

## History of Logic from Aristotle to Gödel

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## Buridan's Logic and Metaphysics: An Annotated Bibliography (Second Part: L - Z)

### BIBLIOGRAPHY

I give an updated list of the published and unpublished logical and metaphysical works of Buridan, and a bibliography of the editions and translations appeared after 2000.

*For Buridan's contributions to the theories of supposition and mental language see: [Medieval Theories of Supposition \(Reference\) and Mental Language](#)*

1. Lagerlund, Henrik. 2000. *Modal Syllogistics in the Middle Ages*. Leiden: Brill.  
See Chapter 5. *The systemtization of modal syllogistic* pp. 130-164.  
"It is unfortunate that of Buridan's logical works dealing with modal logic and modal syllogistic only the *Consequentiae* has been edited (\*). This is probably the reason why so few studies of Buridan's modal logic have been done. The most important of the studies that do exist is G.E. Hughes' paper, 'The Modal Logic of John Buridan' from 1989. My present study will mainly extend and clarify what has been said by Hughes." p. 36  
(\*)[This was written before the publication of G. Klima's translation of the *Summulae de Dialectica* in 2001].
2. ———. 2004. "Vague Concepts and Singular Terms in a Buridanian Language of Thought Tradition." *Proceedings of the Society for Medieval Logic and Metaphysics* no. 4:25-36.
3. ———. 2006. "What Is Singular Thought? Ockham and Buridan on Singular Terms in the Language of Thought." In *Mind and Modality. Studies in the History of Philosophy in Honour of Simo Knuuttila*, edited by Hirvonen, Vesa, Holopainen, Toivo J. and Tuominen, Miira, 217-237. Leiden: Brill.
4. ———. 2010. "Skeptical Issues in Commentaries on Aristotle's *Posterior Analytics*: John Buridan and Albert of Saxony." In *Rethinking the History of Skepticism. The Missing Medieval Background*, edited by Lagerlund, Henrik, 193-214. Leiden: Brill.
5. Lecq, Ria van der. 1981. "Buridan on Modal Propositions." In *English Logic and Semantics: From the End of the Twelfth Century to the Time of Ockham and Burleigh*, edited by Braakhuis, Henk A.G., Kneepkens, Cornelis Henri and Rijk, Lambertus Marie de, 427-439. Nijmegen: Ingenium Publishers.
6. ———. 2004. *Mental Language: A Key to the Understanding of Buridan's Semantics*.
7. Miller, Richard H. 1985. "Buridan on Singular Concepts." *Franciscan Studies* no. 45:57-72.
8. Moody, Ernest. 1965. "Buridan and a Dilemma of Nominalism." In *Harry Austryn Wolfson Jubilee Volume on the Occasion of His Seventy-Fifth Birthday*, edited by Lieberman, Saul, 578-596. Jerusalem: American Academy for Jewish Research.  
Reprinted in: E. A. Moody - *Studies in medieval philosophy, science, and logic. Collected papers 1933-1969* - Berkeley, University of California Press, 1975, pp. 353-370.
9. ———. 1969. "Jean Buridan." In *Dictionary of Scientific Biography. Vol. Ii*, edited by Gillispie, Charles C, 603-608. New York: Charles Scribner's Sons.  
Reprinted in: E. A. Moody - *Studies in medieval philosophy, science, and logic. Collected papers 1933-1969* - Berkeley, University of California Press, 1975, pp. 441-453.
10. Normore, Calvin. 1963. "Buridan's Ontology." In *Essays in Ontology*, edited by B., Allaire Edwin, 189-203. The Hague: Martinus Nijhoff.  
"Here is a recipe for ontology. First divide the expressions of one's language into those which purport to

pick things out and those which don't. Then see whether some of those which purport to pick things out can be defined in terms of others. Finally admit into your ontology whatever an undefinable term purports to pick out. This scheme expresses (though vaguely and incompletely) one of the central intuitions behind many ontological programmes. What is admitted by an ontologist operating within this framework will depend, of course, upon how he or she divides expressions, on what resources of definition are available, and, perhaps, on pressures from other theories. What I hope to do in this paper is to show the influence of the intuition behind this sketch on the work of the fourteenth century Parisian master Jean Buridan. To some extent, I shall compare Buridan's views with those of his contemporary, William Ockham. In doing so, I hope both to present Buridan's own very striking contributions to ontology and to shed a little light on the inner life of 14th century nominalism." (p. 189).

11. Novaes, Catarina Dutilh. 2004. "The Buridianian Account of Inferential Relations between Doubly Quantified Propositions: A Proof of Soundness." *History and Philosophy of Logic* no. 25:225-243. "On the basis of passages from John Buridan's *Summula Suppositionibus* and *Sophismata*, E. Karger has reconstructed what could be called the 'Buridianian theory of inferential relations between doubly quantified propositions', presented in her 1993 article 'A theory of immediate inference contained in Buridan's logic'. In the reconstruction, she focused on the syntactical elements of Buridan's theory of modes of personal supposition to extract patterns of formally valid inferences between members of a certain class of basic categorical propositions. The present study aims at offering semantic corroboration -- a proof of soundness -- to the inferential relations syntactically identified by E. Karger, by means of the analysis of Buridan's semantic definitions of the modes of personal supposition. The semantic analysis is done with the help of some modern logical concepts, in particular that of the model. In effect, the relations of inference syntactically established are shown to hold also from a semantic point of view, which means thus that this fragment of Buridan's logic can be said to be sound."
12. ———. 2005. "Buridan's *Consequentia*: Consequence and Inference within a Token-Based Semantics." *History and Philosophy of Logic* no. 26:277-297. "I examine the theory of *consequentia* of the medieval logician, John Buridan. Buridan advocates a strict commitment to what we now call proposition-tokens as the bearers of truth-value. The analysis of Buridan's theory shows that, within a token-based semantics, amendments to the usual notions of inference and consequence are made necessary, since pragmatic elements disrupt the semantic behavior of propositions. In my reconstruction of Buridan's theory, I use some of the apparatus of modern two-dimensional semantics, such as two-dimensional matrices and the distinction between the context of formation and the context of evaluation of utterances."
13. ———. 2005. "In Search of the Intuitive Notion of Logical Consequence." In *The Logica Yearbook 2004*, edited by Behounek, Libor, 109-123. Prague: Filosofia. "After decades of predominant focus on the notion of logical truth, the debate on the concept of logical consequence among philosophers and logicians was re-ignited by J. Etchemendy's book *The Concept of Logical Consequence* (1990). His main tenet was that the model-theoretic notion of logical consequence did not capture adequately the corresponding intuitive notion. One of Etchemendy's central claims was that the intuitive notion could be understood essentially from two different perspectives, one representational and one interpretational - and that the model-theoretic notion failed to match either. Some years ago, S. Shapiro (1998) sought to vindicate the model-theoretic notion of logical consequence; one of his arguments was that the dichotomy representational/interpretational notion of logical consequence was in a certain way infelicitous, since, according to him, a faithful rendering of the intuitive concept would have to have elements of both notions. Clearly, the resolution of issue as to whether the model-theoretic notion correctly captures the intuitive notion presupposes an at least minimally adequate characterization of this intuitive notion. Shapiro claimed that Etchemendy hadn't really provided such a characterization (1), and attempted to formulate one himself. He further claimed that, thus characterized, the intuitive notion was indeed correctly captured by the model-theoretic notion (albeit with some adjustments). (2) In this paper, I do not discuss Shapiro's defense of the model-theoretic notion; rather I examine his contention that the best rendering of the intuitive notion of logical consequence is what he called the 'conglomeration' notion, that is, the hybrid notion that combines both the representational and the interpretational view on consequence. More specifically, I claim that such a hybrid view was held by the medieval logician John Buridan (Cf. Hubien, *Iohannis Buridani tractatus de consequentiis*, 1976), and that this fact offers significant historical support to Shapiro's version of the intuitive concept of (logical) consequence."
  - (1) Cf. Stewart Shapiro 'Logical consequence: models and modality'. In Matthias Schirn (ed.), *Philosophy of Mathematics Today*. Oxford, Oxford University Press, 1988, pp. 131-156. p.143.
  - (2) 'My claim is that model-theoretic consequence can be made into a good model of this notion [the 'hybrid' intuitive notion of logical consequence] and that both the intuitive notion so characterized and its mathematical model are useful tools for shedding light on the normative/modal/semantic notion of correct reasoning in natural language, the target of logic.' (Shapiro 1998, 148)

14. ———. 2009. "Lessons on Sentential Meaning from Mediaeval Solutions to the Liar Paradox." *Philosophical Quarterly* no. 59:682-704.  
"Fourteenth-century treatises on paradoxes of the liar family, especially Bradwardine's and Buridan's, raise issues concerning the meaning of sentences, in particular about closure of sentential meaning under implication, semantic pluralism and the ontological status of 'meanings', which are still topical for current theories of meaning. I outline ways in which they tend to be overlooked, raising issues that must be addressed by any respectable theory of meaning as well as pointing in the direction of possible answers. I analyse a Bradwardinian theory of sentential meaning as it emerges from his treatment of liar sentences, exploring where it requires more thorough elaboration if it is to be a fully developed theory of sentential meaning."
15. Nuchelmans, Gabriel. 1988. "Appellatio Rationis in Buridan, *Sophismata* Iv, 9-15." In *Die Philosophie Im 14. Und 15. Jahrhundert. In Memoriam Konstanty Michalsky (1879-1947)*, edited by Pluta, Olaf, 67-84. Amsterdam: B.R. Grüner.  
Reprinted as Chapter VIII in: G. Nuchelmans - *Studies in the History of Logic and Semantics, 12th-17th Centuries* - Edited by E. P. Bos - Aldershot, Variorum, 1996.
16. Pérez-Ilzarbe, Paloma. 2004. "John Buridan and Jerónimo Pardo on the Notion of Propositio." In *John Buridan and Beyond. Topics in the Language Sciences 1300-1700*, edited by Ebbesen, Sten and Friedman, Russell L., 153-182. Copenhagen: C. A. Reitzel.
17. ———. 2004. "'Complexio, Enunciatio, Assensus': The Role of Propositions in Knowledge According to John Buridan." In *Medieval Theories on Assertive and Non-Assertive Language*, edited by Maierü, Alfonso and Valente, Luisa, 401-414. Firenze: Leo S. Olschki.
18. Perini-Santos, Ernesto. 2008. "John Buridan on the Bearer of Logical Relations." *Logica Universalis*:59-70.  
"According to John Buridan, the time for which a statement is true is underdetermined by the grammatical form of the sentence - the intention of the speaker is required. As a consequence, truth-bearers are not sentence types, nor sentence tokens plus facts of the context of utterance, but statements. Statements are also the bearers of logical relations, since the latter can only be established among entities having determined truth-conditions. This role of the intention of the speaker in the determination of what is said by an utterance is not isolated in medieval semantics."
19. ———. 2011. "John Buridan's Theory of Truth and the Paradox of the Liar." *Vivarium* no. 49:184-213.  
"The solution John Buridan offers for the Paradox of the Liar has not been correctly placed within the framework of his philosophy of language. More precisely, there are two important points of the Buridanian philosophy of language that are crucial to the correct understanding of his solution to the Liar paradox that are either misrepresented or ignored in some important accounts of his theory. The first point is that the Aristotelian formula, 'propositio est vera quia qualitercumque significat in rebus significatis ita est', once amended, is a correct way to talk about the truth of a sentence. The second one is that he has a double indexing theory of truth: a sentence is true in a time about a time, and such times should be distinguished in the account of the truth-conditions of sentences. These two claims are connected in an important way: the Aristotelian formula indicates the time about which a sentence is true. Some interpreters of the Buridanian solution to the paradox, following the lead of Herzberger, have missed these points and have been led to postulate truth-values gaps, or surrogates of truth-value gaps, when there is nothing of this sort in his theory. I argue against this tradition of interpretation of Buridan and propose an interpretation of his solution to the Liar."
20. Perreiah, Alan R. 1972. "Buridan and the Definite Description." *Journal of the History of Philosophy* no. 10:153-160.  
"Previously unpublished commentaries by Buridan on Aristotle's *Physics* (Book I, Question X) and *Metaphysics* (Book VII, Question XX) are examined in order to determine whether the 14th-century philosopher and logician anticipated a theory of descriptions. The writings show that Buridan's distinctions between singular and common concepts parallels Russell's between knowledge by acquaintance and by description. Basic features of determinate concepts are studied, particularly those of existence and identity. Buridan's treatment of these matters shows that: (a) he had all of the concepts needed to analyze the iota-operator (b) he was sensitive to the restriction that predication involving unquoted descriptive phrases presuppose that existence and identity requirements are met and (c) he appreciated the peculiar behavior of determinate concepts in logical inference. Buridan's theory of concepts is applied to some problematic expressions in direct discourse."
21. Pinborg, Jan, ed. 1976. *The Logic of John Buridan*. Copenhagen: Museum Tusulanum Press.  
Acts of the 3rd European Symposium on medieval logic and semantics, Copenhagen 16-21 November 1975.
22. Pironet, Fabienne. 1993. "John Buridan on Ther Liar Paaradox: Studfify of an Opinion and Chronology of the Texts." In *Argumentationstheorie. Scholastische Forschungen Zu Den Logischen Und Semantischen*

- Regeln Korrekten Folgerns*, edited by Jacobi, Klaus, 293-300. Leiden: Brill.
23. Pluta, Olaf. 2002. "John Buridan on Universal Knowledge." *Bochumer philosophisches Jahrbuch für Antike und Mittelalter* no. 7:25-46.
  24. Priest, Graham, and Read, Stephen. 2004. "Intentionality: Meinongianism and the Medievals." *Australasian Journal of Philosophy* no. 82:421-442.  
 "Intentional verbs create three different problems: problems of nonexistence, of indeterminacy, and of failure of substitutivity.  
 Meinongians tackle the first problem by recognizing nonexistent objects; so too did many medieval logicians. Meinongians and the medievals approach the problem of indeterminacy differently, the former diagnosing an ellipsis for a propositional complement, the latter applying their theory directly to non-propositional complements.  
 The evidence seems to favor the Meinongian approach. Faced with the third problem, Ockham argued bluntly for substitutivity when the intentional complement is non-propositional; Buridan developed a novel way of resisting substitutivity. Ockham's approach is closer to the Meinongian analysis of these cases; Buridan's seems to raise difficulties for a referential semantics. The comparison between the Meinongian and medieval approaches helps to bring out merits and potential pitfalls of each."
  25. Read, Stephen. 2002. "The Liar Paradox from John Buridan Back to Thomas Bradwardine." *Vivarium* no. 40:189-218.  
 "My aim is to counter recent infatuation with John Buridan's analysis in his *Sophismata* (circa 1356-7) of the liar paradox and other insolubles, and show not only how he derived his solution from Thomas Bradwardine's *Insolubilia* (circa 1324), but how he altered it for the worse. Buridan was a great logician and philosopher. He was careful, methodical and had a great influence on succeeding generations. But his analysis of the liar paradox was flawed. It introduced an ad hoc supplement to the truth-conditions of just those propositions which induce paradox to prevent the contradiction from arising. What was really clever in his analysis, and attracted the attention of, among others in recent decades, Moody, Prior and Hughes, was in fact derived from Bradwardine, in whose hands it was dealt with both consistently and successfully. By all the historical evidence, Bradwardine's proposal was an original insight. On analysis, it is seen to be a great and instructive one, too."
  26. ———. 2012. "John Buridan's Theory of Consequence and His Octagon of Opposition." In *Around and Beyond the Square of Opposition*, edited by Béziau, Jean-Yves and Jacqueline, Dale, 93-110. Basel: Birkhäuser.  
 "One of the manuscripts of Buridan's *Summulae* contains three figures, each in the form of an octagon. At each node of each octagon there are nine propositions. Buridan uses the figures to illustrate his doctrine of the syllogism, revising Aristotle's theory of the modal syllogism and adding theories of syllogisms with propositions containing oblique terms (such as 'man's donkey') and with propositions of "non-normal construction" (where the predicate precedes the copula). O-propositions of non-normal construction (i.e., 'Some S (some) P is not') allow Buridan to extend and systematize the theory of the assertoric (i.e., non-modal) syllogism. Buridan points to a revealing analogy between the three octagons. To understand their importance we need to rehearse the medieval theories of signification, supposition, truth and consequence."
  27. Reina, Maria Elena. 2002. *Hoc Hic Et Nunc. Buridano, Marsilio Di Inghen E La Conoscenza Del Singolare*. Firenze: Leo S. Olschki.
  28. Rijk, Lambertus Marie de. 1976. "On Buridan's Doctrine of Connotation." In *The Logic of John Buridan. Acts of the Third European Symposium on Medieval Logic and Semantics, Copenhagen 16-21 November 1975*, edited by Pinborg, Jan, 91-100. Copenhagen: Museum Tusulanum.  
 Reprinted as chapter XI in: *Through language to reality: studies in medieval semantics and metaphysics*.  
 "Mediaeval Terminist logic was concerned with the so-called properties of terms (*proprietaes terminorum*), to the extent that it not only studied the formal structures of Latin language, its logical syntax, and all kinds of specifications within this scope, but also interpreted the linguistic elements and structures. This interpretation mainly focussed on what the moderns would call semantics rather than on formal logic as such. The properties of terms (*significatio, appellatio, suppositio* and its various forms: *ampliatio, restrictio, distributio*) were investigated in their relation to the so-called *res extra animam* (extra-mental reality).  
 Two statements can be made. First: Who wants to detect a Mediaeval thinker's implicit ontological points of view, finds a wealth of firm evidence in his doctrine of the properties of terms. Secondly: Within the domain of these properties it is Buridan's *appellatio* that has a very interesting role because of its affinity with the modern concept of connotation. So Buridan's *appellatio* is entitled to have the attention of both the historians of Mediaeval thought and learning as of those modern logicians who do not want to seclude themselves from the historical background of modern doctrines.  
 My approach to the matter concerned now is to compare Buridan's *appellatio* with modern connotation, more specifically to put the translation 'connotation' for Buridan's *appellatio* to the test." p. 91

29. ———. 1992. "John Buridan on Universals." *Revue de Métaphysique et de Morale* no. 97:35-59.  
 "It is common knowledge that Plato strongly believed that, in order to explain the nature of whatever is (either things or states of affairs, including Man and his environment), the assumption of Transcendent Universal Forms is indispensable. In his view, these universal Forms are the ontic causes of each and every sublunary entity, which all owe their being to their sharing in these Forms. Consequently, everyone who is in want of firm knowledge (*episteme*) about, the things of the outside world is bound to direct his attention to the transcendent domain of the universal Forms'.  
 However, Plato was the first to recognise, and seriously deal with, the objections that can be raised to this doctrine. These objections mainly concern the status (and the dignity, however modest) of our transient world and, above all, the possibility to obtain, true knowledge of this world as *it stands*, in its ever-changing nature, that is." p. 35  
 (...)  
 "To be sure, the Medievals all rejected the Platonic Ideas taken as separate substances and they adhered to the Aristotelian common sense principle that only individuals have independent existence. Nevertheless, they were still under the spell of the status of «universal being» as the indispensable basis of true knowledge.  
 Marylin McCord Adams has analysed some early fourteenth century solutions to the problem of universals (Scotus, Ockham, Burley and Harclay) (\*). In McCord's article Buridan's view of the matter is left out of consideration. Quite understandably so, since Buridan's solution to the problem differs considerably from the sophisticated arguments given by his contemporaries. Buridan seeks for a solution in analysing the several ways of human understanding. In directing his attention to the propositional attitude involved in the cognitive procedure Buridan is remarkably close to the ingenious solution Peter Abelard had come up with two centuries earlier. In the next *sections* I shall give an outline of Abelard's treatment of the question of universals followed by an analysis of Buridan's discussion of the matter (as found in his commentary on the *Metaphysics* and elsewhere)." p. 37  
 (...)  
 "We may conclude, then, that two bright logicians of the Parisian tradition have come up with quite an ingenious solution to the problem of universals. Both of them started out from the firm conviction that nothing exists but particulars. Nevertheless, they apparently were not satisfied with purely extensional solutions as brought forward by Oxford logicians such as Heytesbury and Ockham. Maybe extensionalists are out to show how people *ought* to think. Abelard and Buridan, however, were especially interested in the various ways of conceiving we *actually* use in daily life, in our attempts to conceptually deal with the outside world." p. 59  
 (\*) "Universals in the early Fourteenth century" in *Cambridge History of Later Medieval Philosophy, from the rediscovery of Aristotle to the desintegration of Scholasticism 1100-1600* pp. 411-439.
30. ———. 1993. "On Buridan's View of Accidental Being." In *John Buridan: A Master of Arts. Some Aspects of His Philosophy. Acts of the Second Symposium Organized by the Dutch Society for Medieval Philosophy Medium Aevum on the Occasion of Its 15th Anniversary*. Leiden-Amsterdam (Vrije Universiteit), 20-21 June, 1991., edited by Bos, Egbert Peter and Krop, Henri A., 41-51. Nijmegen: Ingenium Publishers.  
 "One of the most striking characteristics of late medieval metaphysics is the upgrading of 'accidental being'. The strict opposition between '*esse per se*' and '*esse per accidens*', which had been of paramount importance ever since Aristotle, has lost its relevance in the ontological discussions of the fourteenth century. The status of 'accidental being' came rather close to that of 'substantial being'. In the views of philosophers such as Ockham and Buridan (not to mention thinkers like Crathorn) the nature of 'accidental being' (or rather 'quantitative and qualitative being') can no longer be properly defined in terms of ontological dependency upon substance. In other words, '*per se* subsistence' is assigned not only to substance but to 'accidental being' as well.  
 In the present contribution I will illustrate this development by discussing some of Buridan's expositions in his *Questiones* commentary on Aristotle's *Metaphysics* (IV, q. 6 and VII, q. 3-4)." p. 41
31. ———. 1994. "John Buridan on Man's Capability of Grasping the Truth." In *Scientia Et Ars Im Hoch-Und Spätmittelalter*, edited by Craemer-Rügenberg, Ingrid and Speer, Andreas, 282-303. Berlin, New York: Walter de Gruyter.  
 Miscellanea Mediaevalia, vol. 22/1.  
 "As is well-known, two subjects are distinctive of the fourteenth century theory of cognition, namely '*certitudo*' and '*evidentia*'. It is true, thirteenth century philosophers, such as Thomas Aquinas, were also concerned with certitude and evidentness as indispensable requisites for 'true knowledge' (*'scientia*'). However, until the end of the thirteenth century certitude and evidentness were not prominent in the discussions about the cognitive procedure nor were they treated as separate matters, requiring separate attention. In Thomas Aquinas for example, the conviction that man is really capable of grasping the truth with certainty is really constitutive of his philosophical (and theological) thought and praxis (\*), or to speak with J. A. Aertsen, of 'Thomas' way of thought'.(\*\*) This, however, does not alter the fact that in Aquinas' philosophy '*certitudo*' is not highlighted as such, and the specific role of '*evidentia*' is even

- virtually ignored.  
Buridan's theory of cognition, on the contrary, clearly focusses on the ingredients '*certitudo*' and '*evidentia*', and, within this framework, on the notion of '*assensus*'. In the present paper I aim to elucidate the role of this key notion of John Buridan's theory of cognition."
- (\*) See the excellent paper by Gerard Verbeke, "Certitude et incertitude de la recherche philosophique selon saint Thomas d'Aquin", in: *Rivista di Filosofia neo-scolastica* 66 (1974), 740-57.
- (\*\*) Jan Aertsen, *Nature and Creature. Thomas Aquinas' Way of Thought. Studien und Texte zur Geistesgeschichte des Mittelalters* herausgegeben von Albert Zimmermann, Band XXI, Leiden etc. 1988, passim.
32. Roberts, Louise Nisbet. 1952. "Formalism of Terminist Logic in the Fourteenth Century." *Tulane Studies in Philosophy* no. 1:107-112.
  33. ———. 1952. *An Introduction to the Terminist Logic of John Buridan*. Unpublished Ph.D Thesis, available at Proquest Dissertation Express.
  34. ———. 1953. "Every Proposition Is False. A Medieval Paradox." *Tulane Studies in Philosophy* no. 2:95-102.  
"Paradoxes similar to that of Epimenides the Cretan are present in the highly developed logic of the Late Medieval period. These "sophisms" were known as the "impossibilia" or "insolubilia." an interpretation is given of the analysis of "every proposition is false" which is to be found in the *Sophismata* of John Buridan."
  35. ———. 1960. "A Chimera Is a Chimera: A Medieval Tautology." *Journal of the History of Ideas* no. 21:273-278.  
"Rejection of the truth of a tautology containing a fiction reveals something of the complexity of the Terminist logic of the late Middle Ages. The analysis of "a chimera is a chimera," to be found in the *Sophismata* of the Fourteenth century logician John Buridan, involves a theory of signs and an interpretation of logical truth."
  36. Schönberger, Rolf. 1994. *Relation Als Vergleich. Die Relationstheorie Des Johannes Buridan Im Kontext Seines Denkens Und Der Scholastik*. Leiden: Brill.  
"All central concepts in philosophy contain a relational aspect. The type of reality to be accorded to relations is for this reason one of the core questions of philosophical thought. This is particularly so in the case of nominalism.  
This book is devoted to John Buridan. While his towering importance in the late Middle Ages and for the development of early modern science has been recognised, his works are still not really well known. How does his theory of relations relate to those of his contemporaries, for example William of Ockham or Gregory of Rimini? The question of the reality of relations is not only of interest as an "experimentum crucis of nominalism, but also because Buridan in his ethics frequently falls back upon older traditions. The first part of the book contains a discussion of theories of relation from Thomas Aquinas to Gregory of Rimini. The author then offers an exhaustive presentation of the basic lines of Buridan's philosophy and its relation to theology, before turning attention to his theory of relation. Finally he addresses particular forms of relation (identity, analogy, causality, etc.)."
  37. ———. 2003. "Quod Omnia Appetunt? Der Begriff Des Guten in Der Nominalistischen Metaphysik Des Johannes Buridan." In *Die Logik Des Transzendentalen. Festschrift Für Jan A. Aertsen Zum 65. Geburtstag*, edited by Pickavé, Martin, 395-417. Berlin: Gruyter.
  38. Sylla, Edith Dudley. 2009. "John Buridan and Critical Realism." *Early Science and Medicine* no. 14:211-247.  
"In this paper I examine what John Buridan has to say in his *Quaestiones in Analytica Posteriora* relevant to the subalternate mathematical sciences, particularly astronomy. Much previous work on the scholastic background to the Scientific Revolution relies on texts that were written in the late sixteenth or seventeenth centuries. Here I am interested in texts that might reflect the context of Copernicus, and, in particular those before 1500. John Buridan and Albert of Saxony were fourteenth century authors influential in Cracow in the fifteenth century, whose conception of science may be characterized as "critical realism." Their view would support the autonomy of astronomy, as well as the idea that sciences may progress over time."
  39. Tabarroni, Andrea. 2010. "John Buridan and Marsilius of Inghen on the Meaning of Accidental Terms (*Quaestiones Super Metaphysicam*, Viii, 3-5)." *Documenti e Studi sulla Tradizione Filosofica Medievale* no. 14:389-407.
  40. Thijssen, Johannes M.M.H. 1987. "Buridan on the Unity of a Science. Another Chapter in Ockhamism?" In *Ockham and Ockhamists. Acts of the Symposium Organized by the Dutch Society for Medieval Philosophy Medium Aevum on the Occasion of Its 10th Anniversary (Leiden, 10-12 September 1986)*, edited by Bos, Egbert Peter and Krop, Henri A., 93-105. Nijmegen: Ingenium Publishers.  
"In an article that appeared in 1974, A.A. Maurer traced the contemporary notion of science as a body of

knowledge to the 13th and 14th centuries. One may doubt Maurer's suggestion that the development of the notion of science as a body of knowledge is another chapter in the eclipse of Thomism during the Late Middle Ages. Nevertheless he has certainly pointed out an important change in the notion of the unity of a science which took place in the Later Middle Ages (2).

Within the spectrum of medieval opinions on the unity of a science, Maurer was of the opinion that the extreme positions were represented by Thomas Aquinas and William of Ockham. The purpose of this paper is to determine the position of John Buridan in the debate on the unity of a science. Because Buridan is generally pictured as an 'Ockhamist', a comparison will be made between the essentials of Buridan's and Ockham's theory of science. Apart from their views on the unity of a science, these essentials also include their views on the immediate object of scientific knowledge in general. In this comparison, priority will be given to Buridan's theory of science, for in contradistinction to Ockham's texts, his texts on this subject are not yet available in a modern edition. Besides, some aspects of Ockham's theory of science which will be touched upon here, have already been studied (3). So, Ockham's philosophy of science will more serve as general background for the presentation of Buridan's opinions (4).

This presentation will be rounded off with some brief remarks on the vexed question as to whether it really makes sense to designate Buridan as an Ockhamist."

(2) A.A. Maurer, 'The Unity of a Science. St. Thomas and the Nominalists' in: *St. Thomas Aquinas 1274-1974*, p. 275 and already in 'Ockham's Conception of the Unity of Science' in: *Mediaeval Studies* 20 (1958), pp. 100-101 and p. 104. A. Zimmermann, *Ontologie oder Metaphysik?* Leiden - Kegan Paul 1965, p. 353 has arrived at the same conclusions with regards to the change that took place in the notion of the unity of a science. This change is also documented in Spade, 'The Unity of Science according to Peter Auriol' in: *Franciscan Studies* 32 (1972).

(3) Especially in Maurer, 'Ockham's Conception of the Unity of Science', and 'The Unity of a Science. St. Thomas and the Nominalists'. See further Goddu, *The Physics of William of Ockham*, Leiden - Kegan Paul 1984, pp. 23-27.

(4) Some aspects of Buridan's theory of the unity of a science are discussed in Zimmermann, *Ontologie oder Metaphysik*, pp. 339-348, but he confines himself exclusively to a presentation of some passages taken from Buridan's *Commentary on the Metaphysics*. He does not provide a real analysis of Buridan's position, and besides, he does not draw attention to the differences that exist between Buridan's and Ockham's theories.

41. ———. 2004. "The Buridan School Reassessed. John Buridan and Albert of Saxony." *Vivarium* no. 42:18-42.
42. Thijssen, Johannes M.M.H., and Zupko, Jack, eds. 2001. *The Metaphysics and Natural Philosophy of John Buridan*. Leiden: Brill.
43. Thom, Paul. 2003. *Medieval Modal Systems. Problems and Concepts*. Aldershot: Ashgate. See Chapter 9 *Buridan* pp. 169-192.  
"With Buridan (c.1300 - c.1358), modal syllogistic reaches its highest point in the Middle Ages, both in terms of completeness and elegance. Lagerlund observes that it was Buridan who gave modal syllogistic the form it would retain for the rest of the Middle Ages, and that his achievement in this field 'surpassed most things done in the history of logic since Aristotle completed the *Prior Analytics*'.(1)In this chapter we will look at his modal logic as expounded in Buridan's *Tractatus de Consequentibus* and his *Summulae de Dialectica*." p. 169  
(1) H. Lagerlund, *Modal Syllogistics in the Middle Ages*, Leiden, Brill, 2000, p. 30.
44. Uckelman, Sara L., and Johnston, Spencer. 2010. "John Buridan's *Sophismata* and Interval Temporal Semantics." *Logical Analysis and History of Philosophy* no. 13:133-147.  
"In this paper we look at the suitability of modern interval-based temporal logic for modeling John Buridan's treatment of tensed sentences in his *Sophismata*. Building on the paper [Øhrstrøm, P., Buridan on interval semantics for temporal logic. *Logique et Analyse* 106: 211-215, 1984], we develop Buridan's analysis of temporal logic, paying particular attention to his notions of negation and the absolute/relative nature of the future and the past.  
We introduce a number of standard modern propositional interval temporal logics (ITLs) to illustrate where Buridan's interval-based temporal analysis differs from the standard modern approaches. We give formal proofs of some claims in [Øhrstrøm 1984], and sketch how the standard modern systems could be defined in terms of Buridan's proposals, showing that his logic can be taken as more basic."
45. Willing, Anthony. 1991. "Buridan's Divided Modal Syllogistic." *Notre Dame Journal of Formal Logic* no. 32:276-289.
46. ———. 1998. "Unheard of Objects of Knowledge: A Controversial Principle of Buridan's Epistemic Logic." *Franciscan Studies* no. 56:203-224.
47. Yrjönsuuri, Mikko. 2008. "Treatments of the Paradoxes of Self-Reference." In *Mediaeval and*

*Renaissance Logic*, edited by Gabbay, Dov and Woods, John, 579-606. Amsterdam: Elsevier.

Handbook of the history of logic: Vol. 2.

On Buridan see pp. 600-606.

"John Buridan's massive textbook of logic *Summulae de Dialectica* ends with a collection of sophisms, seemingly as a section containing exercises. The last set in this collection deals with self-referential propositions and thus also with insolubles.

This is not the only location where Buridan discusses paradoxes of self-reference, but it is perhaps the most accessible one. The textbook as a whole was widely used for several centuries, but no other section in it is directly dedicated to self-reference." p. 600 (note omitted)

"If compared to Bradwardine's work, Buridan's discussion of the insolubles does not appear very ingenious and original. He wavers and leaves room for doubt, allowing the reader to get the feeling that his solution is sketchy. The work is, however, clearly on a very advanced logical level and the problems obviously result from difficulties in the subject matter. Given the extremely wide circulation of Buridan's *Summulae*, it is very understandable that his solution achieved a very high reputation and a wide influence in the coming centuries." pp. 605-606

48. Zupko, Jack. 1990. "John Buridan on Abstraction and Universal Cognition." In *Knowledge and the Sciences in Medieval Philosophy. Proceedings of the Eight International Congress of Medieval Philosophy (Siepm), Helsinki, 24-29 August 1987*, edited by Asztalos, Monika, Murdoch, John Emery and Niiniluoto, Ilkka, 393-403. Helsinki: Acta Philosophica Fennica.

Vol. II.

"For the nominalist, the claim that the mind can cognize universally, or that its thoughts can range over non-individual objects such as 'human being', or 'whiteness', requires further explanation. What is it that happens, psychologically speaking, when I cognize universally? Given the standard assumption of nominalist ontologies that the world contains no non-individual entities, what status do the objects of universal thought have, and how do they come to be entertained?

There are two distinct questions here: one semantic, asking how a mental act can mean something universal, and the other psychological, asking about the genesis of universal thoughts. Aristotle's answer to the second can be found in *De memoria*, where he says, "... someone who is thinking, even if he is not thinking of something with a size, places something with a size before his eyes, and thinks of it not as having a size;" (1) thus, the intellect thinks of what is common or universal, such as triangularity, by an effort of abstraction from what is determinate or particular - triangles having physical dimensions. (2) His answer to the first can be reconstructed from his famous remark in *De anima* that "in the case of objects which involve no matter, what thinks and what is thought are identical." (3)<sup>3</sup> The identity in question is formal - thinking is, like perceiving, defined as the sort of change in which form is received without matter - and so what makes my thought of triangularity a thought of that universal is my intellect becoming triangularly formally. But does this mean that there is something universal in my mind whenever I think universally?" (p. 393)

"In conclusion, I think Buridan is for most part successful in reconciling his nominalistic world-view with the problem of how we think universally. The task for the nominalist is to explain our evident ability to cognize universally without postulating universals, either as products of abstraction or thought-objects. Buridan endeavours to steer clear of both these obstacles by on the one hand stipulating that the species by which we entertain a universal is itself singular, and on the other by treating the universality of thought as a function of the way in which concepts refer not to abstract concepts or entities, but to individuals in the world. And although his account of concept-generation explains intellectual abstraction in such a way that its product still looks like a good candidate for a universal, we can tell a more suitable story without much difficulty. At least in this respect, Buridan's psychology does not compromise his ontology." (p. 403).

(1) Arist. *De mem.* 1.450a4-6; tr. Sorabji, *Aristotle on Memory* (Providence: Brown U.P., 1972), 48-49.

(2) Arist., *De an.* I.1.403b15; cf. III.4.429b18; III.7.431b12, III.8.432a5.

(3) Arist., *De an.* III.4.430a3-5.

49. ———. 1993. "Buridan and Skepticism." *Journal of the History of Philosophy* no. 31:191-221.

50. ———. 2003. *John Buridan. Portrait of a Fourteenth-Century Arts Master*. Notre Dame: University of Notre Dame Press.

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