

Chapter 1

LOGIC WITHOUT TRUTH

Buridan on the Liar

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Abstract Stephen Read's criticism of Buridan's solution of the Liar Paradox is based on the charge that while this solution may avoid inconsistency, it does so at the expense of failing to provide a theory of truth. This paper argues that this is one luxury Buridan's logical theory actually can afford: since Buridan does not define formal consequence in terms of truth (and with good reason), his logic simply does not need it. Therefore, Buridan's treatment of the paradox should be regarded as an attempt to eliminate a problem concerning the possibility of the consistent use of semantic predicates under the conditions of semantic closure, rather than as an attempted solution of a problem for a theory of truth. Nevertheless, the concluding section of the paper argues that Buridan's solution fails, because it renders his logical theory inconsistent. A postscript, however, briefly considers an interpretation that may quite plausibly save the consistency of Buridan's theory.

Keywords: nominalism, insolubilia, truth, correspondence, validity, virtual implication, consequences, signification, supposition, *syncategoremata*, *complexe significabilia*, token-sentence, Bradwardine, Buridan, Albert of Saxony

1. Read, Bradwardine and Buridan

In a couple of recent, extremely intriguing papers,¹ Stephen Read has successfully revived Thomas Bradwardine's ingenious treatment of the

¹See S. L. Read, "The Liar Paradox from John Buridan back to Thomas Bradwardine", *Vivarium*, 40(2002), pp. 189-218; S. L. Read, "The Truth Schema and the Liar", in this volume.

Liar Paradox, along with his theory of truth and propositional signification, after being nearly completely forgotten and generally unappreciated for almost seven centuries. In the course of this resuscitation process, Read has also argued against contemporary “infatuation” with another, already quite successfully resuscitated medieval treatment of the Liar, namely, John Buridan’s, and for the superiority of Bradwardine’s solution, which (or rather, a significantly modified version of which) Buridan had abandoned.

Despite possible (and even actual) appearances to the contrary, I am not one of those who are “infatuated” with Buridan in general or his treatment of the Liar in particular.² Nevertheless, I believe fairness demands that we acknowledge Buridan’s genuinely good reasons for abandoning his own earlier solution within its own theoretical framework. Indeed, we should realize that the charges leveled against Buridan’s solution coming from the demands of a different theoretical framework are not quite justified, if we consider the role of his final solution within its own theoretical context.

Therefore, given the importance of the different theoretical contexts in which these solutions are proposed, I believe I should begin by clarifying some points concerning the relationships between Bradwardine’s and Buridan’s positions within their respective theoretical contexts. As Stephen Read has carefully pointed out, there is a significant difference between Bradwardine’s solution and Buridan’s early solution, despite the fact that they are both framed with reference to the signification of propositions, as opposed to Buridan’s final solution, which is framed with reference to the “co-supposition” of the terms of a “virtually implied” proposition.

The fundamental difference between the two solutions provided in terms of propositional signification is that whereas Buridan’s early solution involves the thesis that *all* propositions signify their own truth, Bradwardine’s solution restricts this claim to propositions signifying that they are false, i.e., according to Bradwardine, it is only such propositions that signify their own truth (and so, signifying both their own falsity and truth, they must be false). But the difference between their solutions is not restricted to the different scopes of these two theses: the authors provide radically different reasons for these theses. Bradwardine’s thesis is based on an elaborate argument, specifically designed to deal with propositions signifying themselves not to be true or to be

²In fact, I consider Buridan my worthiest philosophical opponent on some fundamental issues in metaphysics. This is precisely the reason why I spend considerable time and effort on reconstructing his genuine positions.

false.³ Buridan's, on the other hand, is based on what he considers to be the general feature of the signification of all propositions based on their form (i.e., the meaning of their copula).⁴ Therefore, it is actually not quite clear whether Buridan's early solution was directly influenced by Bradwardine's, or rather by just the formula in general circulation that a proposition is true because things are in [all] the way[s] it signifies them to be (*qualiter[cumque] significat [rem esse] ita [res] est*). I cannot, and I do not want to, decide this historical question here. But because of their theoretical differences, I do want to distinguish Bradwardine's own solution from Buridan's early solution,⁵ both provided in terms of propositional signification, but involving claims of different generality, as well as from Buridan's final solution framed in terms of the requirement of a "virtual implication". Thus, I will refer to "Bradwardine's solution", as the one involving the claim that propositions signifying their own falsity signify themselves to be true; I will also talk about Buridan's early, "Bradwardinian solution" (allowing for the possibility that it was actually influenced by Bradwardine), as the one involving the different claim that *all* propositions signify their own truth; and I will finally talk about "Buridan's final solution", as the one framed in terms of a "virtual implication", and involving the rejection of Buridan's own "Bradwardinian solution".

Given these distinctions among these three solutions, I am going to argue for the following four theses.

- 1 Buridan was justified in abandoning his own "Bradwardinian solution" within his own logic, for in Buridan's logic a crucial thesis of that solution cannot be expressed by a true sentence.
- 2 Bradwardine's own solution could still be maintained in Buridan's framework, at least for a certain class of cases of the paradox, provided it is sustainable in that framework at all.
- 3 The demands on Buridan's final solution, requiring it to provide a theory of truth, coming from a different theoretical framework, are unjustified, given the theoretical role this solution plays in Buridan's logic.

³See Read, 2002, p. 192.

⁴See Read, 2002, pp. 193-202, esp. p. 195.

⁵Indeed, I want to do so especially because I treated these solutions indistinctly elsewhere (where their distinction, however, was not relevant to my argument). See G. Klima, "Consequences of a Closed, Token-Based Semantics: The Case of John Buridan", *History and Philosophy of Logic*, 25 (2004), pp. 95-110, esp. p. 103, notes 15 and 17.

4 Buridan's solution nevertheless fails, because it renders his theory inconsistent.

2. The Liar Paradox and Buridan's Solutions

The Liar Paradox emerges for Buridan as a natural consequence of his conception of logical theory, treating logic as primarily a (practical) science of inferential relations among token-sentences of human languages (*propositiones* – propositions), whether spoken, written, or mental.⁶ Accordingly, the languages to which his theory applies are semantically closed: they contain semantic predicates and means of referring to items they contain. Therefore, in these languages, any proposition claiming its own falsity is well-formed, and given Buridan's unrestricted endorsement of the principle of bivalence, must be either true or false. However, apparently, such a proposition would have to be both true and not true. For if it is true, then, given that it (truly) claims itself to be false, it is false. So, if it is true, then it is false; therefore it is false. On the other hand, if it is false, then things are the way it says they are; therefore, it is true. But then, if it is true, then it is false, and if it is false, then it is true, whence it is true if and only if it is false, which, given bivalence, leads to the explicit contradiction that it is true and it is not true.

As has been discussed in a number of papers including Read's,⁷ Buridan's solution to the paradox accepts the proof of the falsity of Liar-sentences, but blocks the reverse implication from their falsity to their truth. The fundamental point of the solution, namely, blocking the reverse implication, which Buridan shares with Bradwardine, Albert of Saxony and other medieval philosophers, is the claim that things being the way a Liar-sentence claims they are is not sufficient for its truth. So, given that its truth entails its falsity, it is false, but its falsity will not entail its truth, for even if things are the way it claims them to be (for it claims itself to be false and it is indeed false), this much is not sufficient for its truth. For its truth some further condition would have to be met, which the Liar-sentence fails to meet. That further condition in Bradwardine's and Buridan's early, "Bradwardinian" solution was formulated in terms of the signification of the Liar-sentence. Buridan, however, in his later works changed his mind about the viability of stating this further

⁶Henceforth, I am going to use the term 'proposition' in this medieval sense, referring to sentence-tokens, whether spoken, written, or mental. For Buridan, inferential relations hold primarily among mental propositions, given his conception of language in general, according to which any semantic features of conventional spoken or written languages are derivative, and dependent on the primary, natural semantic features of the language of human thought.

⁷See again the papers referred to in notes 1 and 5 above, and the "classic" treatments provided by Spade, Hughes, Scott, Moody and Prior referred to in those papers.

condition in terms of the signification of propositions, and formulated it with reference to the terms of a “virtually implied” proposition. This is a fundamental departure from both Bradwardine’s and Buridan’s “Bradwardinian” solution, which finds its explanation in Buridan’s nominalist theory of propositional signification. Therefore, to understand Buridan’s reasons, we first need to take a closer look at this theory.

3. Buridan’s Theory of Propositional Signification

Buridan’s nominalist ontology is a world of individuals: individual substances and their individualized qualities and quantities.⁸ In this ontology, therefore, there is no place for another type of entities, say, facts, or states of affairs, or their late-medieval counterparts famously endorsed by Adam Wodeham and Gregory of Rimini, the so-called *complexe significabilia*, for propositions to signify.⁹ Buridan’s semantics maps all items of any language it concerns (spoken, written, or mental) ultimately onto this parsimonious ontology. But this ontology, since it encompasses all entities there are, includes also items of these languages: conventionally significant individual inscriptions and utterances, and naturally significant acts of thought (which are just certain naturally representing individualized qualities of thinking substances). Thus, in assigning semantic values to the items of these languages, one has to take into account not only how things other than items of a language are, but also how things that are items of the language under evaluation are.

In dealing with the semantic evaluation of propositions, therefore, Buridan has to heed two demands of his nominalist metaphysics: 1. propositional signification can only be provided in terms of individuals permitted by his ontology, and 2. special care needs to be taken of those propositions whose semantic values depend not only on individuals

⁸I should also add “and their modes” but those need not detain us in this context. For more on this aspect of Buridan’s ontology, see C. Normore, “Buridan’s Ontology”, in: J. Bogen, and J. E. McGuire, (eds.) *How Things Are*, D. Reidel Publishing Company: Dordrecht-Boston-Lancaster, 1985, pp. 189-203, and G. Klima, “Buridan’s Logic and the Ontology of Modes”, in: S. Ebbesen – R. L. Friedman, (eds.), *Medieval Analyses in Language and Cognition*, Copenhagen: The Royal Danish Academy of Sciences and Letters, 1999, pp. 473-495.

⁹See Buridan’s arguments against positing such quasi-entities, based primarily on the observation that they would not fit into any broad and jointly exhaustive ontological categories (for they cannot be substance or accident, or God or creature). See J. Buridan, *Summulae de Dialectica* (henceforth: SD), an annotated translation with a philosophical introduction by Gyula Klima; New Haven: Yale University Press, 2001, pp. 829-831; J. Buridan, *In Metaphysicam Aristotelis Questiones Argutissimae* (henceforth: QM), Paris 1588 (actually 1518). Reprinted as *Kommentar zur Aristotelischen Metaphysik*, Minerva, Frankfurt a. M., 1964, lb. 6, q. 8.

that are other than items of the language under consideration, but also on individuals that are items of the language in question. For example, the proposition ‘No proposition is negative’, being itself a negative proposition, cannot be true in a situation in which it is actually formed. Still, it is an obviously possible scenario in which there are no negative propositions in the world. (Indeed, this was certainly the case before the first human being formed the first negative proposition in the history of the universe, assuming we are only talking about negative propositions formed by human beings and disregard the issue of non-human intelligences.) Therefore, this proposition is clearly true *of* that scenario, even if it cannot be true *in* that scenario. So, in evaluating this proposition (and especially its modal versions), Buridan clearly has to take into account the existence or non-existence of this proposition itself in the situation in which its truth-value is assigned.

Given these theoretical demands, Buridan constructs a two-tiered semantics for propositions, namely, one that contains a “fine-grained mapping” from spoken and written propositions to mental propositions and a “coarse-grained mapping” from mental propositions (and by their mediation from spoken and written propositions) to things in the world, where the world itself contains also all items of the languages to which these propositions belong. The first mapping, from conventional spoken and written languages to mental language, maps token-sentences of conventional languages to corresponding mental propositions, where the corresponding mental propositions are those token-acts of singular minds that are compositionally dependent for their semantic values on the semantic values of those concepts that are signified in these minds by the syntactical parts of the conventionally signifying sentences.¹⁰ It must be noted here that this mapping is not one-to-one. In the case of synonymous sentences (say, in the case of strictly matching translations or sentences containing synonymous terms), it is many-to-one.¹¹ Still, this mapping is sufficiently fine-grained to provide the semantic distinctions

¹⁰For the issue of compositionality in the mental-language tradition in general, see the excellent historical survey provided by C. Panaccio, *Le discours intérieur de Platon à Guillaume d’Ockham*, Éditions du Seuil, Paris, 1999. For Buridan’s conception in particular, see my *Introduction to Buridan’s Summulae*, esp. SD, pp. xxxvii–xlili.

¹¹One would think that, correspondingly, in the case of ambiguous sentences the mapping should be one-to-many. However, in his *Questiones Elencorum*, Buridan argues that ambiguous sentences need not be distinguished, for they express their different senses disjunctively. So, apparently, an ambiguous written or spoken proposition would then be mapped onto a single disjunctive mental proposition. But Buridan seems to have abandoned this strong position in his later works. See J. Buridan, *Questiones Elencorum* (henceforth: QE), ed. R. van der Lecq and H.A.G. Braakhuis, Nijmegen 1994, *Introduction*, section 3.2.

one needs to make, especially in intentional contexts.¹² But when the mental propositions concern things other than items in a language, they cannot further be mapped onto some sort of propositional entities, given the demands of Buridan's nominalist ontology. So, the second mapping has to be "coarser": a mental proposition concerning things in the world can only signify things that are signified by its categorematic terms (the terms flanking its copula), whence even non-synonymous propositions that share the same terms will end up signifying the same things.

It is for this reason that Buridan explicitly draws a number of apparently rather counterintuitive conclusions concerning the extra-mental (*ad extra*) signification of written and spoken propositions, as opposed to their intra-mental (*apud mentem*) signification. For example, a result of this conception is that although the written propositions 'God is God' and 'God is not God' signify different (indeed, contradictory) mental propositions, they signify the same *ad extra*, namely, what their categorematic terms signify, i.e., God. But this result is counterintuitive *only* if extra-mental signification is thought to determine truth-conditions; for example, under the assumption that the truth of a proposition consists in the actual extra-mental existence of its *significatum*. But, as we shall see, for Buridan their signification has no role in determining the truth of propositions (it is rather determined by the *supposition* of their terms), while their synonymy-relations are adequately accounted for even in accordance with his parsimonious ontology. For the contradictory written and spoken propositions, although they signify the same thing *ad extra*, are not synonymous, given that they signify distinct mental propositions *apud mentem*. And the mental propositions, even if they also signify the same thing, are not synonymous either, for they signify the same thing, but not in the same way, on account of their different compositional structure (the one being negative and the other affirmative).¹³ So the extramental *significata* of propositions can be identified without trouble with the *significata* of their categorematic terms, without any need for specific, extra-mental propositional *significata*, which Buridan, therefore, happily eliminates from his ontology.

¹²See G. Klima, "'Debeo tibi equum': A Reconstruction of Buridan's Treatment of the Sophisma", in S. L. Read, (ed.), *Sophisms in Medieval Logic and Grammar: Acts of the 9th European Symposium for Medieval Logic and Semantics*, Dordrecht: Kluwer Academic Publishers, 1993, pp. 333-347.

¹³See SD pp. 10-14, 232-234, 825-826, 841-843.

4. The Semantics of Sentential Nominalizations

In accordance with this conception, then, sentential nominalizations, such as “that-clauses” or infinitive constructions, which by supporters of special propositional entities, i.e., *dicta*, *enuntiabilia*, *real propositions* or *complexe significabilia*, were taken to name what the corresponding propositions signify, cannot have this function in Buridan’s semantics. Instead, Buridan explains their function with reference to his semantic theory of categorematic terms.¹⁴

Categorematic terms are terms that can be the subject or predicate of a syntactically well-formed proposition, i.e., terms that can suitably flank the copula of a proposition.¹⁵ Propositional nominalizations can obviously do so (as in ‘That a man walks is possible’ or ‘For a man to walk is possible’).¹⁶ Therefore, Buridan is clearly entitled to his move of treating these as complex common terms with the same type of semantic functions that ordinary complex common terms (such as ‘wise man’ or ‘braying donkey’) have. The basic semantic functions of such common terms are *signification* (roughly, *meaning*) and *supposition* (roughly, *reference*). Common terms of spoken and written languages *immediately* signify in the mind common concepts, i.e., individualized, naturally representative qualities of the mind, which in turn *naturally signify* or *represent* individuals of the same kind. The common terms of spoken and written languages, therefore, *ultimately* signify the individuals naturally represented by the concepts they immediately signify. So, signification is a property of a spoken or written term that renders it a meaningful utterance or inscription, as opposed to some meaningless noise or scribble. This is the property that makes an utterance or inscription part of a spoken or written human language. But in their actual use in that language, these terms take on another property, namely, *supposition*, or

¹⁴The best monographic survey of the history of medieval theories of propositional signification is still G. Nuchelmans, *Theories of the Proposition: Ancient and Medieval Conceptions of the Bearers of Truth and Falsity*, North-Holland, Amsterdam-London, 1973. The best source materials for early medieval theories can be found in L.M. De Rijk, *Logica Modernorum: A Contribution to the History of Early Terminist Logic*, 3 vols. Assen, 1962-67, where one can find elaborate theories of the referring function of sentential nominalizations, called *appellationes dicti*.

¹⁵There is more to the distinction, but the details need not detain us here. For more, see my article on “Syncategoremata”, in: *Elsevier’s Encyclopedia of Language and Linguistics*, 2nd Ed. ed. K. Brown, Elsevier, Oxford, 2006, vol. 12, pp. 353-356. Buridan’s discussion of the discussion can be found in SD, pp. 232-234.

¹⁶The corresponding constructions in Latin are actually more natural. In English, the corresponding ‘It is possible that a man walks’ or ‘It is possible for a man to walk’ are “smoother”, but syntactically more complicated.

reference.¹⁷ Buridan's theory of supposition is designed to describe the various ways in which terms are used to refer to or stand for (*supponere pro*) various things in different propositional contexts.

The primary division of the kinds of supposition spoken or written terms can have is that between *personal* and *material* supposition. A term in personal supposition is used to stand for individuals it ultimately signifies. A term in material supposition is used to stand not for its ultimate, but for its immediate significata, the concepts it signifies in individual human minds, or for token terms of the same type, including itself.¹⁸ For example, in the proposition 'Man is an animal', insofar as this proposition is true, both terms are taken to stand in personal supposition, i.e., for individual humans and individual animals, respectively, and what renders the proposition true is the identity of some of the individuals referred to (or, using the coinage by now standard in the secondary literature, *supposita for*) by both terms. By contrast, in 'Man is a species', insofar as this proposition is true, the term 'man' obviously cannot be taken to supposit for its ultimate significata, namely, individual humans, but it can be taken to stand for the specific concept of humans in this or that individual human mind (i.e., the individual acts of these minds that represent human beings indifferently, in abstraction from their individual differences, but as being specifically distinct from other animals), and for token utterances and inscriptions that signify these concepts in these minds, including itself. But then, clearly, if 'man' is taken in material supposition in 'Man is a species' (and 'species' is taken in personal supposition, for its ultimate significata), then this proposition is true on account of the co-supposition of its terms, for at least some (indeed, all) of the material *supposita* of its subject are identical with some of the (personal) *supposita* of its predicate.

Now, applying this doctrine to propositional nominalizations, Buridan claims that these can also be taken either materially or personally. Taken materially, they have the function of standing for the corresponding token-propositions, whether written, spoken, or mental. Taken per-

¹⁷I will deal here only with Buridan's theory. For a brief survey of the varieties of the theory, as well as references to the vast secondary literature, see S. L. Read, "Medieval Theories: Properties of Terms", *The Stanford Encyclopedia of Philosophy (Spring 2002 Edition)*, E. N. Zalta (ed.), URL = <http://plato.stanford.edu/archives/spr2002/entries/medieval-terms/>.

¹⁸Medieval authors commonly distinguished personal, simple, and material supposition, reserving simple supposition for the case where the spoken or written term is used to refer to the concept to which it is subordinated (or the simple, common nature grasped by that concept). But Buridan simply lumps together all "non-significative" uses of terms under the heading of material supposition, i.e., uses, when the term is not taken to stand for its (ultimate) *significata*. Cf. SD, tr. 4, c. 3, sect. 2, especially, p. 253.

sonally, however, they stand for those *significata* of the corresponding propositions of which the terms of these propositions are co-verified, i.e., for which these propositions are true.¹⁹ For example, in the proposition ‘For Socrates to love God is good’, the subject term, taken personally, supposit for what the terms of the corresponding proposition ‘Socrates loves God’ co-supposit. Thus, if Socrates does in fact love God, then the terms of this proposition co-supposit for him, namely, Socrates loving God, and so the subject of the original proposition supposit for the same. On the other hand, if Socrates does not in fact love God, then the terms of the proposition ‘Socrates loves God’, i.e., ‘Socrates is a lover of God’, do not co-supposit, and so the corresponding sentential nominalization supposit for nothing, and then the original proposition is false.²⁰

5. Buridan’s Rejection of His Own Bradwardinian Solution

After these preliminaries, we are in a better position to appreciate Buridan’s reasons for rejecting his own earlier, “Bradwardinian” solution to the Liar Paradox, provided in terms of propositional signification.

In a crucial passage in his *Sophismata*, discussing the problem-sentence (*sophisma*) ‘Every proposition is false’, positing the case that all true propositions are eliminated,²¹ Buridan first briefly recapitulates his earlier solution as follows:

For some people have said, and so it seemed to me elsewhere,²² that although this proposition does not signify or assert anything according to the signification of its terms other than that every proposition is false, nevertheless, every proposition by its form signifies or asserts itself to be true. Therefore, every proposition asserting itself to be false, either

¹⁹I am restricting this discussion now to present tense affirmative propositions, as Buridan does in his corresponding remarks in the *Sophismata*. Whether and how this account could be generalized to provide a full-fledged Buridanian theory of propositional signification and sentential nominalizations is a further issue that is not directly relevant to our present concern with Buridan’s treatment of *insolubilia*.

²⁰Possible intuitions to the contrary, according to which the proposition ‘For Socrates to love God is good’ is true even if Socrates actually does not love God, might be accounted for by saying that these intuitions are based on the consideration that it would be good for Socrates to love God even if he does not; in this case, however, the proposition to be considered would have to be ‘For Socrates to love God would be good’, when not the actual, but possible co-supposition of terms is required for truth, because of the *ampliative* force of the subjunctive copula. For a reconstruction of Buridan’s theory of *ampliatio*, see G. Klima, “Existence and Reference in Medieval Logic”, in: A. Hieke – E. Morscher (eds.), *New Essays in Free Logic*, Kluwer Academic Publishers, 2001, pp. 197-226.

²¹SD, *Sophismata*, c. 8, 7th sophism, pp. 965-971.

²²J. Buridan, *Quaestiones in primum librum Analyticorum Posteriorum*, q. 10 (unpublished edition by H. Hubien).

directly or implicitly, is false, for although things are as it signifies, insofar as it signifies itself to be false, nevertheless, things are not as it signifies insofar as it signifies itself to be true. Therefore, it is false and not true, since for its truth it is required not only that things be as it signifies but also that they be in whatever way it signifies [them to be]. But this response does not seem to me to be valid, in the strict sense.²³

The solution is clear enough, and seems to be pretty much in line with Bradwardine's solution, as presented by Read. But it is important to note here that Buridan employs in this "Bradwardinian" solution the crucial thesis that *every proposition* signifies itself to be true, which Bradwardine's original solution restricts to *propositions that signify themselves to be false*. The importance of this point is that since Buridan bases his rejection of this "Bradwardinian" solution on the rejection of his own unrestricted claim, the argument he employs for this rejection may not affect Bradwardine's solution.²⁴ The argument is presented in the following passage:

[...] I [am going to] show that it is not true that every proposition signifies or asserts itself to be true. For you take the expression 'itself to be true' either materially or significatively. If materially, then the proposition 'A man is an animal' does not signify or assert itself to be true, for then the sense [of your claim] would be that it would signify the proposition "The proposition 'A man is an animal' is true," and this is false, for this second proposition is already of second intentions, and the first, since it was purely of first intentions, did not signify second intentions.²⁵ But if you say that 'itself to be true' is taken significatively, then the proposition 'A man is a donkey' does not signify itself to be true, for just as *that a man is a donkey* is nothing, because a man cannot be a donkey, so also *that the proposition 'A man is a donkey' is true* is

²³See SD, p. 968.

²⁴This is because the rejection of a more universal claim does not in and of itself entail the rejection of a more restricted, less universal claim. For example, rejecting the claim 'All intelligent beings are material beings' does not commit one to rejecting the claim 'All human beings are material beings', even if one accepts that all human beings are intelligent beings and not *vice versa*. But then, of course, it may turn out that the reason for rejecting the more universal claim is also compelling against the less universal one, but that is a separate question.

²⁵Second intentions are concepts by means of which we conceive of concepts (or other signs) insofar as they are concepts (or signs). For example, the concept to which the term 'species' is subordinated is a second intention. First intentions are concepts by means of which we conceive of things other than concepts (or other signs), or perhaps concepts, but not insofar as they are concepts (or signs). Such is, e.g., the concept to which the term 'man' is subordinated, by which we conceive of human beings, who are not concepts or the concept to which the term 'being' is subordinated, by which we conceive of both things that are not concepts and things that are concepts; however, by this concept we conceive of the latter not insofar as they are concepts but insofar as they are entities, regardless of their representative function. See Albertus de Saxonia, *Perutilis Logica* (Venice, 1518; reprint, Hildesheim: Georg Olms Verlag, 1974), f. 4, va.

nothing, nor can it be anything, for it [namely, the proposition ‘A man is a donkey’] cannot be true.²⁶ But it is not true to say of that which is nothing, nor can be anything, that it is signified or understood or asserted, as was sufficiently discussed elsewhere.²⁷ For if you say that *that the proposition ‘A man is a donkey’ is true* is signified or asserted or understood, then you say something false, for this proposition is affirmative and its subject supposits for nothing.²⁸ And the case is similar here, for the proposition ‘Every proposition is false’ cannot be true; therefore, that it is true is not, nor can it possibly be; hence, it is neither signified nor understood, and so it does not signify itself to be true.²⁹

The point of the argument is that the fundamental claim of Buridan’s “Bradwardinian” solution, namely, that every proposition signifies itself to be true, cannot be true. For if we analyze this claim, we can see that whether we take the sentential nominalization, i.e., the infinitive construction, in it in material or in personal supposition, the universal claim cannot be true.

To see this in more detail, consider the universal proposition ‘Every proposition signifies itself to be true’. From this, by eliminating the infinitive construction in favor of the more transparent corresponding “that-clause”, we get ‘Every proposition signifies that it is true’, where ‘it’ is ranging over token-propositions (written, spoken, or mental). Now consider the sentential nominalization in this sentence: ‘that it is true’. According to Buridan’s theory, this can be taken either materially or personally. Taken materially, it is a common term suppositing for propositions of the form ‘it is true’, in which ‘it’ refers to some proposition. However, in that case an instance of the original universal proposition would be ‘The proposition ‘a man is a donkey’ signifies the proposition ‘the proposition ‘a man is a donkey’ is true’’. But any proposition of the form ‘a man is a donkey’ signifies men and donkeys, and not propositions. Therefore, this instance of the universal proposition is false, and so the universal proposition is false.

²⁶This is because the sentential nominalization “that the proposition ‘A man is a donkey’ is true” should refer to things of which the terms of the corresponding proposition, namely, “The proposition ‘A man is a donkey’ is true”, are jointly true. But the subject of this proposition refers to any proposition of the form ‘A man is a donkey’, which is necessarily false; therefore, the predicate ‘true’ cannot be true of any of these, whence the two terms cannot be jointly true of anything, and so the corresponding nominalization can refer to nothing.

²⁷*Sophismata*, c. 1, Fourth sophism, conclusion 5.

²⁸Namely, “that the proposition ‘A man is a donkey’ is true,” which is the subject of the proposition “That the proposition ‘A man is a donkey’ is true is signified”, supposits for nothing.

²⁹The notes referenced inside this passage come from my translation of Buridan’s *Summulae*. See SD, pp. 968-969.

Indeed, it would be false for any proposition whose terms are terms of first intention, as opposed to terms of second intention, just as Buridan claims. For if ‘S’ and ‘P’ can be replaced by terms of first intention, then a proposition of the form ‘S is P’ signifies all the things signified by ‘S’ and all the things signified by ‘P’. But since ‘S’ and ‘P’ are terms of first intention, their *significata* are things that are not items of any language, and so they are things that are not propositions, whence they cannot be true or false. Accordingly, ‘The proposition ‘S is P’ signifies the proposition ‘the proposition ‘S is P’ is true’ will always be false for all such terms, since ‘S is P’ will never signify any proposition, let alone a proposition of the form ‘the proposition ‘S is P’ is true’.

On the other hand, if we take the “that-clause” in personal supposition, then it would have to supposit for everything of which the terms of the corresponding proposition are jointly true. But in this case, an instance of the universal proposition would be ‘The proposition ‘a man is a donkey’ signifies everything that is both the proposition ‘a man is a donkey’ and is true’. But since any proposition of the form ‘a man is a donkey’ is impossible, nothing can be both a proposition of this form and true. So, the original universal proposition is false on this interpretation as well.

Therefore, given Buridan’s own theory of propositional signification and sentential nominalizations (or rather, the few principles he lays down of a would-be theory), he is compelled to reject his own “Bradwardinian” solution, given the fact that he has to reject the universal proposition that every proposition signifies itself to be true, which is the foundation of this solution. And this was the point of the first thesis that I proposed to argue for in the first section. However, since Bradwardine’s own solution does not rest on this universal claim, the truth of the second thesis is still an open question.

6. Bradwardine’s Solution in the Buridanian Framework

Indeed, it is easy to see that Bradwardine’s more restricted thesis, according to which every proposition signifying itself to be false signifies itself to be true could be maintained even on Buridan’s theory of propositional signification and sentential nominalizations, if those sentential nominalizations are taken materially, according to Buridan’s own rules.

Consider again a more transparent version of the thesis, using “that-clauses”: ‘Every proposition signifying that it is false signifies that it is true’, where the pronouns refer to some proposition, written, spoken, or mental. Let such a proposition be ‘C is false’, and let ‘C’ be the name of

this proposition. On Buridan's rules for propositional signification, this proposition signifies everything its terms signify; so it signifies C and it signifies all false propositions. (Indeed, since on Buridan's solution C is false, the terms of this proposition co-supposit for C.) Therefore, Bradwardine's thesis has the following instance: 'C signifying that C is false signifies that C is true'. In this proposition, the string 'that C is false', taken materially, stands for all propositions equiform to this: 'C is false'. Such a proposition, according to Buridan's rules, signifies C and all other false propositions. The string 'that C is true', again, taken materially, stands for any proposition of the form 'C is true'. But then, Buridan's objection to taking his own, unrestricted universal claim with its "that-clause" in material supposition does not apply here. For the point of that objection was that the claim would not be true for any proposition with terms of first intention. But Bradwardine's restricted claim only concerns propositions with terms of second intention, i.e., terms that signify propositions. Indeed, if we substitute token-propositions referred to by the "that-clauses" in Bradwardine's thesis as stated above, we get: 'C signifying 'C is false' signifies 'C is true'. This, given that C does signify the original token equiform to 'C is false' in this paragraph, reduces to 'C signifies 'C is true'. But then, since the predicate term of C signifies all false propositions and C is not true, the sentence 'C signifies 'C is true' is true on Buridan's principles.

Thus, apparently, on Buridan's principles we can find no falsifying instance to Bradwardine's original claim, at least among versions of the paradox formed with terms of second intention. Therefore, Buridan could have kept it, if he had wanted to use it, at least for these cases. And of course this was the point of the first half of my second thesis in the first section.

On the other hand, it has to be noted that other versions of the Liar-paradox, involving terms of first intention could still not be said to signify their own truth. For when I say 'I am saying something false', i.e., 'I am someone saying something false', then the terms of my proposition supposit for me and signify me and everybody saying something false. But none of these things is a proposition, so none of these things can be supposit for by the relevant sentential nominalization taken in material supposition, standing for propositions. Therefore, Bradwardine's restricted claim could not have been maintained as universally true in Buridan's framework.

Further complications would arise from assuming, as is plausible to assume, that 'What I am saying is false' and 'I am saying something false' are equivalent, at least *ut nunc*. Indeed, since any proposition is formed by someone, any proposition that can be referred to directly by means

of terms of second intention can also be referred to indirectly, referring to the person forming it, by means of terms of first intention. But then, for any proposition claiming itself to be false apparently there should be an equivalent proposition claiming that the person forming it forms something false. And so in those cases Buridan's objection would apply again. Therefore, if we maintain the equivalence of Liar-sentences with first intention-terms with those of second-intention terms, Bradwardine's solution may not hold up in Buridan's framework at all. And this was the point of the second half of the second thesis of the first section.

In any case, Buridan clearly did not maintain Bradwardine's thesis in his final solution, even if he could have done so at least for cases involving only terms of second intention. In fact, it is quite possible that Buridan was simply not directly influenced by Bradwardine, and he did not consider Bradwardine's more restricted thesis at all. Or he may have considered it, but thought that it entailed the more general thesis.³⁰ Or, as it seems more likely to me, he just found the universal claim that all propositions signify their own truth intuitively clear on the basis of the meanings of the words involved (as he explicitly states on several occasions), and realized only later its untenability within his own theory of propositional signification and sentential nominalization. Indeed, since Buridan abandoned the idea of a direct link between propositional signification and truth altogether as well as the idea of a direct link between truth and logical validity, he did not have to feel any pressing theoretical need to pursue the ideas involved in Bradwardine's solution, even if he considered it in any detail at all.

7. Truth without *Complexa Significabilia*

In question 9 of his question-commentary on book 6 of Aristotle's *Metaphysics*, Buridan raised the question whether every proposition is

³⁰At least, he may have thought that his more general thesis was entailed by Bradwardine's thesis and Bradwardine's other, explicit or implicit postulates, or some other intuitive principles, as did Paul Spade. Spade's recent response to Read's criticism of his argument against Bradwardine can be found in P. V. Spade, "Insolubles", *The Stanford Encyclopedia of Philosophy* (Fall 2005 Edition), E. N. Zalta (ed.), URL = <http://plato.stanford.edu/archives/fall2005/entries/insolubles/>. However, even aside from these subtle considerations, given Bradwardine's strong "entailment principle" concerning signification, according to which a proposition signifies whatever it entails *simpliciter* or *ut nunc*, one might argue that any proposition trivially signifies (what is signified by) any other proposition. For the proposition p with the assumption that q, trivially entails q, *ut nunc*. But I do not want to pursue this idea here.

true because the thing/s signified by it is/are all the ways it signifies it/them to be.³¹

In typical scholastic fashion, after arguing against the affirmative answer, he provides the main motivation for it in the following passage:

Many people commonly hold the opposite based on the authority of Aristotle, who in the Categories says that a proposition is true or false because the thing [signified by it] exists or does not exist. [...] And truth is also commonly described in this way, namely, that it is the adequation or conformity of the understanding and the things understood. But this sort of adequation or conformity cannot obtain except because things are in this way; therefore, etc.

Buridan never really “bought into” the conception described here, even if he never abandoned this manner of speaking either. In any case, the formula “a proposition is true or false because the thing [signified by it] exists or does not exist” expresses a semantic conception radically different from his own; indeed, a radically different way of constructing logical semantic theory. Therefore, Buridan could only keep it by filling it with radically different content, making it eventually in principle entirely eliminable.

The sort of logical semantics required by the original conception, even if it may never have been spelled out in this way in the Middle Ages, should first provide the significations of simple terms, both categorematic and syncategorematic, then a compositional semantics for the significata of complex terms and propositions based on the significations of simple terms, specifying the rules of how the actuality of the significata of the complex expressions depends on the actuality or non-actuality of the significata of their components (for example, a simple rule could specify that if the significatum of a proposition is actual, then the significatum of its negation is non-actual, or that for the actuality of the significatum of a conjunction the actuality of the significata of all of its members is required, etc.), and then it could provide a simple criterion for truth for all kinds of propositions in terms of the actuality of their significata, just as Aristotle’s formula requires. Finally, with this criterion of truth in hand, logical validity could be defined as truth for all possible interpretations, i.e., for all possible assignments of significata as specified by these rules.

Buridan’s conception is radically different. In the first place, he does not have rules to specify the unique, extramental significata of whole propositions as a function of the semantic values of their components. In fact, as we could see, he denies that propositions extramentally sig-

³¹QM, lb. 6, q. 10: *Utrum omnis propositio ex eo est vera quia qualitercumque significat ita est in re significata vel in rebus significatis.*

nify anything as a whole, over and above what their categorematic terms signify. But then, extramental propositional signification as Buridan conceives of it is unable to distinguish even contradictories, so it obviously cannot serve for specifying their truth-conditions. Therefore, truth-conditions are to be specified in terms of the supposition of their terms, and hence also their signification, presupposed by their different modes of supposition in different contexts, as well as the signification of syncategorematic terms, providing the formal structure of different types of proposition (affirmative, negative, universal, particular, indefinite, past-tense, future-tense, modal, categorical, hypothetical, etc.). And so, since the truth conditions of these different types of propositions have to be specified differently for each type, the Aristotelian formula can at best serve as an abbreviation, a quick reference to the specification of these different types of truth-conditions.

In fact, this is precisely how Buridan proceeds in his most mature treatment of the issues of truth and validity, in his *Sophismata*. In the first place, he declares that (on the basis of his theory of propositional signification), propositional signification cannot provide a criterion of truth:

... every true affirmative proposition about actuality [*de inesse*] and about the present [*de praesenti*] is not true on the ground that whatever and howsoever it signifies as being, so it is, for [...] whatever and howsoever is signified as being by the two propositions 'A man is a man' and 'A donkey is a donkey,' that also is signified as being in the same way by the proposition 'A man is a donkey', as is clear from what has been said. But the latter is false, and the former two were true. And thus, it seems to me that in assigning the causes of truth or falsity of propositions it is not sufficient to deal with significations, but we have also to take into account the suppositions concerned.³²

Buridan then proceeds in his subsequent "conclusions" (conclusions 9-14)³³ to specify the truth-conditions of various types of propositions in terms of the supposition of their terms in the various types of contexts provided by the syncategorematic terms of these propositions. Significantly, however, after recapitulating these truth-conditions at the end of this discussion, he adds the following remark:

But in the end we should note – since we can use names by convention [*ad placitum*], and many people commonly use this way of putting the matter – that with respect to every true proposition we say: 'It is so', and with respect to 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

³²SD, p. 854.

³³SD, pp. 854-859.

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.³⁴

So, for Buridan, the Aristotelian formula apparently becomes just a moniker, an inappropriate expression serving to remind us what he really means when he uses it.

8. Logic Without Truth

But, as it turns out in Buridan's subsequent discussion, the formula with its changed, Buridanian meaning has a deeper significance for Buridan's logic. For while in the context of c. 2 of the *Sophismata* it may appear that Buridan is after all providing the clauses of a complex definition of truth (which he will then just inappropriately indicate by means of the Aristotelian formula) in order to use it for the definition of logical validity, in the context of his discussion of logical validity, in c. 8, he argues that validity cannot properly be defined in terms of truth. The gist of the argument (which, quite importantly, he also uses in his systematic treatise on consequences),³⁵ is that an obviously invalid consequence with a self-falsifying antecedent would on a definition of validity in terms of truth turn out to be trivially valid, whence such a definition cannot be correct. For example, take the consequence: 'No proposition is negative; therefore there is a stick in the corner'.³⁶ This consequence is obviously invalid, for it is a quite possible situation in which there are no negative propositions and no stick in the corner either, as was certainly actually the case before the first negative proposition was formed by a human being (and when that stick – probably Buridan's walking stick left in the corner of his classroom – did not yet exist). But on the proposed definition of validity, according to which a consequence is valid if and only if it is impossible for its antecedent to be true and its consequent not to be true when they are both formed together, this consequence would have to be valid, since the antecedent, being a negative proposition, always falsifies itself whenever it is formed; thus it cannot be true, and so it is

³⁴SD, p. 859.

³⁵See J. Buridan, *Tractatus de Consequentibus*, H. Hubien, ed., Philosophes Médiévaux, vol. 16. Louvain: Publications universitaires, 1976, pp. 21-22. I provide a detailed discussion of Buridan's argument in Klima, 2004.

³⁶Buridan's example with the stick had 'no proposition is affirmative' as its antecedent, and the reason why that consequence has to be deemed valid on the proposed definition is that the affirmative consequent, formed together with the antecedent, always falsifies the antecedent. But this version, presenting a consequence with a self-falsifying antecedent, which will also be featured in the next example, will better serve our present purposes.

indeed trivially impossible for it to be true while the consequent is not true.³⁷

Therefore, Buridan proposes a different definition of validity, not in terms of truth, but in terms of the Aristotelian formula, as he interpreted it in c. 2. As he writes:

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, as has been correctly argued above about the stick in the corner. And this is also obvious from another example, 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 there, 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.³⁸

So, as it turns out, Buridan’s logic as such has simply no use for a theory of truth. What it really needs is just the set of “correspondence-conditions” briefly indicated by the Aristotelian formula. Indeed, as this argument shows, the notion of truth is not only unnecessary, but it leads to paradoxical results if used in the definition of validity; therefore it had better be abandoned in considerations concerning the validity of inferences.

But why does this situation arise, and what does Buridan gain by this further move? The situation obviously arises from the semantic closure of the languages for which Buridan devises his theory. Under conditions of

³⁷In fact, Buridan might have come up with a further, unrelated reason to reject the definition of validity in terms of truth. For as he sees it, truth is a property of propositions; but the clauses of a consequence are not propositions. So, one could not strictly speaking talk about the truth or falsity of the antecedent and the consequent, but at most about the truth or falsity of equiform proposition tokens formed in all possible situations in which their truth values need to be checked to check the validity of the consequence formed in the actual situation. But Buridan obviously does not want to go into these complications, and allows the improper way of talking about the clauses of a consequence as propositions. However, strictly speaking, with a definition of validity based on truth, he would have to consider the existence of equiform propositions in possible situations, and not just the clauses of the consequence formed in the actual situation. For more on this issue, see G. Klima, “John Buridan and the Force-Content Distinction”, in: A. Maierú, L. Valente, (eds.) *Medieval Theories On Assertive and Non-Assertive Language*, Acts of the 14th European Symposium on Medieval Logic and Semantics, Rome: Olschki, 2004, pp. 415-427.

³⁸SD, pp. 955-996.

semantic closure, self-falsifying propositions can naturally occur. But in their case we have examples of propositions that cannot be true, despite the fact that they describe situations that are obviously possible, or using the Aristotelian formula, things can be the way they signify them to be, even if they can never be true. So such propositions provide the primary examples of *the possibility of a divergence between correspondence and truth under the conditions of semantic closure*: they can obviously correspond to a possible situation, in which, however, they cannot be true, for if they are formed in that situation, then their existence immediately falsifies them in the same situation.

What Buridan gains, therefore, by returning to the (re-interpreted) Aristotelian formula is 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. The issue is whether the consequence 'No proposition is negative; therefore, some proposition is negative' is valid (or as Buridan says, 'true', but he makes clear that he means the same by a 'true' consequence and by a 'valid' or even a 'good' consequence).

Buridan here directly argues against even his improved definition of validity, provided in terms of the (re-interpreted) Aristotelian formula:

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 is signified by the second.³⁹

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

³⁹SD, pp. 956-967.

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.⁴⁰

So, the final definition of validity understood in the divided sense 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. Thus, by means of the re-interpreted Aristotelian formula, as summarizing the correspondence conditions of propositions Buridan laid out in terms of the supposition of their terms, he finds a way of identifying a “possible state of affairs”, the way things are as signified by a proposition in a possible situation regardless of whether the proposition in question exists in that situation. Yet, spelling out “the ways things are” signified by a proposition in terms of the conditions concerning the supposition of its terms, he can do so without reifying that “state of affairs” in the form of some ontologically suspect entity, a *complexe significabile*, distinct from the ordinary things admitted in his nominalist ontology.

But then, understanding the issue of validity in this way, as definable without any reference to the truth-values of the antecedent and consequent which they can only have in those situations in which they exist, Buridan has a logic without truth, a logical theory that works for determining the validity of inferences, and yet one that can do so without checking the truth-values of propositions in any situation. Thus, Buridan’s logic *does not have* and *does not need* a definition of truth.

⁴⁰SD, pp. 957-958.

9. Correspondence without Truth and Truth without Paradox

The only thing Buridan's logic needs to do with truth is to eliminate the Liar-type puzzles that are bound to crop up under the conditions of semantic closure. But this is exactly what Buridan does in the remainder of c. 8 of the *Sophismata*, already in possession of the logical devices he needs for doing so, in particular the logical devices needed to handle the above-mentioned *possibility of divergence between correspondence and truth*.

As we could see in connection with 'No proposition is negative', under the conditions of semantic closure it is quite possible that the correspondence conditions of a proposition are satisfied in a possible situation, even if the proposition cannot be true in that situation, for its very existence in that situation would falsify it. In the case of Liar-type propositions, the situation is quite similar. Given the fact that they are false, their correspondence conditions are satisfied. But since the satisfaction of their correspondence conditions means precisely that they fall under the term 'false', given bivalence, they cannot be true.

However, Buridan has already shown that the satisfaction of correspondence conditions need not be sufficient for the truth of a proposition. In the case of 'No proposition is negative', the existence of the proposition in a possible situation would falsify it in that situation, although, if it does not exist in that situation, its correspondence-conditions may be satisfied in the same situation. In the case of a Liar-type proposition, the existence of the proposition in the actual situation is assumed, and the problem is assigning its truth-value in that situation. Since the assumption of its truth entails its falsity, i.e., given bivalence, it entails its own contradictory, it cannot be true. But that is precisely what it says. So, its correspondence conditions are satisfied: its subject supposits for the proposition itself, which falls under the term 'false'; hence, its terms co-supposit. But given the possibility of divergence between the satisfaction of correspondence conditions and truth, it should come as no surprise in this context that the proposition is not true, despite the satisfaction of its correspondence-conditions. Therefore, Buridan merely has to specify that further condition the failure of which prevents the proposition from being called 'true', i.e., he has to specify what would constitute the sufficient conditions for a proposition to be called true. He finds this further condition in the trivial "virtual entailment principle": any proposition "virtually" entails another proposition that claims the original proposition to be true (where the point of "virtuality" seems to be that the relevant consequence need not actually be formed).

With this principle at hand, Buridan can now claim an easy victory over the paradox. The Liar-sentence is simply false, for despite the fact that it corresponds to the actual, real situation (namely, to the situation that it is false), its correspondence to that real situation need not entail that it is true. Indeed, that correspondence is insufficient for its truth, for it fails to meet another, trivially required condition, namely, the correspondence of the virtually implied proposition to the same situation.

This further, trivial requirement is no more *ad hoc* than the general, trivial requirement that a proposition can only be true if all propositions it validly entails are true as well, as required by *modus ponens*. And this trivial requirement will not render Buridan's "theory of truth" nonsensical, for as I claimed above, he does not have a theory of truth, and does not need one. As far as checking validity is concerned, all his logic needs is checking whether the correspondence conditions laid out in c. 2 of the *Sophismata* that satisfy the antecedent in any possible situation will also satisfy the consequent in the same situation. For this, he will only have to invoke the supposition of terms in those situations, of course, occasionally, the supposition of the terms 'true' and 'false' as well. But upon seeing that the terms of an affirmative proposition can co-supposit in a possible situation without placing the proposition itself among the supposita of the term 'false', he can be sure that the proposition in that situation is true, provided it exists in that situation. On the other hand, if the co-supposition of its terms places the proposition itself among the supposita of the term 'false', Buridan can be sure that the virtually implied proposition cannot be true, and hence the original proposition cannot be true either. This procedure is entirely effective, without any circularity, i.e., without requiring us to see first whether the proposition is true so we can know whether it is true.⁴¹ But then, if the paradox is effectively dispelled without any need for a general theory of truth, Buridan can apparently rest satisfied. He did all that he could reasonably be asked to do with his logic. And this was the point of the third thesis of the first section.

10. The Failure of Buridan's Solution

At any rate, these are the things one can say in defense of Buridan's solution against the charges of adhocery, circularity, and in general, its failure to provide a theory of truth. Nevertheless, this is not to say that Buridan's approach is immune to all criticism (unless one is *truly*

⁴¹For this charge, see especially Read, 2002, p. 201.

“infatuated”). In fact, I will now argue that the solution cannot work, because it renders Buridan’s theory inconsistent.

As we could see, a fundamental claim of the solution is that every proposition virtually implies another proposition claiming that the original proposition is true. If the terms of the implied proposition do not co-supposit in a given situation, I will say that the “virtual implication condition” (VIC) of the original proposition is not satisfied in that situation. Another fundamental claim of the solution is that an affirmative Liar-sentence is false, and so, since its subject refers to the proposition itself and its predicate is the term ‘false’, its terms co-supposit. In general, I will say that when the terms of an affirmative proposition co-supposit (and, correspondingly, if the terms of a negative proposition do not co-supposit), then its “co-supposition condition” (CSC) is satisfied.

Next, we should recall that Buridan defined the validity of a consequence in terms of howsoever the antecedent and the consequent signify things to be, and he reminded us that this “Aristotelian formula” should be understood as an abbreviation of the “conclusions” he gave us in c. 2 of the *Sophismata*. In discussing the issue of validity, I somewhat loosely referred to the satisfaction of the conditions specified by those “conclusions” as the satisfaction of the “correspondence-conditions” of the relevant kinds of proposition. But now we should more specifically ask whether those “correspondence-conditions” include both the VIC and the CSC or only the latter (other possibilities being naturally excluded).

If only the latter, then, despite Buridan’s claim, the virtual implication of a Liar-sentence cannot be valid by his own criterion of validity. If both, then, despite Buridan’s claim, the consequence ‘No proposition is negative; therefore, some proposition is negative’ will turn out to be valid. So, either way, Buridan cannot maintain all his claims together; his theory is inconsistent.

To see this in more detail, consider first the Liar-sentence:

(A) (A) is false

This, allegedly, virtually implies a sentence claiming (A) to be true:

(B) (A) is true

Suppose the “correspondence-conditions” involve only CSC. In that case, since the subject and the predicate of (A) co-supposit for (A), the CSC of (A) is satisfied. But then the CSC of (B) cannot be satisfied. Therefore, (A) cannot entail (B), despite what Buridan says, on his own account of validity.⁴²

⁴²Note that this argument is based on the assumption that the point of Buridan’s talking about a *virtual* implication is to assure that he can invoke this requirement even if the

Now suppose the “correspondence-conditions” involve both the CSC and the VIC. In that case, since the VIC of (A) is not satisfied, (A) may validly entail (B), although, of course, in that case both (A) and (B) are false and their correspondence conditions are not satisfied (for although the CSC of (A) is satisfied, its VIC is not, because the CSC of (B) is not satisfied). But in this case, if their VIC is supposed to be among the correspondence-conditions of all propositions, then Buridan’s solution will not work for ‘No proposition is negative; therefore, some proposition is negative’. The reason is that if the VIC is supposed to be part of the correspondence-conditions of all propositions, then, on Buridan’s final definition of validity, this consequence will be valid if the VIC of its antecedent cannot be satisfied. But this is precisely the case here. The VIC of that antecedent could only be satisfied in a possible situation in which that antecedent is true, and so it exists. But if it exists in that situation, then the situation contains a negative proposition, whence that antecedent (stating that no proposition is negative) cannot correspond to that situation (because its obvious supposition-condition, namely, that its terms *do not* co-supposit, would have to fail). Therefore, the correspondence-conditions of the antecedent cannot be satisfied, and hence the correspondence conditions of the antecedent cannot be satisfied without the satisfaction of the correspondence-conditions of the consequent; whence the consequence must be deemed valid on Buridan’s definition, despite what he says. *Ergo*, Buridan’s solution fails within the context of his own logical theory, for his theory in the end is rendered inconsistent by this solution. And this was the point of the fourth thesis of the first section.

11. Postscript

Upon re-reading the argument of the previous section (a couple of months after I thought I had completed this paper), it appears to me that there is a plausible way to save the consistency of Buridan’s theory. For concerning his “virtual implication” Buridan may plausibly claim that it is not a formally, but merely materially valid consequence, depending for its validity not on the logical form of the propositions involved, but on the meaning of their terms. Thus, the argument that if the correspon-

consequence expressing this implication is not actually formed. But in all cases when the question is whether a Liar-sentence satisfies the VIC it is assumed that the Liar-sentence itself exists, and that it, or rather a proposition equiform to it, would figure in the antecedent of the consequence expressing the “virtual implication” if it were formed. So, a defense to the effect that it is not only (A), but (A) and a proposition ‘(A) exists’ would be required for the implication probably would not work.

dence conditions of a proposition included only its CSC, then the “virtual implication” of its truth would not be a formally valid consequence by Buridan’s own criterion of formal validity would simply miss the mark: on this understanding of Buridan’s “virtual implication”, it is not even supposed to be formally valid; it is just valid on account of the meaning of the terms of the propositions involved, in particular, the meaning of the term ‘true’.

This defense may actually work, for on this interpretation Buridan may claim without inconsistency that the “correspondence conditions” of propositions are nothing but their CSC, and so his treatment of Liar-sentences is satisfactory, given that even if their CSC is satisfied (since they are false) their VIC, which would be required for their truth, cannot be satisfied precisely for this reason. Still, the validity of the virtual implication involved in the VIC need not be judged in terms of Buridan’s criterion for formal validity, because this implication is not supposed to be formally valid in the first place.

To be sure, Buridan justifies his “virtual implication” with reference to the meaning of the copula, which he takes to be “the formal part” of any categorical proposition; so, its copula is part of the “logical form”, rather than the “matter” of a proposition. Still, it is precisely this “formal part” of the antecedent of the “virtual implication” that is supposed to justify the application of the predicate ‘true’ in its consequent, given the meaning of ‘true’. Indeed, perhaps this is *all* Buridan has to say about the meaning of ‘true’, by way of a (strongly deflationist) “theory of truth”.