding term directly signifies is also this nature itself, whereas the thing bearing this nature is signified only indirectly. But the nature represented by the concept is signified by the term only through the mediation of the concept, *immediately* signified by the term. This semantic idea is spelled out even more explicitly in a 13th-century logic text, the so-called *Summa Lamberti*, in the following fashion:

... it is essential to know that four things are required for an utterance to be significant: a thing, a concept [or some understanding, *intellectus*] of the thing, an utterance, and the union of the utterance with the concept of the thing. What we are calling the thing is something existing outside the soul, which is apprehended by the soul by means of an idea of it - e.g., a man, or a stone. What we call the concept of the thing is the idea [*species*] or likeness of the thing, which exists in the soul; for according to Aristotle in the third book of *De anima* (III, 8, 431b30-432a1), not the stone but rather an appearance [*species*] of the stone is in the soul; and it is by means of the appearance that the soul grasps the thing. The utterance is that which is put forward along with the concept [or understanding] of the thing; in that case [i.e., when the utterance is made with some understanding of a thing] a signification is united to the utterance and the utterance is made significant. And although both the concept of the thing and the utterance are natural in the same way (since they are formed by natural sources), the utterance is nevertheless said to signify by the will of the person instituting it, because the union of the concept of the thing with the utterance is effected by the will, and it is in that [action] that the imposition of the utterance consists. In this way, therefore, an utterance is primarily - in itself - and directly the sign of a concept of the thing; but in addition it is indirectly the sign of the thing. For just as we say that whatever is a cause of the cause is a cause of the thing caused, so we can say that in its own way whatever is a sign of the sign is a sign of the thing signified. Thus, since an utterance is a sign of a concept, and a concept is a sign of a thing, in this way [the utterance] is a sign of the thing as well. An utterance that is a sign of a sign - of the concept - will be a sign of the signified - i.e., of the thing; it is, however, a sign of the concept directly but a sign of the thing indirectly.⁹

⁷ Aristotle: *On Interpretation: Commentary by St. Thomas and Cajetan*, trans. J. T. Oesterle (Milwaukee: Marquette University Press, 1962), p. 25.

⁸ For a more detailed discussion of the medieval Aristotelian conception of abstraction in this connection, see Klima, G., "The Medieval Problem of Universals", *The Stanford Encyclopedia of Philosophy (Winter 2004 Edition)*, Edward N. Zalta (ed.), URL = <<http://plato.stanford.edu/archives/win2004/entries/universals-medieval/>>.

⁹ "The *Summa Lamberti* on the properties of terms", *The Cambridge Translations of Medieval Philosophical Texts*, ed. N. Kretzmann-E. Stump, tr. N. Kretzmann, Cambridge University Press: Cambridge, 1988, pp. 104-110. For the same type of reasoning concerning the signification of common

It is important to note here, as this is going to be one of the sticking points for Ockham, that the term signifies the thing it signifies only by virtue of signifying the concept; still this does not mean that the word is imposed to signify the concept only, because the concept naturally signifies the thing conceived by it. The other important point, again, sternly opposed by Ockham, is that the “thing” signified by a common term is not any of the singular things one can ultimately conceive of by means of the corresponding concept. For the concept directly represents in an abstract universal fashion the nature existing individualized in its particulars. The particulars themselves will therefore not be strictly speaking the *significata* of the term, but rather its *supposita*, i.e., the things the term can be used to stand for in a proposition. Lambert makes this clear in the immediately following paragraph:

Now signification differs from supposition in that signification is prior to supposition. For the signification is the concept of the thing represented by means of the utterance, and before the union of it with the utterance there is no term; rather, a term is constituted in the union of that concept of a thing with an utterance. Supposition, on the other hand, is a certain property of a term that has been constituted in that way. There is another difference, because signification extends only to the thing the term is imposed to signify; supposition, however, extends not only to the thing signified by means of the term but can extend to *supposita* contained under that thing. For example, the signification of ‘man’ extends only to *man*, not to the things contained under *man*; for ‘man’ signifies *man*, not Socrates and not Plato. ‘Man’ can, nevertheless, supposit for Socrates, and for Plato, and for *man*.¹⁰

The “thing”, therefore, that a term on this conception signifies is not any of the ordinary things we would normally use the term to stand for in the context of a proposition. For the thing in question is what the concept directly represents, namely, the nature of the individuals abstracted from its individuating conditions in the formation of the concept. Thus, on this conception, what the term *ultimately* signifies is determined by the *representational content* of the concept *immediately* signified by the term in the mind. That representational content, in turn, is determined by the process of concept-formation, namely, abstraction.

This description of what determines the ultimate signification of a term, however, renders the issue somewhat murky, insofar as it is not exactly clear what we are talking about when we are referring to what a term ultimately signifies. To be sure, it is clear enough what it is *not* supposed to be. It is not supposed to be either the concept that the term immediately signifies or any of the individual things whose nature the concept represents, which are the *supposita* of the term according to Lambert’s description. What the term

terms used by Burley against Ockham, see his *On the Purity of the Art of Logic*, tr. P. V. Spade, Yale University Press: New Haven, 2000, pp. 87-88 (33). For further references to other *via antiqua* authors, see Spade’s note 32 on p. 87.

¹⁰ Ibid. Clearly, *man* here is the universal nature signified by the term ‘man’ and represented by the concept that this term directly signifies, as opposed to the individual humans, such as Socrates or Plato. So, the signification of this term extends only to this universal nature, the direct object of the concept of humans, although, on account of this signification, the term can be used in a sentence to stand for the individual humans who have this nature. The function of the term of standing for these individuals in a sentence is its property that is called ‘supposition’ (which is why this property is often compared to the modern notion of reference, as it is contrasted with meaning).

ultimately signifies therefore is either some intermediary representation “between” the concept and the individuals universally represented by the concept or it is the nature of the individuals *as represented* by such an intermediary representation. But even this description of the situation needs some further sorting out. Because we also have to clarify what we are supposed to be referring to when we are talking about “the concept” or understanding that the term immediately signifies “in the mind”, and what we are supposed to be referring to when we are talking about “the nature” of the individuals represented by the concept.

To cut a long story short, by the 13th century there was general agreement that there are *no universal things* in reality in the sense of some numerically one entity common to many numerically distinct particular things constituting the substance of each and all at the same time, for the assumption of the existence of such a thing would lead to numerous inconsistencies.¹¹ To be sure, this did not prevent various authors from talking about common natures or even universal things, but with the understanding that the “things” talked about in this way are not to be understood to be things of nature existing in their universality apart from any consideration of the intellect, rather, they should be regarded as objects of our understanding owing their universality to the abstractive activity of our minds, and having as their foundation in reality their individualized instances constituting the individuals in their specific and generic kinds.

Thus, we should say that what common categorematic terms ultimately signify are these ultimate objects of the intellect, namely, the individualized natures of individual things, the actual presence of which verifies these terms of these individuals. Such an individualized nature, however, is conceived by an act of our understanding in abstraction from its individuating conditions: not *qua* the nature of *this* or *that*, but *qua* that nature, regardless of whether it is of this or of that individual; although everyone agreed that it *could not exist* without being of *some* individual or another. The act of understanding whereby this ultimate object is conceived is an individual concept of *this* individual mind, and the ultimate object is an individualized nature of *that* individual thing. However, since the act of the mind represents this individualized nature in a universal manner, on account of which it can equally represent any other individualized instance of the same nature, the representative content of this act was characterized as the *direct* and *immediate* object of the act, a universal object of the mind, *by means of which* the mind conceives not only of individuals from which it obtained its concept, but also of ones it has never encountered. In late-scholastic terminology, therefore, authors distinguished the *formal* or *subjective concepts*, the individual mental acts of individual minds, from their *objective concepts*, the universal, immediate objects of the formal concepts, whereby the mind conceives of the individualized natures of individuals, its ultimate objects. Some authors even distinguished the objective concept from the common nature itself, i.e., the nature considered in abstraction not only from its existence in individuals, but also from its existence as the object of any intellect.¹²

¹¹ For a discussion of some of these inconsistencies, see again Klima, G., “The Medieval Problem of Universals”.

¹² See Klima, G., “The Medieval Problem of Universals”, sect. 7.

But we need not go into further details of this rather complicated and difficult psychological as well as ontological doctrine in order to understand its *semantic* import. The upshot of all these considerations, despite variations in finer details in various authors, is that our common categorematic terms ultimately signify the ultimate, direct objects of our individual (formal) concepts, namely, the individualized natures of individual things, whereas they immediately signify the immediate objects of these formal concepts (through signifying these formal concepts as well),¹³ namely, the objective concepts, and through these, the common natures themselves.

What renders the doctrine difficult to swallow is not only the dubious ontological status of these quasi-entities, these objects-of-the-mind (which are not to be regarded as full-fledged objects in their own right),¹⁴ but also the relative obscurity of their conditions of distinction and identity. In fact, as we shall see, this was precisely one of the main motivations for Ockham to break with this doctrine.

But before dealing with its genuine or perceived problems, we should round out the doctrine insofar as it can serve as the starting point for a full-fledged semantic construction. (Not surprisingly, though, in a proper set theoretical reconstruction, in which these obscure entities are represented by well-behaved set theoretical objects, many of the perceived obscurities of the doctrine almost “miraculously” disappear.) Taking our cue from the foregoing discussion as well as from Peter Geach’s seminal paper “Form and Existence”,¹⁵ in a formal semantic construction we may represent the signification of a common categorematic term by means of a semantic function that assigns individualized natures, forms or “property-instances” (the terminology is of no importance) to individuals at different times.

Accordingly, if F is a common term, u is an individual element of the universe of discourse U , and t is a time-point or interval (we do not have to determine that in advance), then let $SGT(F)(u)(t)$ be an element of U , representing the ultimate significata of F in u at t , the individualized F -ness of u at time t . The signification of F itself, $SGT(F)$, on the other hand, is the function itself assigning these ultimate significata to F in respect of u and t .¹⁶ The function itself, therefore, can also be regarded as a representation of the objective concept, or the common nature itself, what is immediately signified by F in abstraction from the individualizing conditions of the nature ultimately signified by F . In fact, if we distinguish a special subclass of individuals in U , namely,

¹³ See Cajetan: *Commentary on Being and Essence*, tr. by F. C. Wade, SJ, L. H. Kendzierski, Marquette University Press: Milwaukee, 1965, pp. 67-68.

¹⁴ For a more detailed discussion of the ontological issues involved, see Klima, G. (1993) “The Changing Role of *Entia Rationis* in Medieval Philosophy: A Comparative Study with a Reconstruction”, *Synthese* 96(1993), pp. 25-59.

¹⁵ P. T. Geach, “Form and Existence,” *Proceedings of the Aristotelian Society*, 55(1955), pp. 251-272, reprinted in his *God and the Soul* (London: Routledge & Kegan Paul, 1969), pp. 42–64.

¹⁶ To be sure, technically speaking, $SGT(F)$ is a function from individuals to functions from times to individualized forms. There are certain technical advantages to working with compounded monadic functions instead of polyadic functions in the semantic construction, but we need not get into those here. These advantages should be obvious in the semantics presented in Klima, G. “Aquinas’ Theory of the Copula and the Analogy of Being”, *Logical Analysis and History of Philosophy*, 5(2002), pp. 159-176.

individual minds designated by m , then we can take $SGT(F)(m)(t)$ to represent what F signifies immediately in mind m at t , namely, the formal or subjective concept m has of the nature objectively signified by F in abstraction from any mind or any thing that is or can be F .¹⁷

Furthermore, distinguishing subjective concepts as the immediate significata of F in individual minds may give us the opportunity to make better sense of the distinction between objective concept and common nature made by later Thomists such as Cajetan, taking his cue from Aquinas' remarks in his *De Ente et Essentia*.¹⁸ For if the common nature is the object of the abstractive mind considered in abstraction from both its individuating conditions in extramental things and from its being the object of any mind, whereas the objective concept is the same nature considered insofar as it is the object of some mind or another, then we may say that the common nature is best represented by the signification function, abstracting both from external individuals and minds, whereas the objective concept is best represented by the same function restricted to extramental objects, i.e., the ultimate objects of the formal concepts of individual minds.

But regardless of these somewhat obscure details, the emerging semantic conception is clear enough, and relatively easy to approach from a modern, post-Fregean angle. The ultimate significata of common terms are "trope-like" forms or properties individualized by the subject they inform and by time. What verifies the term of an individual at a given time in a simple predication is, therefore, the actuality, i.e., actual existence of this *significatum*. Thus, for example, 'Socrates is wise' is true because of the actual existence of Socrates' wisdom, namely, Socrates' actual, individualized quality, signified by the predicate 'wise'. Correspondingly, 'Meletus is wise' is false, because of the non-actuality of Meletus' wisdom, provided these sentences are uttered, say, during Socrates' trial. To be sure, if Meletus still *can* be wise at that time, the term 'wise' can be taken to signify his potential wisdom. But in regard of a thing that simply cannot have wisdom, such as a rock or a color, the term 'wise' just signifies nothing. So, the signification of a concrete common term is best represented by a semantic function that takes individuals and times as its arguments, and yields actual or potential individualized properties for these arguments or nothing, in case it is undefined for those arguments.¹⁹

A simple predication, therefore, in general, yields the combination of the signification of the predicate with its appropriate arguments, provided by those semantic values of the other syntactic components of the predication that determine the individualized significata of the predicate. These "individualizing factors" are the individual thing

¹⁷ This suggestion is worked out in some detail in a formal semantics presented in Essay V of Klima, G. *Ars Artium: Essays in Philosophical Semantics, Medieval and Modern*, Budapest: Institute of Philosophy of the Hungarian Academy of Sciences, 1988.

¹⁸ See n. 13.

¹⁹ These remarks also indicate how we should treat the semantics of the corresponding abstract terms. They signify the same as their concrete counterparts; however, because of their different mode of signification, when they are made the subject of a proposition, they stand for their significata, and not for the things bearing their significata in the way the concrete terms do. Again, the formal semantics for these is worked out in my *Ars Artium*. See also Klima, G. "The Semantic Principles Underlying Saint Thomas Aquinas's Metaphysics of Being", *Medieval Philosophy and Theology*, 5(1996), pp. 87-141.

provided by the *suppositum* (i.e., referent) of the subject, and the time provided by the tense of the verb and the context (of the utterance or, for example, the actual interpretation of a written predication). This last remark, however, introduces two other essential elements into the picture, namely, the verb needed for the predication, i.e., the *copula*, along with the time it co-signifies, and the *supposition* (reference) of the subject.

Supposition

As we have seen, the *via antiqua* analysis of signification provides a number of different semantic values for any common term: their immediate significata (whether those should be identified as the formal concept, objective concept, or the common nature represented by these concepts, or all these in a sequence), their ultimate significata (the individualized natures, forms or “property instances” of individuals), and the merely indirectly signified individuals themselves. Ordinarily, we use concrete common terms to talk about these last-mentioned items. When we in fact use a term in a proposition to talk about these, namely, about the individuals in which the ultimate significata of the term are actual, then the term is said to be in personal supposition, standing (or to use the common neologism, *suppositing*) for its *personal supposita*. When it stands for its (various) immediate significata (or even perhaps its ultimate significata or its significata in relation to its supposita, etc.),²⁰ then it stands in *simple supposition*. And when it is used to stand for itself (or similar tokens of the same type), then it is said to be in *material supposition*. For example, ‘man’ in ‘Man is a species’ stands for the objective concept of humans, i.e., it has simple supposition, but in ‘A man is a rational animal’ it has personal supposition, and in ‘Man is a noun in English’, it has material supposition.

Attributing supposition, i.e., a context-dependent referring function to common terms stands in stark contrast with the Fregean conception, on the basis of which Peter Geach has repeatedly criticized the medieval idea of common personal supposition.²¹ However, one can clearly reconstruct this semantic function of common terms by using *restricted variables*, i.e., variables that are exactly like the variables of standard quantification theory, except they range not over the entire universe of discourse but only over the extension of their matrix. For instance, the sentence ‘A man is a rational animal’ in this reconstruction would not have to be formalized by using an unrestricted variable bound by an existential quantifier, forcing us to introduce a conjunction to provide the correct truth conditions of the original. Instead, representing the subject term by the quantifiable

²⁰ Walter Burley, for example, presents an elaborate system of distinctions for various sorts of simple supposition in his *Tractatus de suppositionibus*, in S.F. Brown, “Walter Burleigh’s Treatise *De suppositionibus* and its Influence on William of Ockham”, *Franciscan Studies*, 32 (1972), pp. 15-64. he also changed his mind about parts of his doctrine in his *On the Purity of the Art of Logic*. For details, see Spade, P.V., “Walter Burley on the Kinds of Simple Supposition”, *Vivarium*, 37(1999), pp. 41-59. But we find similar distinctions in other “older” authors as well.

²¹ See Geach, P. T., *Reference and Generality*, Cornell University Press: Ithaca, NY, 1962, c. 2, sect. 28, pp. 34-36; Peter Geach, “Nominalism,” *Sophia* 3(1964), pp. 3-14, reprinted in his *Logic Matters*, Berkeley and Los Angeles: University of California Press, 1980, pp. 298-301.

restricted variable ‘ $x.Mx$ ’, we get a formula that need not contain a conjunction: ‘ $(\exists x.Mx)(Ax)$ ’.²²

In fact, since the syntax of this formula is much closer to the original in this regard than formulae of standard quantification theory, it should be clear that just as changing the determiner in the English sentence (using ‘every’, ‘the’, ‘this’, ‘no’, or, switching to the plural, ‘two’, ‘five’, ‘most’, ‘twenty percent of’, in the place of the indefinite article, etc.) does not introduce new conjunctives into the sentence, so the addition of the corresponding (non-standard, numerical, and even “pleonotetic” quantifiers) to this sort of formula need not introduce different logical connectives into the syntax of this formula, as it does in the case of standard quantificational formulae (as when we have to switch from conjunction to implication when replacing the existential quantifier with the universal quantifier – but we cannot do that with the pleonotetic quantifiers).²³

Thus, using restricted variables to represent common terms in personal supposition clearly has the advantage of providing a better “match” with the syntax of natural languages than the formulae of standard quantification theory can provide. However, with the appropriate *semantic* interpretation restricted variables can do even more.

If restricted variables are used to represent common terms in their referring function, then the *supposition* of these terms can best be interpreted as the value-assignment of such variables. For example, in accordance with the doctrine of personal supposition, ‘Every man is an animal’ was analyzed by the medievals in terms of the conjunction ‘This man is an animal and that man is an animal ...’, where the demonstrative pronouns pick out all individuals falling under ‘man’. But if we represent this sentence as ‘ $(\forall x.Mx)(Ax)$ ’, then the restricted variable in this formula, ‘ $x.Mx$ ’, does exactly the same thing, namely, it takes its values from the extension of its matrix. Thus, we can justifiably define a *supposition function* for this variable analogously to the *value assignment function* of ordinary variables of standard quantification theory, with the only difference that whereas ordinary variables range over the entire universe of discourse, restricted variables range only over the extension of their matrix.

However, there can obviously be cases when the extension of the matrix of a restricted variable is empty, namely, when the common term represented by the variable is true of nothing. In such a case we may assign the variable some artificial value, whatever that may be, of which no simple predication is true.²⁴ This move at once yields the result that universal affirmative propositions will have existential import, which in turn restores both

²² This is the approach to the reconstruction of certain features of medieval supposition theory I first presented in my *Ars Artium*. But there are a number of other, basically equivalent approaches in the literature e.g. by G. Englebretsen, D. P. Henry, A. Orenstein and T. Parsons.

²³ For a discussion of this observation see essay III of my *Ars Artium*. The impossibility of representing pleonotetic quantifiers in standard quantification theory was first proven (for ‘most’ interpreted as ‘more than half the’) in J. Barwise and R. Cooper, “Generalized Quantifiers and Natural Language”, *Linguistics and Philosophy*, 4(1981), pp.159-219, pp.214-215. (C13), setting off a whole cottage industry of generalized quantification theory in the eighties.

²⁴ Again, I took this approach in Essay II of my *Ars Artium* as well as in “Existence and Reference in Medieval Logic”, in: A. Hieke – E. Morscher (eds.): *New Essays in Free Logic*, Kluwer Academic Publishers, 2001, pp. 197-226.

the traditional Square of Opposition and traditional, Aristotelian syllogistic invalidated by the conditional interpretation of universal affirmatives necessitated by standard quantification theory.²⁵

Such results are interesting and may be regarded as forming a certain conceptual bridge between modern and medieval theories. But we must not forget that the medievals themselves did not analyze sentences in terms of a quantifier-analysis, not even in terms of restricted variables. Rather, they made distinctions *equivalent to* distinctions we would draw in terms of quantifier scopes, using their own theoretical devices to distinguish different *modes of personal supposition*, namely the so-called *suppositional descents*. Since these are discussed elsewhere in this volume, and they are not directly relevant to the contrast between the two *viae* I am dealing with here, I will not go into the details of this theory. All that is relevant from our present point of view is that according to the *via antiqua* conception, the two terms of a categorical proposition have radically different semantic functions. The subject term supplies its supposita to fill in the argument places of the abstract significata-function of the predicate, thereby determining *which* ultimate significata of the predicate need to be actual to render the proposition true. The *signum quantitatis* (the “quantifier word”) of the subject term will determine *how many* of these significata will have to be actual, whereas the tense of the copula will determine *when* these significata will have to be actual. But the copula on this conception will do actually much more, namely, it will signify the actuality of these ultimate significata, effect the combination of subject and predicate, and signify the existence of the resulting propositional complex, while co-signifying the time when this complex needs to be actual for the truth of the proposition.

The copula and the significata of propositions

If we look at the foregoing suggestions for reconstructing the semantic functions of subject and predicate, it will be obvious that the function of the copula is not represented in these suggestions at all. However, if we want to take the reflections of medieval authors on the issue seriously, we have to acknowledge that the copula in their analysis is not just a mere syntactical marker of the application of predicate to subject (to distinguish a predication from a mere list), but it actually has the genuine semantic function of predicating existence. As Aquinas explains:

The reason why [Aristotle] says that the verb ‘is’ co-signifies composition is that it does not principally signify composition, but secondarily; for it primarily signifies what occurs to the mind in the way of actuality absolutely: for ‘is’, uttered absolutely, signifies being in act, and hence it signifies as a verb. But since actuality, which the verb ‘is’ principally signifies, is in general the actuality of every form, whether it is a substantial or an accidental actuality, this is why when we want to signify any form or act to actually inhere [*in esse*] in a subject, we signify this by means of the verb ‘is’, either absolutely [*simpliciter*] or with some qualification [*secundum quid*] ...²⁶

²⁵ Cf. Parsons, Terence, “The Traditional Square of Opposition”, *The Stanford Encyclopedia of Philosophy* (Winter 2006 Edition), Edward N. Zalta (ed.), URL = <<http://plato.stanford.edu/archives/win2006/entries/square/>>.

²⁶ *In Perihermeneias* lb. 1, lc. 5, n.22

That is to say, according to Aquinas, the reason why we use the verb signifying existence to indicate the application of the predicate to the subject is precisely that in any act of predication we actually predicate existence: either the existence of the thing supposed for by the subject absolutely, or the existence of the form signified by the predicate in the subject.

Thus, the copula with respect to a suppositum of the subject and with respect to the ultimate significatum of the predicate in that suppositum signifies the existence of this ultimate significatum, which can be compositionally determined as the value of the signification of the verb 'is' and its equivalents. However, depending on the nature of the ultimate significata of the predicate, the existence of these ultimate significata may be radically different. This is the clearest in the case of the ultimate significata of a privative predicate, such as 'blind', and the corresponding positive predicate, such as 'sighted'. Clearly, for the ultimate significata of 'blind' to exist is for the ultimate significata of 'sighted' not to exist. Therefore, since nothing can be existence and non-existence in the same sense, we cannot say that in 'Homer is blind' and 'Socrates is sighted' the copula would signify existence in the same sense. So, the significata of the copula in respect of the ultimate significata of the predicates of these sentences in the supposita of the subjects cannot be said to be acts of existence in the same sense.

However, at the same time, with regard to the immediate significatum of the predicate (the common nature signified by the predicate) the copula also signifies the existence of some other type of entity uniformly, in the same sense, according to Aquinas, namely, of the entity signified by the proposition as a whole, the so-called *enuntiabile*.²⁷

The conception of propositional signification involving such entities crops up quite early in the history of medieval logic, and recurs in different guises time and again.²⁸ It is present in Abelard's theory of *dicta*, and it is worked out in greater detail by the anonymous author of the 12th-century tract *Ars Burana* as follows:

Note that whether we speak about the *dictum* of a proposition or of the *significate* of a proposition or of an *enuntiabile* it is the same. For an *enuntiabile* is what is signified by a proposition. For example: 'A man is an animal', this proposition is true, because what it signifies is true; and that true thing that you in this way understand is the *enuntiabile*, whatever it is. Similarly, when I say: 'Socrates is an ass', this proposition is false, because what it signifies is false, and the false thing that you conceive in this way is the *enuntiabile*. And this cannot be seen, nor heard or sensed, but it is only perceivable by the intellect. If you ask in which category of things it belongs, whether it is a substance or an accident, of the *enuntiabile* we have to say that it is neither a substance nor an accident nor does it belong to any of the categories. For it has its own peculiar type of existence. And it is said to be extrapredicamental, not because it does not belong to any category, but because it does not belong to any of the categories distinguished by Aristotle. Therefore it belongs to some category that can be called the category of

²⁷ For a detailed reconstruction of Aquinas' ideas on the signification of the copula along these lines, see Klima, G. "Aquinas' Theory of the Copula and the Analogy of Being", *Logical Analysis and History of Philosophy*, 5(2002), pp. 159-176.

²⁸ Cf. Nuchelmans, G. *Late Scholastic and Humanist Theories of the Proposition*, Amsterdam: North Holland Publishing Co., 1980, and *Theories of the Proposition: Ancient and Medieval Conceptions of the Bearers of Truth and Falsity*. Amsterdam: North Holland Publishing Co., 1973. Perler, D. "Late Medieval Ontologies of Facts", *The Monist* 77(1994), pp. 149-169.

enuntiabilia. And in this category the most general item will be that consigned by the term `enuntiabile'. And this can be divided further as follows. Some enuntiabilia are of the present, some are of the past and some are of the future. Furthermore, some enuntiabilia are true and some are false. And further: of the true ones some are necessary and some are not necessary, and of the false ones some are possible and some are impossible. So it is to be understood what an enuntiabile is.²⁹

“At the other end of the story”, we have, for example, Aquinas’ famous 16th-century commentator, Thomas de Vio Cajetan declaring the following:

And note that Aristotle’s maxim posited here: ‘a sentence is true according as the thing is or is not’ is to be understood not of the thing which is the subject or the predicate of this sentence, but of the thing which is signified by the whole sentence, e.g., when it is said ‘a man is white’, this is not true because a man or a white thing is, but because a man’s being white is, for this is what is signified by this sentence.³⁰

And of course we must not forget various “major players” in the meantime, such as Walter Burley, proposing *real propositions* corresponding to ordinary written or spoken propositions, or Adam Wodeham and Gregory of Rimini positing *complexe significabilia* in the same role, evoking the relentless criticism of John Buridan.³¹

What all these in their details rather disparate views seem to boil down to is that these authors, having already been committed to a wealth of semantic values of various ontological statuses on the level of the semantics of terms, apparently had no trouble with adding “another layer” of semantic values on the level of the signification of propositions. Thus, on top of the supposita as well as the immediate and ultimate significata of categorematic terms, they would have the significata of the copula, signifying the existence of the ultimate significata of the predicate in the supposita of the subject, as well as the existence of the significatum of the proposition as a whole. In a compositional semantics reconstructing these ideas, therefore, the copula would have to be assigned a semantic function taking the various semantic values of the categorematic terms as its arguments, and yielding the existence of the semantic values resulting from the combination of the values of these terms.³²

A survey of “*via antiqua* semantics”

The resulting semantic theory is complicated and unwieldy, but one that is not necessarily inconsistent and has a number of advantages in logic itself as well as in metaphysics. In the first place, it is clear that the apparently boundless proliferation of various semantic

²⁹ De Rijk, L. M. (ed.), *Logica Modernorum*, Vol. II, Part II, Van Gorcum: Assen, 1967, pp. 357-359.

³⁰ Cajetan, Thomas de Vio, *Scripta Philosophica: Commentaria in Praedicamenta Aristotelis*, ed. M. H. Laurent, Angelicum, Romae, 1939, p. 87.

³¹ Cf. Zupko, J. “How it Played in the *rue de Fouarre*: Reception of Adam Wodeham’s Theory of the Complexe Significabile in the Arts Faculty at Paris in the Mid-fourteenth Century”, *Franciscan Studies* 54(1994), pp. 211-25. A good collection of relevant 14th-century texts can be found in Perler, D. *Satztheorien. Texte zur Sprachphilosophie und Wissenschaftstheorie im 14. Jahrhundert*, (Texte zur Forschung Bd. 57), Darmstadt: Wissenschaftliche Buchgesellschaft 1990.

³² For technical details, see Klima, G. “Aquinas’ Theory of the Copula and the Analogy of Being”, *Logical Analysis and History of Philosophy*, 5(2002), pp. 159-176.

values assigned to both categorematic and syncategorematic terms³³ yields a very fine-grained semantics, capable of making distinctions that more coarse-grained theories cannot make. For example, it is well-known that modern intensional logics, defining intensions in terms of functions from possible worlds to extensions or truth-values, cannot distinguish necessarily co-extensional predicates or propositions, such as the predicates ‘trilateral’ and ‘triangular’, or two tautologies. But on the *via antiqua* conception, as sketched here, it is easy to see that the two predicates can have distinct significations, yielding distinct ultimate significata for the same individuals, even if those significata are necessarily co-actual in any possible situation. In the same way, the significata of two non-synonymous tautologies can be two distinct, yet always necessarily co-actual *enuntiabilia* or *complexe significabilia* determined compositionally in terms of the distinct semantic values of the components of these distinct propositions.

Another logical advantage of this sort of construction is a simple, uniform theory of truth, consonant with Aristotle’s simple definition cited by Cajetan: a proposition is true just in case its significatum exists, which in turn is conditioned on both the way things are and on the way the compositional structure of the proposition determines the existence-conditions for the propositional significatum. For example, the proposition ‘Homer is blind’ on this conception is true, provided the *enuntiabile* or *complexe significabile* it signifies, namely, *that Homer is blind*, exists. But this entity, which is the value of the application of the semantic function signified by the copula to its arguments, namely, the suppositum of the subject and the signification of the predicate, exists just in case the ultimate significatum of the predicate in the suppositum of the subject, i.e., Homer’s blindness exists. The existence of this, however, is conditioned on the non-actuality of the ultimate significatum of the corresponding positive predicate, namely, the non-existence of Homer’s sight. Thus, the simple fact of the truth of the proposition ‘Homer is blind’ will consist in the simple fact of the existence of the significatum of this proposition. However, the existence of the significatum of this proposition is conditioned on the existence or non-existence of several “layers” of other items, assigned as the various semantic values of the syntactic components of the proposition.

And herein reside both the strength and the difficulty of this semantic construction. The primary strength of this construction consists in the expressive power of the system, which renders it capable of making the most refined distinctions, and thus allowing the formulation of the most abstruse metaphysical questions concerning the various semantic values of any phrases in any syntactical category. On the other hand, this is also the difficulty with this construction. It not only allows the formulation of abstruse metaphysical questions: it makes them *inevitable*, especially concerning the identity and distinction of these semantic values and the determination of their nature, their precise ontological status.

³³ For a discussion of this medieval distinction and its relation to the modern distinction between logical connectives and non-logical terms, see Klima, G. “Syncategoremata”, in: *Elsevier’s Encyclopedia of Language and Linguistics*, 2nd Ed. Edited by Keith Brown, Elsevier: Oxford, 2006, vol. 12, pp. 353-356.

Ockham's complaints

In fact, the apparently inevitable obscurity of the issues concerning the multitude and distinctions of these semantic values was the best motivation for Ockham to get rid of them in one fell swoop, by discarding the semantics that engendered them in the first place. Ockham's main complaints against the semantics of "the moderns" as he rather tendentiously refers to the representatives of the older theory³⁴ fall precisely into these two categories: those concerning the sheer multitude of entities (or quasi-entities) implied by this construction, clearly offending a nominalist's "taste for desert landscapes" (as Quine famously put it), and those concerning the obscurity of the nature and distinctions of these entities. The arguments supporting these complaints are also of two main sorts: there are those that argue for the absurdity of the ontological commitments of his opponents, and those that argue for the eliminability of those commitments.

The *first strategy* points to a number of logical and physical absurdities that seem to follow if we allow "multiplying entities with the multiplication of terms", as Ockham claims the "moderns" do.³⁵ To be sure, as we have seen, Ockham's characterization of his opponents' position is not entirely fair, for they are *not* committed to positing distinct entities in distinct logical categories. However, it is true that since their semantics left the question of the distinctness or identity of these items open, the semantic framework inevitably leads to a number of apparently intractable metaphysical problems. For instance, if Socrates is similar to Plato in wisdom, and he is similar to Plato in wisdom if and only if his similarity to Plato in wisdom exists, then it seems that he may be similar to Plato in wisdom even if one (or each) of them is not wise, provided this similarity is distinct from Plato's and Socrates's wisdom. For if they are distinct, then God can create any one or two of these things without the others. So, Plato and Socrates can be similar in wisdom without being wise, if God sustains their similarity in wisdom while annihilates their wisdom; and they can both be wise without being similar, if God sustains their wisdom, but annihilates their similarity, which is certainly absurd.

Ockham actually uses somewhat more complicated arguments against distinct "relation-things",³⁶ but the point is the same in all these, namely, that these distinct relation-things can exist logically independently from their foundations, and so their presence or absence may verify or falsify relational predications logically independently from the existence of those foundations, which is patently absurd. To be sure, "*via antiqua* authors" were quite aware of these difficulties and they had their own *metaphysical* solutions to them.³⁷

³⁴ In the medieval intellectual context, to be "modern" is to carry lesser weight than the established older authorities. Thus, by referring to his opponents as "moderns" Ockham was trying to "sell" his innovations as being just an attempt to restore a simpler, original Aristotelianism distorted by the unnecessary additions of the "moderns".

³⁵ Ockham, W. *Summa logicae* (SL), Philotheus Boehner, Gedeon Gál and Stephen F. Brown, ed., ("Opera philosophica," vol. 1), St. Bonaventure, NY: The Franciscan Institute, 1974, p. 171.

³⁶ Cf. Klima, G. "Ockham's Semantics and Ontology of the Categories", Spade, P. V. (ed.), *The Cambridge Companion to Ockham*, Cambridge: Cambridge University Press, pp. 118-142.

³⁷ For excellent recent discussions in English, see Henninger, M., SJ. *Relations: Medieval Theories 1250-1325*, Clarendon Press: Oxford, 1989; Brower, J. 'Medieval Theories of Relations', in *The Stanford*

However, Ockham's *logical* "solution" will simply eliminate these "apparent" metaphysical problems.

But besides logical absurdities of this sort, Ockham also considers certain physical absurdities derivable from positing such distinct entities, such as the generation of an infinity of distance-things in the fixed stars by a fly, as its distance from them changes by its flight here on earth.

Finally, Ockham also points to the absurdities deriving from attempts to overcome such and similar difficulties by tweaking the notion of the very distinction of such items, such as Scotus' *formal distinction*. For instance, in attacking Scotus' claim that the common nature of any individual is *merely formally* (and not really) *distinct* from the individual difference that individualizes it, he argues that if there is any distinction between two things, then it must be a real distinction, whence Scotus's notion of a mere formal distinction is vacuous. For, he argues, *this* individual difference is not formally distinct from *this* (very same) individual difference (for nothing is formally distinct from itself), and this individual difference is formally distinct from this common nature; therefore this common nature is not this individual difference, that is to say, they are *really* and not *merely formally* distinct, despite Scotus' claim.³⁸

To be sure, as I have indicated, Ockham's arguments are nothing his opponents could not handle; in fact most of these were raised and solved by themselves, although at the expense of introducing further refinements and complications into their own framework.

Ockham's *second strategy*, however, undermines precisely this tactic of "adding epicycles" by showing an alternative way of constructing semantic theory in which such complications need not emerge at all.

Ockham's alternative

Ockham was thinking of semantic relations in terms of the Aristotelian semantic triangle, just as much as his predecessors were. However, he radically reinterpreted the idea of what concepts are and how they represent their objects.³⁹ Consequently, since in his view the semantic properties of written or spoken terms are inherited from the concepts to which they are subordinated, no wonder Ockham's semantics of terms will be radically different as well.

But, apparently, even apart from the differences in his conception of concepts, he has a more directly *semantic* bone to pick with his predecessors. For in an apparent stark contrast to what we have seen in Lambert and Aquinas, Ockham insists that what is primarily signified by a term is not a concept, but the thing conceived by the concept. He argues for this claim as follows:

Encyclopedia of Philosophy (Fall 2005 Edition), ed. E. N. Zalta, URL = <http://plato.stanford.edu/archives/fall2005/entries/relations-medieval/>

³⁸ SL, I, 16, p. 54.

³⁹ For an excellent, detailed discussion of Ockham's doctrine, see Panaccio, C. *Ockham on Concepts*, Aldershot: Ashgate, 2004.

... an utterance primarily signifies that for which on account of its institution it primarily supposit. However, names of first intention supposit for things, and names of second intention for concepts, and names of second imposition for nouns or [other] utterances, as is clear by induction. The major premise is obvious, because that is primarily signified by the utterance for which the person imposing the name uses it. But it is clear that this is what the utterance primarily supposit for. Thus, we use the term 'man' principally for men.⁴⁰

To be sure, Ockham's "*via antiqua* opponents" would not deny that an utterance (ultimately) signifies not the concept, but the object of the concept which it immediately signifies, i.e., to which it is subordinated. But they would not agree with Ockham on what that object is and they would not identify that object in the way Ockham does here, with reference to (personal) supposition and *use*. Walter Burley explicitly attacked Ockham's position on the apparently purely semantic issue, trying to separate it from the connected ontological and cognitive psychological issues. To see the real contrast between their views, it is worth quoting Burley's argumentation at some length:

Again, the name 'man' signifies something first. And it does not first signify Socrates or Plato, because in that case someone hearing the utterance and knowing what was signified by the utterance would determinately and distinctly understand Socrates, which is false. Therefore, the name 'man' does not first signify something singular. Therefore, it first signifies a common entity. And that common entity is a species. Therefore, what is first signified by the name 'man' is a species. (34) I do not care at present whether that common entity is a thing outside the soul or a concept in the soul. Rather it suffices merely that what the name first signifies is a species. Thus 'Man is a species' will be true insofar as 'man' is taken for its significate. This is confirmed, because a name is not imposed except on the known, according to the Commentator, *Metaphysics* VII, 36 and also according to Boethius, who says, 'One imposes names on the things one sees'. But he who imposed the name 'man' to signify did not know me or John who is now present. Therefore, the name 'man' does not signify me or John who is now present. Consequently, the name 'man' does not signify me or John, etc., and yet supposit for me and for John when it supposit personally. Therefore, it is not true that a term supposit for its significate or significates whenever it supposit personally.⁴¹

As can be seen, the main difference from Ockham's position here is *not* that for Burley a term would signify a concept *and not* the thing conceived by means of the concept. When he says, "I do not care at present whether that common entity is a thing outside the soul or a concept in the soul", he is obviously trying to separate the semantic issue from the related ontological issue of what sort of entity it is that the term primarily signifies. The point for him is that it cannot be any individual, but has to be something common, whether in reality or merely "in the mind" (as its object), to those individuals which the term, on account of this signification, can be used to stand for. But that "common entity" (whether it is some common thing existing in reality regardless of any mental activity, or an "objective concept", i.e., the direct object of an abstractive mental act, representing something individual in abstraction from its individuating conditions) is obviously the direct, immediate object of a mental act. So, for Burley, what the term first, primarily signifies is also the object of some concept, but that object is not any individual thing as

⁴⁰ Ockham, *Ordinatio*, Opera Theologica, vol. IV, lb. 1, q. 22, pp. 48.18 - 49.4.

⁴¹ Burley, *Purity*, pp. 87-88. (33)-(34)

such, but rather something that any individual falling under the concept has to “match” by being informed precisely by the form that is abstracted in the concept.

For Ockham, on the other hand, especially after abandoning his earlier *fictum*-theory, and adopting his mature, mental-act theory of concepts, what is conceived by a concept is just any individual thing *indifferently* represented by the concept. Therefore, if a term is supposed to signify what is conceived by the corresponding concept, then it has to signify the individuals themselves, which of course are the personal supposita of the term in a propositional context. So it seems that even what appears to be a purely *semantic* difference between Ockham and Burley (and “the *via antiqua* view” in general) ultimately boils down to a fundamental difference in their cognitive psychology, a difference in their theory of concept-formation. Thus, anyone trying to evaluate the position of each author would have to deal with the details of their cognitive psychology. But regardless of those foundational issues in their respective cognitive theories, it is easy to see the resulting differences in their semantic theory.

For Ockham, the significata of a common categorematic term are the individuals represented by the corresponding concept indifferently, regardless of their existence and non-existence. Thus, a term such as ‘man’ will signify all men, not only those who exist, but those as well who existed, will exist, or can (or could or would) exist. Thus, in a formal reconstruction of Ockham’s semantics the signification of the term ‘man’ would not be a function assigning individualized humanities to individuals (as it would be in the *via antiqua*), but rather a subset of the domain of discourse, comprising both actual and non-actual elements. Correspondingly, a significatum of this term would be just an element of this signification, and thus a personal suppositum of the same term would be any such significatum, provided it is actual relative to the time connoted by the copula of the proposition in which the term is suppositing.

By this move, Ockham could at once get rid of a number of unwieldy problems of the *via antiqua* semantic construction. In the first place, the entire “shady business” of the ontological status of a “common nature” is gone, along with the problems of its distinction from its individuating conditions as it exists in the singulars. Indeed, the entire multitude of the instances of all these “common natures” and the problems of the identity and distinctness of these instances are gone as well. Furthermore, the multitude of these instances in several distinct *ontological categories* may be eliminated, provided Ockham can plausibly apply his semantic model in all the Aristotelian *logical categories* he is still committed to. Showing he can do so is what we usually refer to as Ockham’s program of “ontological reduction”, namely, the project of showing how all the distinct logical categories distinguished by Aristotle can be mapped onto a parsimonious nominalist ontology, having only two distinct ontological categories, namely, those of substance and quality.

Ockham’s program has been much discussed in the literature, so here I only want to focus on what is semantically relevant from it. To see a typical case of Ockham’s “ontological reduction”, let us consider the issue of distinct qualities in the species of shape, which Ockham would want to eliminate. Take for instance, a straight piece of wire. On the *via antiqua* conception, this wire is straight on account of being informed by an inherent shape-thing, named “straightness”. When the wire is bent, this straightness perishes and gives way to another shape-thing, which may be called “curvedness”. Apparently, the

only way to account for this change is precisely by means of assuming the existence of distinct shape-things, which may come and go, while their subject, the wire, remains in existence. Ockham, however *can* provide us with a way of accounting for this change without assuming the existence of such distinct shape-things in terms of his theory of connotation. For according to Ockham, when the piece of wire is straight, this does not have to mean that the wire is informed by a “straightness-thing”. All this means is that the ends of the wire are maximally distant, that is to say, the term “straight” does not signify a straightness distinct from the straight thing; rather, it *signifies* the straight thing itself, while *connotes* the maximal distance between its ends. The term is true of this wire, just in case its ends are maximally distant, and becomes false of it, when they are not. Thus, on account of the meaning of the term “straight”, which can properly be expressed by means of a nominal definition, Ockham can eliminate the apparent need for a “shape-thing”, which was demanded only by what he takes to be a mistaken semantic conception. For, as the nominal definition makes explicit, the term “straight” simply signifies elongated substances (i.e., ones whose length is considerably greater than their width and depth) connoting the maximal distance of their extremes along their length. But the things signified and connoted in this way are only substances and quantities (which Ockham identifies with substances or qualities as measurable in certain ways).

However, regardless of the details of the ontological project it intends to realize, Ockham’s semantic idea is clear. In order to have a nominalist semantics that admits in its domain of interpretation only entities of a certain limited number of categories, one needs to do the following:

1. Take simple absolute terms in the “permitted” categories to be “primitive”, in the sense that they are semantically simple, undefined, and they define others.
2. Take other syntactically simple terms that appear to involve commitment to entities in other than the permitted ontological categories to be compositionally dependent for their semantic evaluation on their nominal definitions, which in the last analysis will only contain “primitive” (undefined) terms and syncategoremata (i.e., terms that signify only syncategorematic concepts, which in turn are entities in the “permitted” ontological category of quality).

Thus, Ockham’s semantic idea in connection with his program of ontological reduction boils down to the strategy of using “eliminative definitions” to show that ontological commitment to entities in the “non-permitted” categories is merely apparent, and can be avoided in terms of providing the *right* sort of semantic analysis.

There are two logical problems with this idea. The first might be termed “the problem of the primitive vocabulary” of Ockham’s semantics, and the second “the problem of a merely programmatic semantics”

The first problem generated much controversy in the recent literature after the appearance of Claude Panaccio’s important study challenging “the received view” on Ockham’s ontological program.⁴² According to “the received view”,⁴³ Ockham’s primitive

⁴² See Panaccio, C. “Connotative Terms in Ockham’s Mental Language”, *Cahiers d’épistémologie* 9016(1990), pp. 1-22. For more recent treatments of the issue see Chalmers, D. “Is There Synonymy in Ockham’s Mental Language?” in *The Cambridge Companion to Ockham*, ed. P. V. Spade, Cambridge:

vocabulary would contain only syncategorematic terms (roughly, logical connectives) and absolute terms, i.e., terms subordinated to absolute concepts, whereby individuals are conceived absolutely (though in the case of universal concepts, indifferently), not in relation to anything else. Accordingly, on this view, Ockham is committed to holding that all connotative terms (i.e., terms subordinated to connotative concepts whereby we conceive of individuals in relation to other things, the *connotata* of the term) are semantically compositional; their semantic values are functionally determined by the semantic values of the components of their nominal definitions. Equivalently, the view holds that all connotative concepts are complex, i.e., there are no simple connotative concepts. The rationale for the view is Ockham's repeated claim that all connotative terms have nominal definitions, which coupled with the idea that nominal definitions are synonymous with their *definita* because they are subordinated to the same concept, directly yields the above theses. Panaccio's meticulous analysis of Ockham's texts, however, cast serious doubt on the assumption that nominal definitions for Ockham always have to be strictly synonymous with their *definita* on account of being subordinated to the same concept, and, correspondingly, whether there are no simple connotative concepts for Ockham.

But even without trying to settle this issue of Ockham scholarship, one can note that what is problematic with a severely limited primitive vocabulary is the feasibility of providing plausible analyses in all cases when needed. However, the primitive vocabulary may be enhanced not only by means of the addition of primitive connotative terms (ones subordinated to simple connotative concepts), but also by means of enhancing the class of syncategoremata, and construe apparently primitive connotative terms as complexes of absolute terms and some "non-standard" syncategoremata. Take for instance the Latin phrase 'hominis asinus' ('donkey of a man'). This is clearly a complex term, consisting of a simple absolute term 'asinus' ('donkey') and an apparently simple connotative term, 'hominis' ('of a man'), signifying things in relation to men as their possession. However, if we look at the corresponding English term, the appearance of the simplicity of the Latin connotative term 'hominis' is dissolved in the syntactical structure of the phrase 'of a man', which seems to indicate that in the formation of the concept expressed both by 'hominis' and by 'of a man' actually several concepts are involved, namely, those to which the English particles 'a' and 'of', and the term 'man' are subordinated.

Thus, if the primitive vocabulary turns out to be too limited, it can be enhanced in two different ways. Either (1) by adding primitive polyadic categorematic terms, i.e., acknowledging that there are connotative terms subordinated to simple connotative concepts, which therefore cannot have strictly synonymous nominal definitions (this is going to be "Buridan's way", and this is also the way for Ockham suggested by

Cambridge University Press, 1999, pp. 76-99; and Panaccio, C. "Semantics and Mental Language," *ibid.*, pp. 53-75. Panaccio's most recent summary account of the debate can be found in his *Ockham on Concepts*.

⁴³ Cf., e.g., Spade, P. V. "Ockham's Distinctions between Absolute and Connotative Terms," *Vivarium* 13 (1975), pp. 55-76; Spade, P. V. "Synonymy and Equivocation in Ockham's Mental Language", *Journal of the History of Philosophy* 18(1980), pp. 9-22. For Spade's most recent discussion of the issue, see Spade, Paul Vincent, "William of Ockham", *The Stanford Encyclopedia of Philosophy (Fall 2006 Edition)*, Edward N. Zalta (ed.), URL = <http://plato.stanford.edu/archives/fall2006/entries/ockham/>

Panaccio's interpretation), or (2) by acknowledging term-forming syncategorematic terms, subordinated to (polyadic) categorematic concepts. So, using the previously introduced restricted variables as representations of common categorematic terms having personal supposition, we might illustrate the difference in the following way:

(1) $x.Dx.(y.H(y)(x.))$ – [an-x-that-is-a-donkey-that-is] [of-a-y-that-is-a-man];

(2) $x.Dx.(ϕ(x.)(y.Hy))$ – [an-x-that-is-a-donkey] [that-is-of] [a-y-that-is-a-man].

In (2), $ϕ$ would be a distinguished logical predicate (pretty much like identity in standard quantification theory) with two arguments, the first of which is to be the possession of the second.

But no matter which way is taken, they both point to the same limitation of this approach to natural language semantics. For if whole classes of syntactically simple categorematic terms are semantically complex, in the sense that their semantic evaluation is a function of the evaluation of their nominal definition, then it would appear that the whole enterprise of Ockhamist semantics is doomed to remain programmatic until the semantic analyses of all these terms are actually carried out by providing their nominal definitions.

However, one may say that this situation need not pose a serious threat to the Ockhamist approach, especially, if one takes Buridan's (and "Panaccio's Ockham's" path). For in that case one may treat any syntactically simple term as semantically primitive as well, which is fine for most logical purposes, unless the term's meaning is relevant to a particular problem, in which case one may just provide the relevant analysis.

In any case, with this treatment of categorematic terms, the semantic construction is easy, and is obviously not committed to the vast and obscure ontology the *via antiqua* construction is apparently committed to. For on this approach any categorematic term will merely have the function of signifying individuals in the permitted categories, all of them in the same way, if the term is absolute, or some of them primarily and others secondarily, if the term is connotative, and in personal supposition will supposit for some or all of its ultimate (primary) significata.

Accordingly, the terms of a proposition in personal supposition will have the same sort of semantic function: subject and predicate will both supposit for their ultimate significata, whence the affirmative copula will have to express the identity of these supposita. For example, in the proposition 'Every man is an animal', the terms supposit for those of their ultimate significata (all men and all animals, respectively, past, present, future and merely possible), which actually exist at the present time of the utterance of the proposition, connoted by the present tense of the copula. The copula, in turn, has to express the identity of these supposita, which is why the *via moderna* subscribes *exclusively* to the *identity theory of predication*, as opposed to the *inherence theory* of the *via moderna* (which, nevertheless, also *allowed*, non-exclusively, the identity theory).⁴⁴ Thus, the quantifier, the *signum quantitatis*, has the function of denoting how many of the

⁴⁴ Aquinas, for instance, allows both analyses, although he regards the inherence-analysis the "more appropriate" [*magis propria*], and in the case of adjectival predicates the only acceptable one, e.g., in *Super Sent.*, lib. 3 d. 5 q. 3 a. 3, expos.; *Summa Theologiae* I, q. 39 a. 6 ad 2.

subject's supposita have to be identical with the supposita of the predicate, if the proposition is to be true.

Therefore, the explicit *via moderna* reading of this sentence would be 'Every thing that is a man is identical with some animal', which is appropriately represented by the corresponding quantificational formula using restricted variables:

$$(\forall x.Mx)(\exists y.Ay)(x. = y.)$$

Accordingly, in this reconstruction, the four types of categorical propositions would be formalized as follows:

$$A: (\forall x.Mx)(\exists y.Ay)(x. = y.)$$

$$I: (\exists x.Mx)(\exists y.Ay)(x. = y.)$$

$$E: \sim(\exists x.Mx)(\exists y.Ay)(x. = y.)$$

$$O: (\exists x.Mx)\sim(\exists y.Ay)(x. = y.)$$

Indeed, given the existential import of A, these formulae would form a perfect traditional Square of Opposition.

So far, so good. But what about the significata of these propositions? Apart from stating the truth-conditions of various types of propositions in terms of his identity-theory of predication and insisting that a proposition signifies nothing over and above what its categorematic terms signify, Ockham is mostly silent on this subject, just as on many further details of his semantic theory, such as the issue of the apparent ontological commitment to non-existents (mere possibilia) in his semantics, or a general account of truth and semantic validity in a semantically closed, token-based semantics.⁴⁵ Such and similar details were, however, worked out very carefully by John Buridan.

Buridan's semantics

Concepts and mental language

Buridan's semantics starts out in the same way as Ockham's. Acknowledging the subordination of written to spoken, and spoken to mental terms (i.e., concepts), establishes for him a "semantic triangle", in which concepts are natural signs of whatever we conceive by means of them, whereas the utterances and inscriptions subordinated to them are the conventional signs of the same, in virtue of their conventional subordination to concepts. Not all concepts have, however, the function of conceiving something; some concepts merely serve to determine *how* we conceive of things conceived by other concepts. This is the basis of Buridan's primary distinction between categorematic and syncategorematic concepts, and the corresponding spoken and written terms. For example, the concept of negation operating on the categorematic concept whereby we

⁴⁵ Most of these issues are taken up and discussed in detail by Marilyn McCord Adams in her *William Ockham*, University of Notre Dame Press: Notre Dame, 1987, Vol. I, c. 11, although she also remarks on p. 394: "Ockham does not anticipate his successors' interest in refining this formulation of the correspondence theory of truth ['an expression is said to be true because it signifies things to be as they are in reality'] in the face of various objections, whether pedantic or formidable, the most notable of the latter being the semantic paradoxes".

conceive indifferently of all humans (past, present, future, and merely possible ones as well) yields a complex concept whereby we conceive of all humans negatively, on account of which the concept applies to all non-humans. Again, the concept of the affirmative, assertoric, present tense copula operating on two categorematic concepts yields a complex concept, a mental proposition, whereby we conceive of all things conceived by the categorematic concepts in such a way as to conceive the identity of those significata of the categorematic concepts that are actual at the time connoted by the copula, i.e., the identity of the actual supposita of these mental terms. As these examples clearly illustrate, following Ockham's lead, Buridan wholeheartedly subscribes to the idea of a mental language, in which simple, naturally significative units of our thought, our simple concepts, are combined in their operation to yield complex representational units of our thought, our complex concepts, the representative (or "naturally significative") function of which is compositionally dependent on the functions of the simple concepts. To be sure, according to Buridan, our complex concepts are complex *only* in this sense, namely, in the compositionality of their representative function; otherwise, ontologically, they are just as simple qualities of the mind as are our simple concepts. However, since their formation and representative function is conditioned on the operation of the relevant simple concepts, it makes good sense to call them *semantically* complex.⁴⁶

The second example also clearly illustrates another logically important feature of Buridan's distinction between categorematic and syncategorematic concepts and the corresponding terms. The concept of the copula, connoting time, does conceive of something external to the mind,⁴⁷ besides effecting the combination (*complexio* – as Buridan calls it) of categorematic concepts. Thus, Buridan classifies the copula as a "mixed" *syncategorema*, which besides its syncategorematic function also has some representative, significative function, unless we form in our minds the concept of an *atemporal* copula, which is purely syncategorematic.⁴⁸

Buridan's mental language, therefore, contains in its "primitive vocabulary" simple concepts, some of which are syncategorematic, others are categorematic, and yet others are mixed. Purely categorematic concepts have the function of representing or naturally signifying the objects we conceive by means of them, in the way we conceive of them. Purely syncategorematic (or *complexive*) concepts do not represent anything in and of themselves, their function merely consists in modifying the representative function of other, representative concepts, by combining with them semantically complex concepts. These concepts are *semantically* complex, because their representative function is

⁴⁶ For a discussion of semantic complexity (compositionality) without syntactic or ontological complexity see my *Introduction* to John Buridan: *Summulae de Dialectica* (SD), an annotated translation with a philosophical introduction by Gyula Klima; New Haven: Yale University Press, 2001.

⁴⁷ Buridan identifies time with the motion of the sphere of the fixed stars, as conceived by means of a concept counting its revolutions. For discussion and references see Dekker, D-J. "Buridan's Concept of Time. Time, Motion and the Soul in John Buridan's Questions on Aristotle's Physics", in: Thijssen, J. M. - Zupko, J. (eds.): *The Metaphysics and Natural Philosophy of John Buridan*, Leiden-Boston-Köln: Brill Academic Publishers, 2000, pp. 151-164.

⁴⁸ Cf. SD 4.2.3 and 4.3.4

compositionally dependent on the semantic values of the concepts “making it up”. Finally, mixed concepts obviously exercise both categorematic and syncategorematic functions, as we could see in the case of the tensed copula (as opposed to the purely syncategorematic, atemporal or tenseless copula). It is the semantic features of the resulting mental language that are inherited, through conventional acts of imposition, by the elements and syntactical structures of conventional spoken and written languages.

The semantics of terms

Written and spoken terms are classified as categorematic, syncategorematic or mixed, depending on the kind of concept they are subordinated to. To be sure, since imposition is conventional and as such arbitrary, this classification may change as established usage changes. And of course there are a number of *pragmatic* factors determining what counts as established usage, but if these pragmatic factors are (reasonably) fixed, then we can have a fixed interpretation of these conventional signs.

Given such an interpretation, some categorematic terms are simple, others are complex. However, some of those that are syntactically simple (i.e., they have no parts that are significative in themselves and contribute their semantic values in determining the semantic values of the whole) may still be semantically complex in virtue of being subordinated to a complex concept, the compositional character of which can be expressed by means of the syntactical structure of the appropriate nominal definition. Again, some categorematic terms are absolute and others are connotative (be they simple or complex) in virtue of being subordinated to absolute or connotative concepts (i.e., to concepts whereby conceive of things absolutely, not in relation to others, or in relation to others, respectively). Finally, some categorematic terms are singular and others are common, again depending on whether they are subordinated to singular or common concepts. Common absolute terms signify all their significata indifferently in the same way, just as these significata are conceived by means of the corresponding concepts. Common connotative terms signify their significata in relation to other things, called their connotata, again, in the same way as they are conceived by means of the corresponding connotative concepts.

When categorematic terms are joined by a copula to form a proposition, they take on the function of supposition, i.e., standing for some or all of their *ultimate significata in personal* (or significative) supposition, or for their *immediate significata* (the token-concepts to which they are subordinated) or for *themselves* or *other tokens* of the same kind, in *material* (or non-significative) supposition. (Buridan drops simple supposition as a separate division of supposition, and simply lumps it together with material supposition under the heading of non-significative or material supposition.)

In personal supposition, and in a *non-ampliative* context,⁴⁹ *absolute* terms supposit for those of their ultimate significata that are actual at the time connoted by the present-tense

⁴⁹ A context is ampliative, if it extends the range of the supposition of the term to its non-actual significata, such as tensed and modal contexts, or intentional contexts (generated, according to Buridan, by verbs, and their derivatives, signifying acts of the cognitive soul). For a reconstruction of Buridan’s treatment of intentional contexts, see Klima, G. ‘*Debeo tibi equum*: a Reconstruction of the Theoretical Framework of Buridan’s Treatment of the *sophisma*’, in *Sophisms in Medieval Logic and Grammar*, ed. S. Read, Dordrecht/Boston/London: Kluwer Academic Publishers, 1993, pp. 333-347.

assertoric copula, whereas *connotative* terms, or as Buridan more often calls them, *appellative* terms, supposit for those of their ultimate significata that are both actual at the time connoted by the present-tense assertoric copula and are actually related to the term's *appellata* in the way demanded by the term's connotation. For example, in the sentence 'A man is an animal', the absolute subject and predicate terms supposit for actual men and actual animals, as opposed to the non-actual ones still signified by these terms. In the sentence 'A man is wise, the absolute term 'man' supposits for actually existing men, whereas the connotative term 'wise' supposits for actual persons actually having wisdom, assuming the correct nominal definition of 'wise' is 'person having wisdom', where the absolute term 'wisdom' signifies individual wisdoms (given Buridan's nominalist ontology, one cannot say 'individual instances of wisdom'), which are the individual qualities informing the souls of wise persons. The wisdoms of wise persons are the connotata of the term 'wise', connoted by it whether they are actual or not, and *appellated* (obliquely referred to) by it in this sentence, provided they are actual. Thus, just as personal supposition is direct reference to the term's actual ultimate significata, so appellation is oblique reference to a connotative term's connotata that are actual at the time connoted by the copula of the proposition in which the term occurs.

Given that personal supposition and appellation in this way pick out the actual ultimate significata and connotata of terms that otherwise signify and connote non-actual as well as actual individuals, and that actuality is relative to time and modality, now we can make good sense of the qualification added at the beginning of the previous paragraph concerning *non-ampliative* contexts. For Buridan, *ampliation* is an extension of the range of supposition of a term from actual to past, or future, or merely possible significata of the term, demanded by its propositional context. For example, whereas in the sentence 'A man is wise' the subject term stands for actual humans, in the past tense sentence 'A man was wise' the range of supposition of the term is *ampliated* to past humans, so that the subject stands either for present or past humans. The predicate on the other hand is not held for it supposita in this disjunctive manner: it is held strictly for the time of the verb. That is to say, this sentence is true if something that *is or was* a man *was* identical with something wise. So, if Socrates was wise, this sentence is true, even if Socrates no longer exists (whence Socrates was, but is no longer, a man), and so is not identical with any presently existing wise person. Again, if the only person who used to be wise is no longer wise, although still exists, and no other person is wise at the present time, this sentence is true, even if, of course, the corresponding present-tense sentence is false. And similar considerations apply to future tense and modal sentences, where the supposition of the subject is amplified to future or merely possible significata of the term.

One counterintuitive result of this analysis explicitly considered by Buridan is that the sentence 'An old man will/can be a boy' on this analysis will come out as true.⁵⁰ For this is equivalent to 'Something that is or will be an old man will be a boy', which is true of someone who is a boy today, and will be a boy tomorrow and will also be an old man years later. Buridan explains the problem away by pointing out that we find the result counterintuitive only because we tend to read the original not as equivalent to the

⁵⁰ Cf. SD 1.8.8 and *Sophismata* c. 4, *fourth sophism*.

sentence with the amplified subject, but with one that is restricted to the present: ‘Something that is an old man will/can be a boy’, which is of course false.

However, Buridan’s doctrine of ampliation, or in general, what we would call “quantification over non-existents”, seems to raise more serious problems concerning Ockham’s and Buridan’s nominalism.⁵¹ After all, despite all their commitment to eliminating all sorts of weird entities posited by their (moderate) realist opponents, are they not equally committed to some really weird “entities”, namely, non-existents?

Quantification, existential import, and ontological commitment

Since according to Buridan’s theory of predication an affirmative proposition is true only if its terms supposit for the same thing, and if at least one of the terms of an affirmative proposition supposits for nothing, then they cannot supposit for the same thing, on his theory all affirmative propositions carry existential import, provided they are non-ampliative of their terms.⁵² As has been mentioned before, this approach immediately attributes existential import to universal affirmatives (with no ampliation), which at once validates the relations of the traditional *Square of Opposition*.

In fact, Buridan would argue that even propositions with amplified terms have analogous inferential relations, even if one might not say in their case that a universal affirmative properly speaking has *existential* import. For example, the modal universal affirmative ‘Every man is possibly a philosopher’ would entail ‘Some man is possibly a philosopher’, still, neither of these would entail that something is actually a man. The reason is that on Buridan’s theory of ampliation, these propositions would be analyzed as ‘Everything/Something that is or can be a man can be a philosopher’, which are true if every/some significata of the term ‘man’, including everything that is or can be a man, can be a philosopher, which, however, can certainly hold even if nothing is actually a man.

Accordingly, Buridan would claim that his analysis of these propositions does not commit him to the existence of anything: on his view neither of these propositions would entail the proposition that a man exists, or even the proposition that a merely possible man exists. Indeed, in general, Buridan would perfectly agree with Quine⁵³ that everything exists and there are no non-existents or mere *possibilia*, for on his analysis these propositions would be true. Still, Quine would not be happy with Buridan’s analysis. He would say that Buridan’s analysis of propositions with amplified terms does ontologically commit him to non-existents, by virtue of (existentially) quantifying over those non-existents.

At this point, however, we should notice that this Quinean charge against Buridan is based on our implicit acknowledgement of the Tarskian distinction between object-

⁵¹ Ockham did not endorse the doctrine of ampliation, but he was still committed to quantifying over non-existents. Cf. Priest, G. and Read, S. “Ockham’s Rejection of Ampliation”, *Mind* 90(1981), pp. 274-279.

⁵² Or, if they are not interpreted according to *natural supposition*, but this issue is not relevant to our present considerations. I deal with the issue though in my “Existence and Reference in Medieval Logic”.

⁵³ Cf. Quine, W.V.O. ‘On What There Is’, in Quine, W. V. O., *From a Logical Point of View*, 2nd revised edition, Cambridge, MA: Harvard University Press, 1980, pp. 1-19.

language and meta-language. For the point of the charge is that even if Buridan in his object language says “all the right things” according to Quine, we can point out in his meta-language that in his analyses of propositions with amplified terms, his variables range over mere *possibilia*.

However, Buridan would flatly reject the presupposition of the objection, namely, the distinction between object-language and meta-language. He would say that the subject matter, as well as the medium, of his theory is one and the same language, in which he is ontologically committed to those things, and *only* those things, of which he has to say that they exist. But he is not committed to saying this of any of the *possibilia* he of course can talk about, signify, refer to, supposit for, and “quantify over”, for all these semantic relations relate our expressions to objects we can conceive of, and of course we can conceive not only of things that presently exist in our narrower or broader environment.

As Buridan put it in his question-commentary on Aristotle’s *De Interpretatione*:

... a name signifies what is understood by it when it is put in an expression, for to signify is to give rise to some understanding of a thing [*intellectum rei constituere*]. But by the name ‘rose’ we understand a rose and by the name ‘roses’ we understand roses. For example, [suppose] last year we, you and I, saw many red roses together. If I ask you: ‘The roses we saw were red, weren’t they?’, then you say: ‘Indeed’. And this you know to be true. But you wouldn’t know this, unless you thought of those roses. Therefore, by the name ‘roses’, when I say ‘We saw roses’, you understand those things that we saw. But we saw red roses. So you think of roses. [...] the name ‘rose’ refers to [*supponit pro*] roses, although nothing is a rose, for according to the above-mentioned case, namely, that last year we saw many red roses, you concede the proposition ‘There were many red roses last year’, and you know that this is true. And since this is an affirmative [proposition], it would not be true, unless its subject, which is the name ‘roses’, referred to some thing or some things. But it does not refer to [any] other thing or other things, but roses. [...] we should note that we can think of things without any difference of time and think of past or future things as well as present ones. And for this reason we can also impose words to signify without any difference of time. For this is the way names signify. Therefore, by the specific concept of ‘man’ I conceive indifferently all men, present, past and future. And by the name ‘man’ all [men] are signified indifferently, present, past and future [ones alike]. So we truly say that every man who was was an animal, and every man who will be will be an animal. And for this reason it follows that the [verbs] ‘think/understand’ [*intelligere*], ‘know’ [*scire*], ‘mean/signify’ [*significare*] and the like, and the participles deriving from them, *ampliate* the terms with which they are construed to refer indifferently to present, past and future and possible [things] which perhaps neither are, nor will be, nor ever were. Therefore, even if no rose exists, I think of a rose, not one that is, but one which was, or will be, or can be. And then, when it is said: the name ‘rose’ signifies something, I concede this. And when you say: that [thing] is not, I concede that; but it was. If, then, you conclude: therefore, something is nothing, I deny the consequence, for in the major premise the term ‘something’ was amplified to past and future [things], and in the conclusion it is restricted to present ones.⁵⁴

⁵⁴ Buridan, J. *Questiones longe super librum Perihermeneias* (QDI), edited with an introduction by R. van der Lecq, Nijmegen: Ingenium Publishers, 1984; Ph. D. thesis, Meppel: University of Leiden, 1983, pp.12-14. Cf.: “All verbs, even in the present tense, which of their very nature can concern future, past and possible things as well as present ones such as ‘think’, ‘know’, ‘mean’ and the like amplify their terms to all times, future, past and present. And what accounts for this is that a thing can be thought of without any difference of time, namely, abstracted from any place and time. And so, when a thing is thought of in this way, then a thing which was, or will be, or can be may be thought of as well as a thing which [actually] is.

So, when we say that in the proposition ‘Some roses existed here’ or ‘Some roses could exist here’ we are referring to things that existed or could exist, but do not exist. Still, according to Buridan it does not follow that therefore in these cases we are referring to (quantifying over) non-existents. For we are referring to what we are thinking of, and a non-existent or non-being cannot be thought of according to Buridan, because the proposition ‘A non-being is understood’ cannot be true.

Buridan considers this issue in his *Sophismata*, when he raises the question whether the *sophisma* (problem-sentence) ‘A non-being is understood’ is true.

First, he lays down that the proposition is affirmative with an infinite subject, that is to say, the negation preceding the term ‘being’ is a narrow-scope term-negation, and not a propositional negation, so the entire proposition is affirmative. Hence he argues for its truth as follows:

[...] the sophism is proved: for such infinite terms are analyzed so that saying ‘A non-man runs’ is equivalent to saying ‘What is not a man runs’. And thus saying ‘A non-being is understood’ is equivalent to saying ‘What is not a being is understood’. But the second is true, for Antichrist, who is not a being, is understood.⁵⁵

Next, Buridan argues for the opposite side before resolving the issue:

O.1 The opposite is argued: for the term ‘non-being’ supposits for nothing, but a proposition is false if its subject supposits for nothing and it is affirmative; therefore, etc.

In his response, Buridan sides with the second position, namely, that the sophism is false, and argues for this position on the basis of his theory of ampliation.

I respond that the sophism is false, for the term supposits for nothing. And this is clear in the following manner: the verb ‘to understand’ or ‘to be understood’ ampliates supposition to past, and future, and even all possible things. Therefore, if I say, ‘A being is understood’, the term ‘being’ supposits indifferently for every present or past or future or possible thing. But the rule is that an infinitizing negation added to a term removes its supposition for everything for which it supposited and makes it supposit for everything for which it did not supposit, if there are any such things. Therefore, in the proposition ‘A non-being is understood’, the term ‘non-being’ does not supposit for some present, nor for some past, nor for some future, nor for some possible being; therefore, it supposits for nothing, and so the proposition is false. And I say that ‘A non-being is understood’ and ‘What is not a being is understood’ are not equivalent, for by the verb ‘is’ you restrict the infinity [*infinitatem*] to present things. Therefore, the supposition for past and future [and possible] things remains, and thus this has to be conceded: ‘What is not [a being] is understood’. If, therefore, we are to give an equivalent analysis of ‘A non-being is understood’, then it will be the following: ‘What neither is, nor was, nor will be, nor can be is understood’, and this is false, just as the sophism was.⁵⁶

Therefore, if I have the common concept from which we take this name ‘man’, then I can think indifferently of all men, past, present and future. And this is why these verbs can concern past or future things as well as present ones.” Albert of Saxony. *Perutilis Logica*, Venice, 1518; reprint, Hildesheim-New York: Georg Olms Verlag, 1974, Tr. 2, c. 10, 8a regula. For an earlier example of the same explanation of ampliation see the selection from the *Logica Lamberti*, in *The Cambridge Translations of Medieval Philosophical Texts*, eds. N. Kretzmann and E. Stump, Cambridge: Cambridge University Press, 1988, pp. 104-163, esp. pp. 116-118.

⁵⁵ SD, p. 923ff.

⁵⁶ *Ibid.*

Thus, even if we can certainly think of, refer to, and quantify over objects that do not presently exist, it does not follow, that we can think of, refer to, and quantify over non-existents: the sentence expressing this idea is just not true.

To be sure, a staunch Quinean might again try to move the objection to the level of meta-language, claiming that even if in Buridan's language, on his own analysis, the sentence 'I am referring to/quantifying over non-existents' is false, in the meta-language of his theory we can truly say this, and that is what matters. But then Buridan might again just deny the validity of that distinction, and when challenged with the semantic paradoxes and the issue of semantic closure motivating Tarski's distinction, he would just point to his own treatment of the paradoxes and his resulting, radically different conception of truth and validity, *without* any need for such a global distinction. So now we need to turn to these issues, starting with Buridan's conception of propositional signification.

The semantics of propositions: truth and validity in a semantically closed language

Buridan's semantics of propositional signification is very simple: propositions signify whatever their categorematic terms signify. Thus, the propositions 'God is God' and 'God is not God' signify the same simple thing as the term 'God' does, namely, God. Yet, the reason why these linguistic expressions are non-synonymous is that they signify different concepts in the mind, whereby the same simple thing is conceived differently. So, whereas these phrases ultimately signify the same thing *ad extra*, outside the mind, they signify different concepts immediately *apud mentem*, i.e., in the mind.

But then it is clear that these contradictory propositions cannot be verified either in terms of the existence of their immediate significata or in terms of the existence of their ultimate significata (for the existence of those would verify both, which is impossible); whence, in stark contrast to the *via antiqua* conception, their truth is not to be determined in terms of their signification at all.

Therefore, the truth of propositions is to be determined for Buridan on the basis of the supposition of their terms.⁵⁷ However, since this varies with propositional context, the conditions of their truth given in terms of the supposition of their terms needs to be provided separately for different types of propositions:

Therefore, recapitulating, we put forth the fourteenth conclusion, namely that every true particular affirmative is true because the subject and predicate supposit for the same thing or things. And every true universal affirmative is true because for whatever thing or things the subject supposits for, the predicate supposits for that thing or for those same things. And every false particular affirmative is false because the subject and the predicate do not supposit for the same thing or things. And every false universal affirmative is false because not every thing or all things which the subject supposits for are also supposed for by the predicate. And every true particular negative is true because the universal affirmative contradictory to it is false; and we have declared what the reason for this is. And every true universal negative is true because the particular affirmative contradictory to it is false; and we have declared what the reason for this is. And every false particular negative is false because the universal affirmative contradictory to it is true; and we have declared what the reason for this is. And every

⁵⁷ See SD 9. c. 2.

false universal negative is false because the particular contradictory to it is true; and we have declared what the reason for this is.⁵⁸

These clauses, in fact, may look very much like the clauses of the satisfaction conditions of formulae in a formal semantics, serving a “definition of truth” (in a model). Indeed, we may get the same impression from what Buridan says immediately after these clauses:

And this fourteenth conclusion, which contains eight partial conclusions, appears to be entirely true on the basis of the foregoing [points] given the principle that whatever is the cause of truth of one of the contradictories, or is required for its truth, is the cause of the falsity of the other, or is required for its falsity. But in the end we should note—since we can use names by convention, and many people commonly use this way of putting the matter—that in respect of every true proposition we say: ‘It is so’, and in respect of every false one we say: ‘It is not so’, and I do not intend to eliminate this way of speaking. But for the sake of brevity I may use it often intending by it not what it signifies on account of its primary imposition, but the diverse causes of truth and falsity assigned above for diverse propositions, as has been said.⁵⁹

However, upon a closer look it should be clear that Buridan is not providing a “definition of truth” here whether in an Aristotelian or in a Tarskian manner. That he is not providing an Aristotelian truth-definition in terms of the existence of what a proposition as a whole signifies in the way the *via antiqua* semantics did is clear from the foregoing considerations concerning Buridan’s conception of propositional signification, as well as from his remark here that whenever *he* uses the Aristotelian formula, he means it merely as a shorthand for his own clauses listed above. It is also clear that these clauses do not list satisfaction-conditions or even truth-conditions for the various types of propositions listed here (amounting to definitions of truth for these proposition types). Indeed, none of these clauses are anything like Tarskian biconditionals. They are not saying ‘A proposition of type T is true if and only if such and such conditions are met’. They are saying ‘A true/false proposition of type T is true/false, because the supposita of their terms satisfy such and such conditions’. So, what these clauses assert is not even the necessary and sufficient conditions of the assertibility of truth or falsity of these various types of propositions; rather, they are stating the “correspondence conditions” of true or false propositions, i.e., what circumstances need to obtain in reality concerning the supposita of their terms for their truth or falsity (these circumstances being quite literally *the causes* of their truth or falsity). Finally, the same point, namely, that these clauses do not constitute Buridan’s definition of truth, or strictly-speaking his statement of truth-

⁵⁸ *Ibid.* pp. 858-859.

⁵⁹ Buridan will often refer back to this remark, reminding us that whenever he uses his simple formula *qualitercumque propositio significat ita est* [‘In whatever way the proposition signifies things to be, so things are’] or any of its stylistic variants, he uses it as a place-holder for the conditions of the truth of the several types of propositions he laid down here. Note also how this general formula is related to the colloquial phrase: *A est B, necne? — Ita est.* [literally: ‘A is B, isn’t it? — It is so.’] What causes the trouble in the translation is the fact that apart from such a conversational context English demands some identification of the grammatical subject of this reply, which is not demanded by Latin. This is why, in translating *qualitercumque propositio significat ita est* [literally, but not in good English: ‘Howsoever the proposition signifies so it is’, although T. K. Scott did use this rather awkward solution], I will use the somewhat more complicated circumlocution ‘In whatever way the proposition signifies things to be, so they are’, or its stylistic variants. [This is my note to this passage in my translation of Buridan’s *Summulae*.]

conditions, is clear from his treatment of Liar-type paradoxes, according to which such paradox statements are simply false, despite the fact that in their case their *correspondence conditions* stated in the above clauses are perfectly met. For according to Buridan, the Liar-type paradoxes, or *insolubilia*, as they were known in medieval logic, merely show that meeting its correspondence conditions is not sufficient for the truth of a proposition.

Without going into a detailed discussion of Buridan's treatment of the Liar paradox and its cognates,⁶⁰ while focusing on its relevance to his construction of semantic theory, one can provide the gist of his solution in the following manner.

Consider the following Liar-sentence, named L:

(L) L is false

What is paradoxical about L is that apparently (1) its truth entails its falsity, whereas (2) its falsity entails its truth. Buridan's solution consists in arguing that on account of the validity of entailment (1), the Liar-sentence L is false; however, no paradox arises, because entailment (2) is not valid. Therefore, *pace* Tarski, semantic closure (i.e., the condition that a language contains its own semantic predicates and means of referring to its own elements) need not render a language inconsistent.

But how can Buridan claim that (2) is not valid? After all, if L is false, then its terms supposit for the same thing, namely, L itself, which would seem to suffice for its truth. But Buridan disagrees. First he observes that any proposition "virtually implies"⁶¹ another proposition, stating its truth. So, L implies 'L is true'. But then, since on account of (1) L is false, 'L is true' is not true. Thus, by *modus tollens*, L is not true either, whence, by virtue of bivalence, it is false. Therefore, L cannot be true, whence its falsity cannot entail its truth, despite the fact that its *correspondence condition* is satisfied: it is false, whence its terms co-supposit for itself. Still, this is not sufficient for calling it true, since for that, besides the correspondence condition its "virtual implication condition" would also have to be met, that is to say, the "virtually implied" proposition stating its truth would also have to be true. So, what is necessary and sufficient for a proposition to be called true, according to Buridan, is not only the fulfillment of its correspondence condition, but also the fulfillment of its virtual implication condition, plus, obviously, the proposition also has to exist.

But even this formulation cannot be regarded as a Buridanian "definition of truth". After all, since the "virtual implication" condition (according to which 'L is true' implied by L must be true) contains the notion of truth, mentioning it in the right-hand side of this Buridanian equivalence would render this putative definition circular.⁶² But I do not think this would be the correct interpretation of this equivalence. The right-hand side of this equivalence is rather a list of trivial, separately necessary and jointly sufficient conditions of the correct assertibility of 'true'.

⁶⁰ Of which he provides an astounding array in his *Summulae*.

⁶¹ The import of 'virtually' will be discussed soon.

⁶² For this charge, see especially Read, S. L. "The Liar Paradox from John Buridan back to Thomas Bradwardine", *Vivarium* 40(2002), pp. 189-218, p. 201.

In the case of non-reflexive sentences, the correspondence and virtual implication conditions are always met together, and that is why they do not give rise to paradox. What is peculiar about the Liar-type sentences, however, is that because of their meaning, their correspondence conditions can be met separately from their virtual implication condition, whence (the appearance of) a paradox arises. However, if one clearly spells out all conditions of the assertibility of 'true', it will be clear that meeting the correspondence condition without the virtual implication condition does not make a proposition true, whence the falsity of the Liar-sentence does not entail its truth; there is no genuine paradox.

But then, if Buridan's solution works for reflexive-sentences in general, then he is not compelled by considerations that motivated Tarski to introduce a global split between object language and meta-language, so his possible defense against the Quinean charges concerning ontological commitment discussed earlier may just work as well.

However, one may still raise the issue that if the list of the assertibility conditions of the truth-predicate does not constitute a Buridanian definition of truth, then how can he have a working semantic definition of validity (an inference is valid if and only if the premises and the negation of the conclusion cannot be true together), which apparently needs to be based on a definition of truth?

The Buridanian answer to this question is that the notion of validity is not to be provided in terms of a definition of truth; indeed, Buridan argues that in (what we would describe as) a token-based, semantically closed system, the notion of validity cannot be based on the notion of truth. The simple reason for this is that items of our language are individual token-symbols, which are parts of Buridan's ontology just as any other really existing individual. These token-symbols come into and go out of existence, whereas their existence may be part of the conditions of their correspondence to reality and their truth. For instance, the proposition 'No proposition is negative', being a negative proposition, can never be true, for its very existence falsifies it. Still, it would not be an impossible situation in which there are no negative propositions (in fact, this was the actual situation before the appearance of humans, provided we restrict our notion of a proposition to those formed by humans whether in writing, speech or in the mind). But then, in the case of this proposition there is again a divergence between the satisfaction of truth conditions and correspondence conditions, this time on account of the existence and non-existence of the proposition itself. Therefore, if he allowed a definition of validity in terms of truth, Buridan would have to accept as valid any odd consequences that have this proposition as their antecedent.

To avoid this, Buridan proposes a different, improved definition of validity, not in terms of truth, but in terms of the correspondence conditions he laid out for different types of propositions, summarized in the (improperly interpreted) Aristotelian formula:

The fifth conclusion is that for the validity of a consequence it does not suffice for it to be impossible for the antecedent to be true without the consequent if they are formed together [...] for this is not valid: 'No proposition is negative; therefore, no proposition is affirmative'. And this is clear because the opposite of the consequent does not entail the opposite of the antecedent. Yet, the first cannot be true without the truth of the second, for it cannot be true. Therefore, something more is required, namely, that things cannot be as the antecedent signifies without being as the consequent signifies. But in connection with this it has been determined that this is not the proper expression of the

point, but we use it in the sense given above, for we cannot generally express in a single expression covering all true propositions a reason why they are true, nor concerning all false propositions a reason why they are false, as has been said elsewhere.⁶³

So, by means of the re-interpreted Aristotelian formula Buridan finds a way of expressing the satisfaction of the correspondence conditions of a proposition in a given situation independently from its truth, indeed, independently from its existence in that situation. This is most obvious in Buridan's discussion leading to his final definition of logical validity, where, using the example 'No proposition is negative; therefore, some proposition is negative', he first argues against his improved definition as follows:

Again, it is not possible for things to be as the first [proposition, i.e., the antecedent] signifies without their being as the second [the consequent] signifies; therefore, the consequence is valid. The consequence seems to be manifest from what we said a valid consequence was in the previous sophism, and you cannot otherwise express the reason why a consequence is said to be valid. But I prove the antecedent: for it follows that if things are as it signifies, then it signifies; and it follows that if it signifies, then it is; and, if it is, then things are as signified by the second.⁶⁴

In his reply to this objection, Buridan draws a very important distinction between two possible ways of understanding his improved definition of validity:

To the second, which seems to be troublesome, I reply that a consequence is never true or false unless it is; and thus the validity or truth of a consequence requires that its antecedent and consequent exist. And then, with this assumption, we give the rule that a consequence is valid if it is impossible for things to be as the antecedent signifies without their being as the consequent signifies. And this rule can be understood in two ways: first, that it is one proposition about impossibility in the composite sense, in the way that this is commonly used, and its sense then is that this is impossible: 'When it is formed, things are as the antecedent signifies and not as the consequent signifies'. And taken in this way the rule is not valid, for according to this rule it follows that the sophism is true. And it is according to this false rule that the argument proceeded. Taken in the other way, the rule is understood as a proposition about impossibility in the divided sense, so that its sense is: a consequence is valid if in whatever way the antecedent signifies [things to be], it is impossible for things to be in that way without their being in the way the consequent signifies [them to be]. And it is clear that this rule would not prove the sophism true, for in whatever way the proposition 'No proposition is negative' signifies, it is possible for things to be in that way, and yet for them not to be in the way in which the other signifies; for this would be that case if, while the affirmatives stayed in existence, all negatives were annihilated, and this is possible.⁶⁵

So, his final definition of validity is the improved definition with the important proviso that it is to be understood in the divided sense. But in that sense it provides a clear criterion for judging the validity of a consequence, regardless of the existence of the antecedent and consequent in the possible situations in which the satisfaction of their correspondence conditions needs to be checked in order to determine the validity of the consequence in which they actually occur.

⁶³ SD, pp. 955-956.

⁶⁴ SD, pp. 956-957.

⁶⁵ SD, pp. 957-958.

But with this notion of validity Buridan is certainly entitled in his solution of the Liar-type paradoxes to use the notion of a “virtual implication”, i.e., a valid consequence whose consequent need not actually be formed. Indeed, despite his strict nominalist criteria concerning the existence of the token-sentences whose truth or falsity we assert, he can certainly talk about the validity of a *virtual* implication, because his notion of validity is not tied to the notion of truth whose assertibility would require the existence of the relevant token-sentences.

Thus, by means of the re-interpreted Aristotelian formula, as summarizing the correspondence conditions of propositions that Buridan laid down in terms of the supposition of their terms, he managed to identify the ways things are in possible situations, regardless of whether the proposition that would signify them to be this way exists in those situations. Yet, relying on his theory of supposition, Buridan can do so without reifying the way things are as a “state of affairs”, a *complexe significabile*, distinct from the ordinary things admitted in his nominalist ontology.

Conclusion: reconstructing medieval logic

After this sketch of Buridan’s semantics, what remains is to provide the sort of rational reconstruction I was talking about in the introduction, at least in outline, to facilitate its comparison with the competing medieval conception as reconstructed here, as well as with modern quantification theory. In fact, perhaps the best way to approach this reconstruction from “our side” is to see how the standard modern semantic construction of quantification theory would need to be modified to represent, at least in part, the contrasting features of the medieval *viae*. Next we should see what further features cannot be captured by such simple modifications, and finally what would need to be done to capture even those features for our own use.

As we have seen in connection with both medieval *viae*, much of the traditional analysis of categorical propositions, their immediate inferential relations in the Square of Opposition and traditional syllogistic can quite easily be restituted by some very simple modifications of the syntax and semantics of standard quantification theory with identity.

All we need to do is add restricted variables to the language, and evaluate them in the semantics in such a way that they pick out elements of the extension of their matrix in a model, provided this extension is not empty; otherwise they should get some evaluation that renders any affirmative predication about them false.⁶⁶

This simple modification of quantification theory renders it capable of representing some common features of both medieval *viae*, through attributing existential import to all affirmative predications, as both *viae* did, although for different reasons. For the *viam antiquam*, affirmative (non-ampliative) predications carry existential import because of the impossibility of the existence of the form signified by the predicate in a suppositum of the subject without the existence of any suppositum of the subject (barring the miraculous

⁶⁶ I have presented such systems in my *Ars Artium*, and “Existence and Reference in Medieval Logic”. A simple, non-modal system is provided here in the *Appendix*. This system I believe is about as close as one can get to Buridan’s semantics by modifying quantification theory “as we know it”.

cases of transubstantiated bread and wine).⁶⁷ For the *via moderna*, on the other hand, affirmative (non-ampliative) predications must carry existential import because of the requirement of the co-supposition of the terms of the affirmative predication, which of course cannot take place unless both terms actually do have *supposita*.

These differences are partly representable already in the modified version of quantification theory with identity and restricted variables. In this system, the *via moderna* analysis of a universal affirmative proposition would have to be represented as a universal identity claim with two quantifiable variables:

$$(\forall x.Sx)(\exists y.Py)(x.Sx = y.Py)$$

The *via antiqua* analysis, on the other hand, would have to be represented as a universal predication where only the subject term is represented by a quantifiable variable:

$$(\forall x.Sx)(P(x.Sx)).$$

These formulae represent quite well the symmetry of the semantic functions of the two terms in the *via moderna* analysis, and the asymmetry of the same in the *via antiqua* analysis. However, it is only the *via moderna* analysis that is represented quite well by the semantic functions of the restricted variables of the first formula. The function of the predicate of the second formula (designating a subset of the domain) is nowhere near the signification function attributed to such a predicate by the *via antiqua*. Thus, in a formal semantic reconstruction of that conception, we would have to assign to the predicates of our language the sort of signification function discussed earlier. However, that will inevitably bring with it having to modify the domain of interpretation of our model, where we would have to distinguish at least actual and non-actual elements (corresponding at least to actual vs. non-actual ultimate significata of our predicates, rendering our predications true or false). But if we want to represent the finer details of the *via antiqua* conception, we will also have to introduce new terms into our language, corresponding to abstract common terms, with the function of suppositing for the significata of the predicates representing our concrete common terms. Furthermore, at this point it will be also inevitable to introduce a copula with the function of asserting the existence of these significata. However, since these significata cannot be regarded as entities in the same sense in all cases, we would have to distinguish several senses of existence, and introduce further sub-domains into our domain of interpretation accordingly. Finally, we should also represent the function of the copula asserting the significata of entire propositions, which could then serve to provide a simple Aristotelian formula for the definition of truth-in-a-model, grounding a definition of validity. These adjustments, however, already involve major departures from the standard construction of quantification theory.

⁶⁷ For the logical complications caused by this supernatural scenario, see Bakker, Paul J. J. M. “*Hoc est corpus meum*. L’analyse de la formule de consécration chez les théologiens du XIVe et XVe siècles,” in Costantino Marmo (ed.), *Vestigia, Images, Verba: Semiotics and Logic in Medieval Theological Texts (XIIIth-XIVth Century)*. Turnhout: Brepols, 1997. pp. 427-51, and Ashworth, E. Jennifer, “Medieval Theories of Singular Terms”, *The Stanford Encyclopedia of Philosophy (Fall 2006 Edition)*, Edward N. Zalta (ed.), URL = <http://plato.stanford.edu/archives/fall2006/entries/singular-terms-medieval/>, sect. 8.

As we have seen, the *via moderna* analysis is actually much closer, at least in the first approach, to standard quantification theory. Indeed, the function attributed to predicate letters (that of denoting subsets of the domain or of its Cartesian products with itself) is not a far cry from the nominalist conception of the signification of common terms, according to which these terms signify certain individuals of the domain, or their ordered collections in the case of connotative terms. And the identity sign is clearly a good representation of the function of the copula in accordance with the *via moderna* conception.

However, again, if we need to represent the finer details of the *via moderna* conception, we need to depart considerably from the standard construction of the semantics of quantification theory. In the first place, although using restricted variables to represent common terms in personal supposition yields “the right results” concerning the square of opposition and syllogistic, nevertheless, it does so at the expense of representing simple common terms (say, F) as complex variables with an intrinsic propositional structure embedded in their matrix (‘x.Fx’, amounting to something expressible as ‘thing that is an F’). But according to our *via moderna* authors it is the simple term ‘man’, for example, that has this referring function, and not a complex term like ‘thing that is a man’. In fact, Buridan would pointedly distinguish the two in various contexts. So, to represent this feature of *via moderna* semantics, we would need to devise “term-logics” along the lines proposed by Lesniewski, Lejewski, Henry, Sommers and Englebretsen.

However, even if all the finer details of *via moderna* semantics were neatly represented in a semantic theory that describes the semantic features of an object language in a distinct meta-language, the entire construction of the semantic theory, as we have seen, would be radically unfaithful to Buridan’s conception. In the first place, the global split between object-language and meta-language would not do justice to his sophisticated conception of ontological commitment, offering a genuine third alternative “between” Quine’s and Meinong’s. In the second place, it would preclude his intriguing treatment of Liar-type paradoxes with all their implications concerning the theory of truth. Finally, it would also be incapable of representing Buridan’s “relentlessly” nominalist account of logical validity in a semantically closed, token based system.

To approach these issues, therefore, one might provide a semantic construction in which the object language is capable of “cannibalizing” its own meta-language, by introducing distinguished semantic predicates into the object-language matching those originally defined in the meta-language.

The payoff of such a project would be the ability to see exactly what it takes, in precise model-theoretical terms, to construct a nominalist semantics, facilitating its comparison both with the competing medieval conception and with a number of modern conceptions. And this, in the end, might just get us closer to a genuine understanding of the fundamental semantic relations between language, thought and reality.

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APPENDIX

LANGUAGE

$L := \langle C, P, V, \text{Trm}, F \rangle$ [language : constants, parameters, variables, terms, formulae]

$C := \{ \sim, \&, =, \forall, \cdot, (,) \}$ [constants: negation, conjunction, identity, universal quantifier, punctuation marks]

$P := \text{Pr} \cup I$, $\text{Pr} := \cup \{ F_n^m \}$, $I := \cup \{ a_n \}$ [parameters: predicates, individual names]

$V := X \cup X_r$, $X := \cup \{ x_i \}$, [variables: simple variables plus restricted variables]

$X_r := \{ t_n : t_n = 'x.A' \text{ and } A \in F \}$ [restricted variable: formula prefixed with simple variable and dot]

$\text{Trm} := I \cup V$ [terms: individual names plus variables]

Formulae:

- (1) $t_1 \dots t_m \in \text{Trm}, F_n^m \in \text{Pr} \rightarrow 'F_n^m(t_1) \dots (t_m)' \in F$
- (2) $t_1, t_2 \in \text{Trm} \rightarrow 't_1 = t_2' \in F$
- (3) $A, B \in F \rightarrow '\sim(A)', 'A \& B' \in F$
- (4) $A \in F, v \in V \rightarrow '(\forall v)(A)' \in F$

MODEL:

$M := \langle D, T, E, 0, 1, \text{SGT} \rangle$, where

$D \neq \emptyset, T \neq \emptyset, t \in T, E(t) \subset D, 0 \notin D, 1 \notin D, \text{SGT}: P \rightarrow D \cup P(D^m)$ [non-empty domain, set of times, times, set of existents at time t , 0 and 1: False and True, signification function: from parameters to the domain plus the power-set of the m -th Cartesian product of D with itself]

- (1) $\text{SGT}(a_n) \in D$
- (2) $\text{SGT}(F_n^m) \in P(D^m)$

Supposition (value-assignment in a model)

- (1) $\text{SUP}(a)(t) = \text{SGT}(a)$, if $\text{SGT}(a) \in E(t)$,
otherwise $\text{SUP}(a)(t) = 0$
- (2) $\text{SUP}(x)(t) \in D$
- (3) $\text{SUP}('x.A')(t) = \text{SUP}(x)(t)$, if $\text{SUP}(A)(t) = 1$,
otherwise $\text{SUP}('x.A')(t) = 0$
- (4) $\text{SUP}('F_n^m(t_1) \dots (t_m)')(t) = 1$, if $\langle \text{SUP}(t_1)(t), \dots, \text{SUP}(t_m)(t) \rangle \in \text{SGT}(F_n^m) \cap E(t)^m$,
otherwise $\text{SUP}('F_n^m(t_1) \dots (t_m)')(t) = 0$
- (5) $\text{SUP}('t_1 = t_2')(t) = 1$, if $\text{SUP}(t_1)(t) = \text{SUP}(t_2)(t) \in E(t)$,
otherwise $\text{SUP}('t_1 = t_2')(t) = 0$
- (6) $\text{SUP}('\sim A')(t) = 1$, if $\text{SUP}(A)(t) = 0$, otherwise $\text{SUP}('\sim A')(t) = 0$
- (7) $\text{SUP}('A \& B')(t) = 1$, if $\text{SUP}(A)(t) = \text{SUP}(B)(t) = 1$,
otherwise $\text{SUP}('A \& B')(t) = 0$
- (8) $\text{SUP}('(\forall v)(A)')(t) = 1$, if for every $u \in \text{RSUP}(v)(t)$, $\text{SUP}[v:u](A)(t) = 1$,
otherwise $\text{SUP}('(\forall v)(A)')(t) = 0$, where $\text{RSUP}(v)(t) := \{ u \in E(t) : \text{for some SUP, } u = \text{SUP}(v)(t) \}$, if $\{ u \in E(t) : \text{for some SUP, } u = \text{SUP}(v)(t) \} \neq \emptyset$, otherwise $\text{RSUP}(v)(t) := \{ 0 \}$, and $\text{SUP}[v:u](w)(t) = u$, if $w = v$, otherwise $\text{SUP}[v:u](w)(t) = \text{SUP}(v)(t)$ --
[$\text{RSUP}(v)(t)$ is called "the range of v at t "]

A is true in M iff for some SUP, $\text{SUP}(A)(t) = 1$; **A is valid** iff for every M, A is true in M.