Review of Terence Parsons, *Articulating Formal Logic.* Oxford University Press, 2014.
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Medieval logic can often "seem to consist of a variety of unsystematic and disparate remarks, and it is not at all obvious whether or how they fit together" (p. 1). In this ambitious book, Terence Parsons seeks to demonstrate how "medieval logic can […] be seen as a group of theories and practices clustered around a core theory which is a paradigm of logic; this theory consists of a number of widely known principles, all of which can be derived from a very simple core of rules and axioms" (p. 1). Starting from the beginning – that is, Aristotle – Parsons takes the reader from the semantics of the simplest categorical (subject-predicate) statements through a semi-formal notation called 'Linguish' (a mix of Latin and English, plus some symbols), to the modes of personal supposition, and eventually to complex statements involving tenses, relatives, anaphora, and other phenomena; along the way, comparisons with contemporary logic and lingusitic theory are regularly made.

Because the *Organon* provided the foundation for developments in the Middle Ages, Parsons begins with Aristotelian logic in Chapter 1, presenting not so much Aristotle's views *per se* but rather what the theory of categorical sentences and syllogisms looked like to medieval logicians (p. 6). This approach focuses on the structure of categorical sentences and arguments, and mostly glosses over questions about what makes these sentences true (though see pp. 9-10). In Chapter 2, the basic building blocks are extended to categorical sentences which have quantified predicates, predicates which are singular terms, and negative terms, all of which require special analyses, and were explicitly dealt with by medieval authors.

The next two chapters are primarily modern in orientation, introducing a new notation, called 'Linguish' for representing explicitly the sentence types ('logical forms') and proof rules discussed in Chapters 1 and 2, as well as an algorithm for generating Latin or English sentences from Linguish logical forms (cf. p. 84). Truth conditions are presented in §4.5, and the completeness of the rules of inference is proven in §4.7. The basic Linguish notation is extended to adjectives, intransitive verbs, transitive verbs, complex terms, including so-called 'parasitic' terms (participles based on transitive verbs), relative clauses, genitives, demonstratives, and molecular propositions.

Chapters 6-8 and 10 are devoted to using Linguish to explore a number of central topics in medieval logical and semantic theory (such as the modes of personal supposition – rules that explain the relationship between quantified sentences and sentences involving singular terms – in Chapter 7, and the rules of 'ampliation' and 'restriction' that govern tensed and modal sentences in Chapter 10). It is in Chapter 10 that I find the only interpretation of a medieval doctrine that I find to be genuinely wrong, rather than merely oversimplified (see below). Parsons says that "the custom is generally to say that terms are restricted when they are required to supposit [stand for or refer to] exactly for the presently existing things that they presently signify, or for some subset of these, and to call any extension of this range of things ampliation" (pp. 277-278). On this view, every term is either ampliated or restricted. But this was *not* the customary view; in contrast, William of Sherwood, Lambert of Lagny, and Peter of Spain, authors of three of the most influential treatises on logic in the 13th century, restrict restriction to those cases where the term supposits for fewer presently existing things than the term signifies.[1] Thus, it is not the case that every term is either restricted or ampliated;

1 "Understand that to restrict something is, strictly speaking, to force it to exist in a smaller space than it is naturally suited for", William of Sherwood's *Introduction to Logic*, N. Kretzmann, trans., University of Minnesota Press, 1996: p. 123; " 'Common term' is used in [the rule] because of the difference between it and a discrete term, which cannot be restricted or ampliated", Lambert of Lagny [né of Auxerre], "Properties of Terms", in N. Kretzmann & E. Stump, eds., *Cambridge Translations of Medieval Philosophical Texts* vol 1, Cambridge University Press, 1988, p. 116; "Restriction is the narrowing of a common term from a larger supposition to a smaller one, as when someone says 'a white man runs', this adjective 'white' restricts 'man' to suppositing for white items", Peter of Spain's *Summaries of Logic*, trans. B. P. Copenhaver, C. Normore, T. Parsons, Oxford University Press, 2014, p. 441.

some are neither.

In Chapter 9, the resulting system, with all of its extensions and modifications, is compared with contemporary logic. After investigating the expressive power of Linguish, first the representation of Linguish within modern logic is considered, and then the representation of modern logic in Linguish. The final section of the chapter steps almost wholly away from any medieval motivation and develops first-order arithmetic in Linguish.

The result is a homogeneous presentation system incorporating roughly two centuries' worth developments with many interesting properties and decent expressive power. Unfortunately, it's not clear how medieval the system actually is. One of the drawbacks of the books it that it is perhaps a bit too ambitious: Parsons thinks that all of these unsystematic and disparate parts can fit together, and in showing how, he sometimes goes too far. In attempting to give a systematic and synthetic account of medieval logic, Parsons overlooks the fact that there was no single unique account of medieval logic, but just as nowadays there were competing accounts of the fundamental logical concepts, so to there wasn't uniform agreement. The material he draws from did not develop in a single homogeneous context, and many of the important divergent traditions are masked in the book, such as (a) different theories of *consequentia* (consquences, logical inferences) and (b) the effect of realist vs. nominalist tendencies in logic. While Parsons straightforwardly admits that "this book does not contain any new historical discoveries" (p. 5), the problem is that sometimes already established historical discoveries differences are glossed over or even erased (only rarely are the controversies noted, cf., e.g., pp. 128-129. The biggest flaw of the book is that a modern reader of the book may come away with an understanding of 'medieval' logic, but whether that logic actually corresponds to anything that a single person would or could have held in the medieval period is disputable.

This leads to the next problematic aspect of the book, namely, that it is not clear what the intended audience is. A modern logician may wonder whether it is worth his time to rehearse idiosyncracies of such temporally remote developments in his field; this feeling is compounded by the fact that much of what is interesting and genuinely novel in medieval developments can be found in discussions of *obligationes*, *insolubilia* and *sophismata*, theories of consequences, and syncategorematic words, all of which are explicitly omitted from the scope of this book (p. 5). A historian of medieval logic may, on the other hand, worry about the lack of attention to historic fact and the amalgamation of views of many different people without any attempt to discuss why it is appropriate to combine these views. The presence of formalization exercises makes the book seem geared towards undergrads, but if that is so, (a) I fear there is presently very little place in the undergraduate curriculum for such a textbook[2] and (b) I wonder what service they would be given being introduced to medieval logic in such a synthetic way, without making clear the tensions, differences, and genuine debates that are present in the development of the field over the 13th and 14th centuries.

The final problematic aspect of the book worth mentioning is that it feels, at times, as if it were unfinished. There are a large number of places – more than you would expect in what is supposed to be a completed and coherent project, as any book should be – where the author says something along the lines of "I think this is the case, but I haven't tried proving it" (cf. pp. 105, 170, 216, 249, 261-262). This is deeply unsatisfying from the logical point of view, and from the historical or exegetical point of view, deeply lacking. I would rather that these points have not been raised at all if they were going to be raised merely to be dismissed. There are also some omissions which appear to be simple errors; monotonicity up and down on both the right and left are introduced on p. 45, but only monotonicity up is defined; examples of monotonicity down are given (p. 46), but it is never formally defined, and not all technical terms are included in the index, for example 'main term', something the definition of

2 This is not to imply that I don't think such a place should be made!

which someone might wish to remind himself of. These appear to be simple oversights.

It's a book that I found admirable for the scope of its accomplishment, and a book I came away from reading with a deeper understanding of the complexities and sophistication of certain aspects of medieval logic. It's a book that I wanted to love, but, alas, found I couldn't quite.